

VIMS Shoreline Assessment Tools 101: supporting coastal resilience and living shoreline assessments

BASELINE CONDITIONS

Shoreline & Tidal Marsh Inventory:

Virginia Coastal Resources Tool



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 Tamia Rudnicki
 Catherine Duning



Virginia Coastal Resources Tool

About

Virginia has 8,916 miles of tidal shoreline...
Not including Eastern Shore seaside marsh islands



EXPLORE YOUR COASTAL COMMUNITY



Virginia Coastal Viewer

Explore shoreline conditions throughout coastal Virginia. View animated sea level rise scenarios through 2100; compare 2 different years of orthorectified imagery from Virginia Base Mapping Program; view reference layers that include bathymetry, conservation lands and easements, submerged aquatic vegetation (SAV) and more. Shoreline inventory layers and Shoreline Management layers have detailed popup descriptions.



Dashboards

There are three different dashboards: Locality, Shoreline Inventory, River System Shoreline Inventory, and Shoreline Management Model (SMM). Summary data is displayed by locality, or river system (inventory only). Shoreline Inventory displays summary information that includes tidal marsh types, structures such as docks and breakwaters, riparian land use, and more. The SMM dashboard displays best management practice recommendations for shoreline conditions.

Purpose and Goals

Shoreline and Tidal Marsh Inventory

- *Developed as a resource for assessing conditions along the tidal shoreline.*
- *Provides important baseline information to support shoreline management and improve the decision-making capacity of local and state governing boards.*
- *These data are also required to run the VIMS Shoreline Management Model, which defines Shoreline Best Management Practices (BMPs) along tidal shorelines.*

Background

Shoreline and Tidal Marsh Inventory

- **1968:** *Virginia Legislature directs VIMS “to make a study and report on all marsh and wetlands in the state”*
- **1972:** *VIMS begins county-by-county survey & mapping of Virginia tidal wetlands using small boats and topographic maps.*
- **1973:** *VIMS publishes first Tidal Marsh Inventory (Lancaster County)*
- **1998 - 2019:** *Second iteration of the Shoreline and Tidal Marsh Inventory was conducted in VA taking advantage of new technology. VIMS also conducted shoreline and tidal marsh inventories in Maryland, and sections of North Carolina and Delaware.*
- **2020:** *VIMS Shoreline Management Model has been applied in six states: Virginia, Maryland, Florida, Alabama, Louisiana, & Texas.*
- **2023:** *VIMS Tidal Marsh and Shoreline Inventory incorporated into next-generation Chesapeake Bay Program Bay model.*

Virginia Coastal Resources Tool (VCRT)

Shoreline and Tidal Marsh Inventory Outputs



Center for Coastal Resources Management

SHORELINE & TIDAL MARSH INVENTORY

- Virginia
- Maryland
- Delaware
- North Carolina

Home / ... / Shoreline & Tidal Marsh Inventory / Virginia

Virginia Shoreline & Tidal Marsh Inventory

The Virginia Shoreline and Tidal Marsh Inventory is a series of reports that describe the condition of tidal shorelines for individual localities in the Commonwealth of Virginia. This inventory series started with historic reports produced in the 1970's. It also includes contemporary digital inventory updates generated from 1998 to the present using a combination of Geographic Information Systems (GIS), Global Positioning System (GPS), and remote sensing technology.



Virginia Coastal Resources Tool provides visualization of shoreline and tidal marsh inventory data and statistics

Data Request Form - download GIS data for the entire Virginia Shoreline Inventory (218MB .zip) - includes Virginia Tidal Marsh Inventory





Locality Portals

Clicking on a locality below will take you to a portal with links to shoreline and tidal marsh inventory reports, summary tables and GIS data for downloading.

- [Accomack County](#)
- [City of Alexandria](#)
- [Arlington County](#)



Virginia has 8,916 miles of tidal shoreline...
Not including Eastern Shore seaside marsh islands

<p>Natural Shoreline ⓘ</p>  <p>7,858 miles</p>	<p>Tidal Marsh Shoreline ⓘ</p>  <p>6,237 miles</p>	<p>Defended Shoreline Living Shorelines ⓘ</p>  <p>68 miles</p>	<p>Defended Shoreline ⓘ <i>All (includes living shorelines)</i></p>  <p>1,058 miles</p>
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Living Shoreline 1.5 miles

Beach Shoreline 12.1 miles

Marina Shoreline 3.8 miles

Defended and Natural Shoreline

- Defended: 30%
- Natural: 70%

Tidal Marsh Shoreline 110.9 miles

Tidal Marsh Area 2,324 acres

Tidal Marsh Community Types

- Submerged aquatic vegetation: 102.2
- Submerged high marsh: 7
- Rock Beaches: 2.7
- Subsided: 0.1
- Big cordgrass: 0
- Clonal: 0
- Avicennia riparian forest: 0
- Phragmites australis: 0.1
- Yellow Pond: 0
- Panhandle: 0
- Strawberry: 0.1

Onshore Protection Structures 43.3 miles

- Submerged: 43%
- Docks: 4%
- Disrupted: 3%
- Riprap: 4%
- Unaccounted: 1%
- Walls: 1%

Riparian Land Use/Land Cover

- Agriculture: 0.4
- Barren: 0.1
- Commercial: 14.4
- Forest: 14.4
- Government/industry: 0.3
- Road: 10.7
- Industrial: 0.4
- Forest: 14.4
- Residential: 11.1
- Water/Other: 27.3

Unsurveyed Tidal Marsh 775.1 acres

Dashboards

There are three different dashboards: Locality Shoreline Inventory, River System Shoreline Inventory, and Shoreline Management Model (SMM). Summary data is displayed by locality, or river system (inventory only). Shoreline Inventory displays summary information that includes tidal marsh types, structures such as docks and breakwaters, riparian land use, and more. The SMM dashboard displays best management practice recommendations for shoreline conditions.

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Tidal Marsh Shoreline 110.9 miles
Tidal Marsh Area 2,324 acres

Onshore Protection Structures 43.3 miles

- Submerged: 43%
- Docks: 4%
- Disrupted: 3%
- Rocky: 4%
- Unconsolidated: 1%
- Walls: 1%

Riparian Land Use/Land Cover

Category	Value
Agriculture	0.4
Bar	0.1
Commercial	14.4
Forest	14.4
Government/industry	0.3
Road	10.7
Industrial	0.4
Power	14.4
Residential	11.1
Unsurveyed/Unknown	27.3

Tidal Marsh Community Types

Community Type	Value
Submerged/low marsh	110.2
Submerged/high marsh	7
Rocky Beaches	2.7
Subsided	0.1
Big cordgrass	0
Clay	0
Acute mangrove/low marsh	0
Wetland/mudflat	0.1
Yellow Pond	0
Penetration	0
Shrubland	148.0





Unsurveyed Tidal Marsh 775.1 acres

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Select a Locality

- Stafford County 30.19 2014
- Henrich City Shoreline Miles: 18.51 2011
- Henric County Shoreline Miles: 121.49 2017
- Henrico County Shoreline Miles: 49.18 2017
- Hopewell City Shoreline Miles: 1.113 2016
- Isle of Wight County Shoreline Miles: 230.18 2017
- James City County Shoreline Miles: 431.64 2016
- King and Queen County Shoreline Miles: 177.4

Living Shoreline 1.5 miles

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Defended and Natural Shoreline

Defended: 30%
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Tidal Marsh Shoreline 110.9 miles

Tidal Marsh Area 2,324 acres

Tidal Marsh Community Types

Search vegetation marsh

- Submerged high marsh: 98.2
- Submerged low marsh: 7
- High marsh: 2.7
- Subaerial: 0.1
- Big cordgrass: 0
- Clonal: 0
- Avicennia riparian forest: 0
- Phragmites australis: 0.1
- Yellow Pond Lili: 0
- Potamogeton: 0
- Strophoceras: 0.1

Onshore Protection Structures 43.3 miles

- Submerged: 43%
- Docks: 4%
- Disrupted: 3%
- Rocky: 4%
- Unsubmerged: 1%
- Walls: 1%

Riparian Land Use/Land Cover

Bar Chart: Agriculture (0.4), Bare (0.1), Commercial (14.4), Forest (14.4), Government (0.3), Open (10.7), Industrial (0.4), Pasture (14.4), Residential (11.1), Unsurveilled (27.3)

Unsurveilled Tidal Marsh 775.1 acres

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Dashboards

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- Subsided: 0.1
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- Clonal: 0
- Avicennia riparian forest: 0
- Phragmites australis: 0.1
- Yellow Pond: 0
- Panhandle: 0
- Strawberry: 0.01

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Riparian Land Use/Land Cover

Category	Value
Agriculture	0.4
Bar	0.1
Commercial	16.6
Forest	18.8
Government	0.3
Road	10.7
Industrial	0.4
Power	14.8
Residential	61.4
Unsurveyed Tidal Marsh	27.3

Unsurveyed Tidal Marsh 775.1 acres

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Virginia Coastal Viewer

Getting Started/Help

Welcome to the Virginia Coastal Viewer

This viewer displays shoreline conditions throughout coastal Virginia. Use the Locality Filter Tool to select and zoom to a locality.

- Getting Started
Quick overview
- Map Contents (Layer List) and Legend
- Search and Measure Tools
- Other Tools
Basemaps, Locality Filter, Swipe, and Print

Legend

Virginia Coastal Localities

Localities

Shoreline Inventory Layers

Shoreline

Water Interface Shoreline

Map navigation toolbar: Full Screen, Search, Layer Filter, Basemap, Refresh, Info, Print, Menu, Layers, and Next.

Map Contents

- Virginia Coastal Localities
- Shoreline Inventory Layers
- Shoreline Management Model
- Reference Layers
- Sea Level Rise (mean high water)
- Virginia Base Mapping Program (VBMP) Imagery

Mapscale 1:2311162
60 km / 30 mi

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Legend

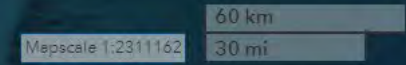
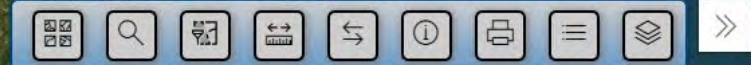
Virginia Coastal Localities

Localities

Shoreline Inventory Layers

Shoreline

Water Interface Shoreline



Virginia Coastal Viewer

Shoreline Inventory Layers



Map Contents

- Virginia Coastal Localities ⓘ
- Shoreline Inventory Layers ⓘ
- Shoreline Access Structures ⓘ
- Marinas ⓘ
- Shoreline Protection Structures ⓘ
- Riparian Land Use/Land Cover ⓘ
- Beach ⓘ
- Shoreline Bank Height ⓘ
- Shoreline Bank Cover ⓘ
- Riparian Tree Fringe ⓘ
- Shoreline ⓘ
- Phragmites australis ⓘ
- Tidal Marsh Inventory ⓘ

Layer Information ⓘ

Shoreline Protection Structures

This layer represents the general location of shoreline protection structures. Breakwater, Bulkhead, Debris, Groinfield, Jetty, Marsh Toe Revetment, and Riprap are all represented as line features either placed on the shoreline or just offshore.

Definitions can be found in the VIMS [Shoreline & Tidal Marsh Inventory Glossary](#), Center for Coastal Resources Management

0.4 km

Map Contents & Legend

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Virginia Coastal Viewer

The screenshot displays the Virginia Coastal Viewer interface. The main map area shows an aerial view of a coastal area with various shoreline protection structures overlaid in different colors: blue for Breakwater, yellow for Bulkhead, brown for Debris, orange for Dilapidated Bulkhead, cyan for Groinfield, red for Jetty, purple for Marsh Toe Revetment, pink for Riprap, and green for Unconventional. The interface includes a legend on the left, a map contents panel on the right, and navigation tools at the top. The map contents panel is open, showing a list of layers with checkboxes and information icons. The legend is also open, showing a list of shoreline protection structures with corresponding color swatches. The map scale is 1:18056, with 0.4 km and 0.3 mi markers.

Legend

Shoreline Protection Structures

- Shoreline Protection Structures
- Breakwater
- Bulkhead
- Debris
- Dilapidated Bulkhead
- Groinfield
- Jetty
- Marsh Toe Revetment
- Riprap
- Unconventional

Map Contents

- Virginia Coastal Localities ⓘ
- Shoreline Inventory Layers ⓘ
 - Shoreline Access Structures ⓘ
 - Marinas ⓘ
 - Shoreline Protection Structures ⓘ
 - Ruarian Land Use/land

Mapscale 1:18056 0.4 km 0.3 mi

Identifying Features

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Virginia Coastal Viewer

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Legend

Shoreline Protection Structures

- Breakwater
- Bulkhead
- Debris
- Dilapidated Bulkhead
- Groinfield
- Jetty
- Marsh Toe Revetment
- Riprap
- Unconventional

Map Contents

- Virginia Coastal Localities
- Shoreline Inventory Layers
- Shoreline Access Structures
- Marinas
- Shoreline Protection Structures
- Riparian Land Use/Land

Shoreline Protection Structure

Bulkhead

Structure Definition: Bulkheads are traditionally treated wood or steel 'walls' constructed to offer protection from wave attack. More recently, plastics are being used in the construction. Bulkheads are vertical structures built slightly seaward of the problem area and backfilled with suitable fill material. They function like a retaining wall, as they are designed to retain upland soil, and prevent erosion of the bank from impinging waves. From aerial photography, long stretches of bulkheaded shoreline may be observed as an unnaturally straight or

200 m
600 ft
Mapscale 1:9028

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Virginia Coastal Viewer

The screenshot displays the Virginia Coastal Viewer interface. At the top left, there is a search bar containing the text "Sarahs Creek Marina, Gloucester P". Below the search bar is a unit selector set to "Metric" and a distance measurement of "72.37 m". A "Zoom to" dialog box is also visible, showing the search result "Sarahs Creek Marina".

On the right side of the map, there is a toolbar with several icons. Two icons are highlighted with red boxes: a magnifying glass icon (Search) and a double-headed arrow icon (Measure). Below the toolbar are two panels: "Legend" and "Map Contents".

The "Legend" panel, titled "Shoreline Protection Structures", lists the following categories with corresponding color-coded lines:

- Breakwater (Blue)
- Bulkhead (Yellow)
- Debris (Brown)
- Dilapidated Bulkhead (Orange)
- Groinfield (Cyan)
- Jetty (Red)
- Marsh Toe Revetment (Purple)
- Riprap (Pink)
- Unconventional (Green)

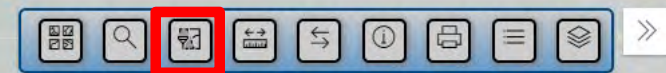
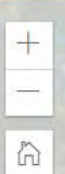
The "Map Contents" panel shows a list of layers with checkboxes and information icons:

- Virginia Coastal Localities
- Shoreline Inventory Layers
- Shoreline Access Structures
- Marinas
- Shoreline Protection Structures
- Riparian Land Use/Land

At the bottom right, there is a scale bar showing "Mapscale 1:18056" and distances of "0.4 km" and "0.3 mi".

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Virginia Coastal Viewer



Select a Locality

Show ONLY selected locality

Select a locality (begin typing locality name):

[Zoom to locality](#) [Clear selection](#)

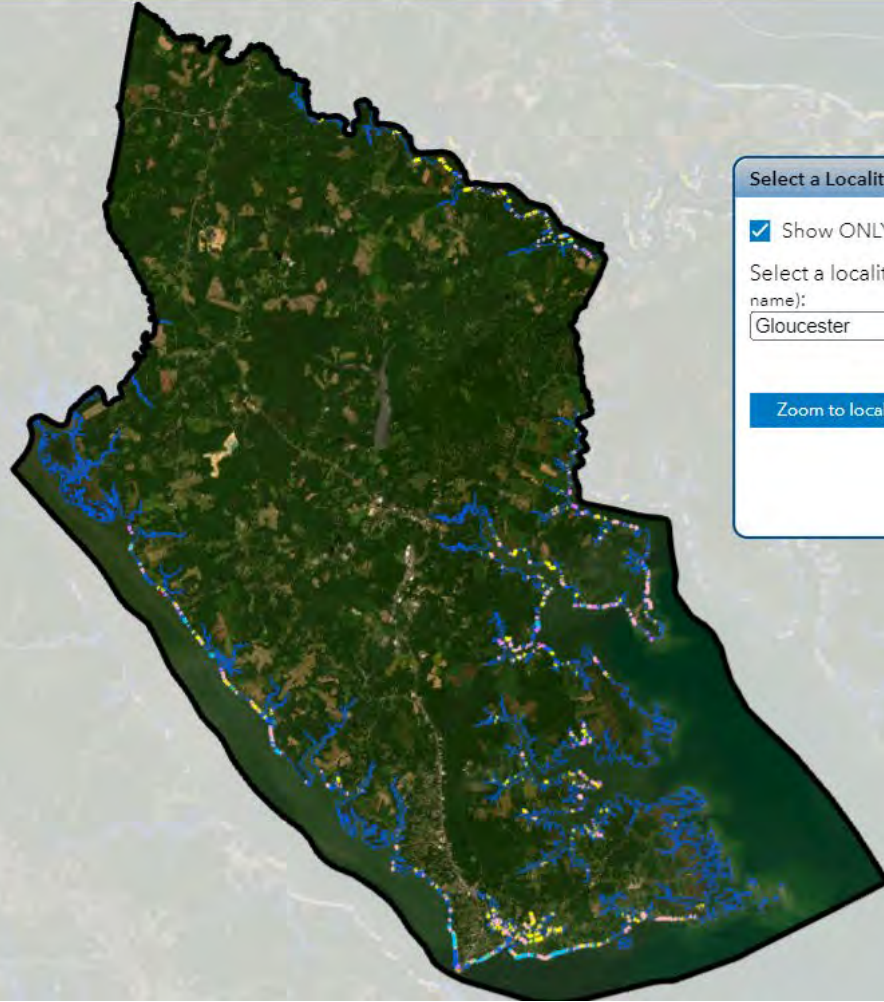
Map Contents

- Virginia Coastal Localities ⓘ
- ▼ Shoreline Inventory Layers ⓘ
 - Shoreline Access Structures ⓘ
 - Marinas ⓘ
 - Shoreline Protection Structures ⓘ
 - Rinnian Land Use/Land

Legend

Shoreline Protection Structures

- Breakwater
- Bulkhead
- Debris
- Dilapidated Bulkhead
- Groinfield
- Jetty
- Marsh Toe Revetment
- Riprap
- Unconventional



Mapscale 1:288895
6 km
4 mi

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Virginia Coastal Viewer

The screenshot displays the Virginia Coastal Viewer interface. The main map area is split into two panels: the left panel shows a 2021 aerial image with a pink dashed line indicating a marina with fewer than 50 slips, and the right panel shows a 2006/07 aerial image with a pink solid line indicating a marina with more than 50 slips. A vertical white bar in the center allows users to swipe between the two images. The interface includes several panels and tools:

- Legend:** Lists Shoreline Inventory Layers (Marinas) and Shoreline Protection Structures (Breakwater, Bulkhead, Debris, Dilapidated).
- Map Contents:** Lists layers such as Virginia Coastal Localities, Shoreline Inventory Layers, Shoreline Access Structures, Marinas, Shoreline Protection Structures, and Rinnian Land Use/Land.
- Swipe Tool Dialog:** Provides instructions on how to use the tool to compare two different years of VBMP imagery. It includes dropdown menus to select the left image (2021) and the right image (2006/07), and buttons for 'Swipe' and 'Clear Swipe'.
- Toolbar:** Located at the top right, it contains various icons for map navigation and interaction, with the 'Swipe' icon highlighted in a red box.

Map scale: 1:4514. Scale bars show 100 m and 300 ft.

Reference Layers

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Virginia Coastal Viewer

The screenshot displays the Virginia Coastal Viewer interface. The main map area shows a satellite-style view of a coastal region with overlaid bathymetry and various reference layers. The bathymetry is color-coded by depth, ranging from light blue (0-1m) to dark blue (>25m). The reference layers include Virginia Coastal River Systems, Hydrology, Parcels, Conservation Lands and Easements, SAV Density, SAV Habitat (10 years), VMRC Private Leases, VOSARA Reefs, Public Baylor Grounds, Intertidal Flats (NWI), Open Water, and Bathymetry. The Bathymetry layer is currently selected and highlighted with a red box. A red box also highlights the 'Layer Information' option in the Map Contents panel for the Bathymetry layer. The Layer Information panel is open, showing the Bathymetry layer's details, including a link to the Topobathymetric Elevation Model of Chesapeake Bay. The Legend panel shows the Bathymetry layer's color scale. The Map Contents panel shows the list of reference layers. The Layer Information panel shows the Bathymetry layer's details. The map includes navigation controls (zoom in, zoom out, home) and a scale bar (200 m / 600 ft).

Legend

Reference Layers

Bathymetry

Water Depth

Water Depth

- 0 to 1 m
- 1 to 2 m
- 2 to 3 m
- 3 to 6 m
- 6 to 18 m
- 18 to 25 m
- >25 m

Map Contents

- Reference Layers
 - Virginia Coastal River Systems
 - Hydrology
 - Parcels
 - Conservation Lands and Easements
 - SAV Density
 - SAV Habitat (10 years)
 - VMRC Private Leases
 - VOSARA Reefs
 - Public Baylor Grounds
 - Intertidal Flats (NWI)
 - Open Water
 - Bathymetry**
- Layer information
- Increase opacity
- Decrease opacity

Layer Information

Bathymetry

Water depth categories for these layers were derived from the [Topobathymetric Elevation Model of Chesapeake Bay](#), developed by the Coastal National Elevation Database (CoNED) Applications Project and USGS.

Scale: 200 m / 600 ft

Reference Layers

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Virginia Coastal Viewer

The screenshot displays the Virginia Coastal Viewer interface. The main map shows a coastal area with various reference layers overlaid. The interface includes a legend, map contents panel, and layer information panel.

Legend

Reference Layers

Bathymetry

Water Depth

Water Depth

- 0 to 1 m
- 1 to 2 m
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Map Contents

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Map scale: 1:5028
200 m
600 ft



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Not including Eastern Shore seaside marsh islands

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7,858 miles

Tidal Marsh Shoreline ⓘ

6,237 miles

Defended Shoreline Living Shorelines ⓘ

68 miles

Defended Shoreline All (includes living shorelines) ⓘ

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Defended and Natural Shoreline

Defended: 30%
Natural: 70%

Tidal Marsh Shoreline 110.9 miles

Tidal Marsh Area 2,324 acres

Tidal Marsh Community Types

Select an on/offshore marsh

- Submerged aquatic vegetation: 102.2
- Submerged high marsh: 7
- Hard beach/riparian: 2.7
- Soft beach: 0.1
- Big cordgrass: 0
- Clonal: 0
- Avicennia riparian forest: 0
- Phragmites australis: 0.1
- Yellow Pond Lili: 0
- Potamogeton: 0
- Hydrilla: 0
- Emerald: 0

Unsurveyed Tidal Marsh 775.1 acres

Onshore Protection Structures 43.3 miles

- Submerged: 43%
- Docks: 4%
- Disrupted: 3%
- Riparian: 4%
- Unsurveyed: 1%
- Walls: 1%

Riparian Land Use/Land Cover

Category	Value
Agriculture	0.4
Bar	0.1
Commercial	16.6
Forest	18.8
Government/industry	0.3
Road	10.7
Industrial	0.4
Power	14.8
Residential	81.4
Water/Water Treatment	27.3

Dashboards

There are three different dashboards: Locality Shoreline Inventory, River System Shoreline Inventory, and Shoreline Management Model (SMM). Summary data is displayed by locality, or river system (inventory only). Shoreline Inventory displays summary information that includes tidal marsh types, structures such as docks and breakwaters, riparian land use, and more. The SMM dashboard displays best management practice recommendations for shoreline conditions.

DASHBOARDS



GIS Data

← Back

Select a locality or river system to view the most current summary data. Change dashboards by using the tabs below.

Locality Shoreline Inventory

River System Shoreline Inventory

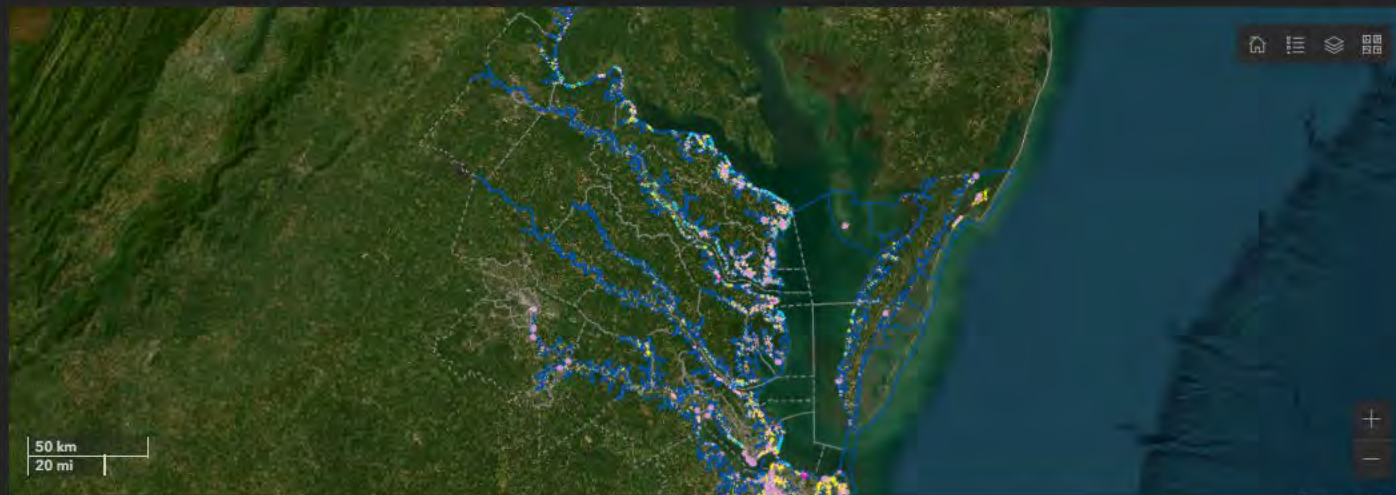
Shoreline Management Model

Select a Locality
Accomack County Shoreline Miles: 708.78 2016
Alexandria City Shoreline Miles: 8.47 2010
Arlington County Shoreline Miles: 15.44 2018
Caroline County Shoreline Miles: 53.93 2018
Charles City County Shoreline Miles: 325.97 2013
Chesapeake City Shoreline Miles: 288.73 2016
Chesterfield County Shoreline Miles: 160.66 2017
Colonial Heights City Shoreline Miles: 19.98

Living Shoreline
 68.3 miles

Beach Shoreline
 365.2 miles

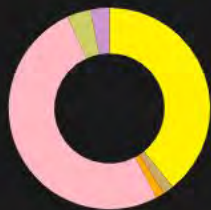
Marina Shoreline
 53.6 miles



Earthstar Geographics | Center for Coastal Resources Management (CCRM)

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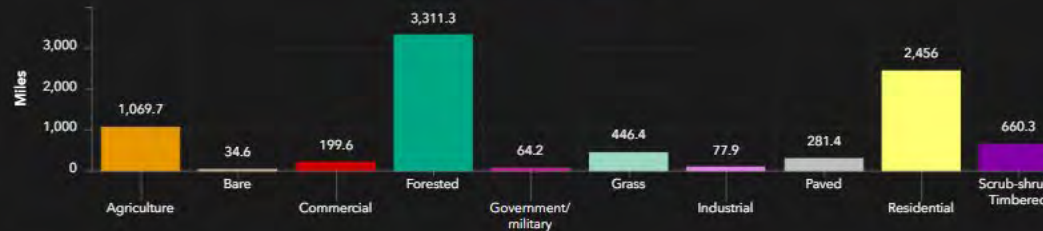
Onshore Protection Structures
 921.3 miles



- Bulkhead 39%
- Debris 2%
- Dilapidated Bulkhead 1%
- Riprap 51%
- Unconventional 4%

Onshore Offshore Access Structures

Riparian Land Use/Land Cover



Bar Chart Pie Chart

Defended and Natural Shoreline



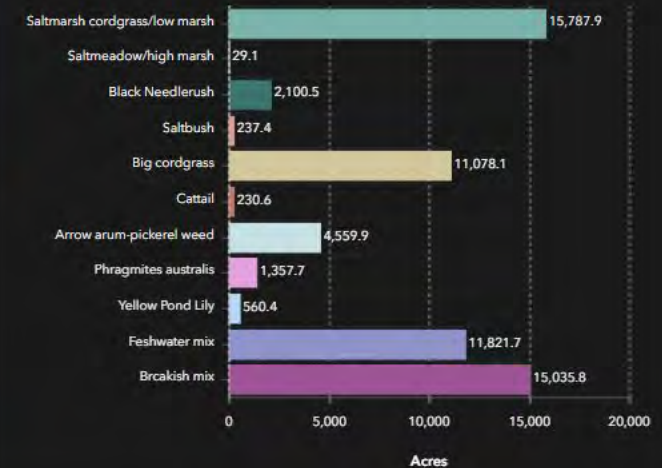
- Defended 12%
- Natural 88%

Tidal Marsh Shoreline
 7,670.2 miles

Includes Northampton seaside marshes

Tidal Marsh Area
 195,035.7 acres

Tidal Marsh Community Types



Unsurveyed Tidal Marsh
 132,236.6 acres

DASHBOARDS

GIS Data

← Back

Select a locality or river system to view the most current summary data. Change dashboards by using the tabs below.

Locality Shoreline Inventory

River System Shoreline Inventory

Shoreline Management Model

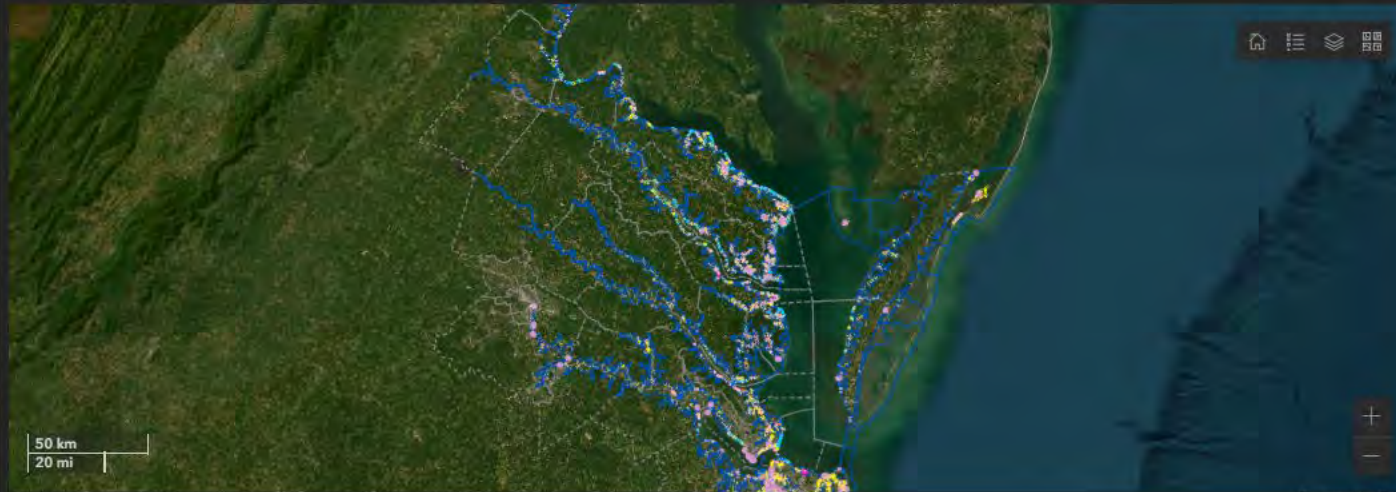
Select a Locality

Accomack County	Shoreline Miles: 708.78	2016
Alexandria City	Shoreline Miles: 8.47	2010
Arlington County	Shoreline Miles: 15.44	2018
Caroline County	Shoreline Miles: 53.93	2018
Charles City County	Shoreline Miles: 325.97	2013
Chesapeake City	Shoreline Miles: 288.73	2016
Chesterfield County	Shoreline Miles: 160.66	2017
Colonial Heights City	Shoreline Miles: 19.98	

Living Shoreline
 68.3 miles

Beach Shoreline
 365.2 miles

Marina Shoreline
 53.6 miles



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Defended and Natural Shoreline



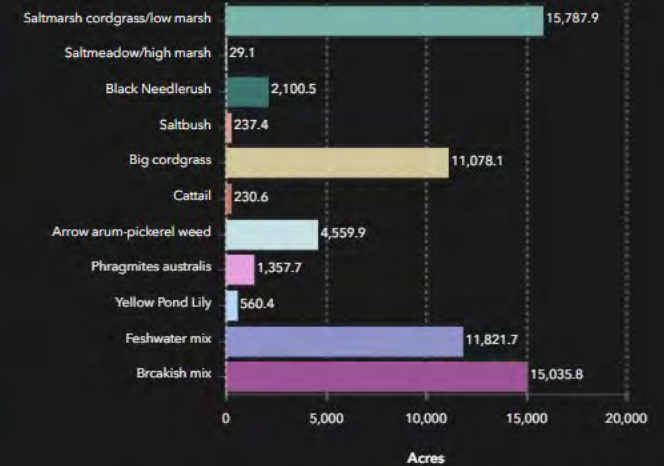
Defended 12%
 Natural 88%

Tidal Marsh Shoreline
 7,670.2 miles

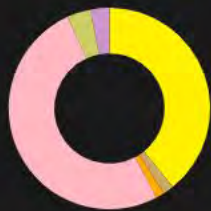
Includes Northampton seaside marshes

Tidal Marsh Area
 195,035.7 acres

Tidal Marsh Community Types



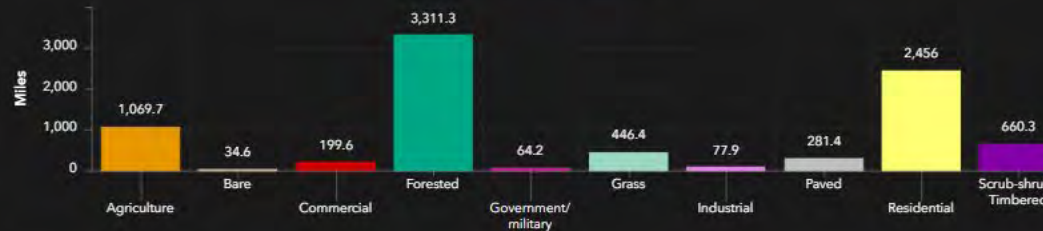
Onshore Protection Structures
 921.3 miles



- Bulkhead 39%
- Debris 2%
- Dilapidated Bulkhead 1%
- Riprap 51%
- Unconventional 4%

Onshore Offshore Access Structures

Riparian Land Use/Land Cover



Bar Chart Pie Chart

Unsurveyed Tidal Marsh
 132,236.6 acres

DASHBOARDS

← Back



GIS Data

Select a locality or river system to view the most current summary data. Change dashboards by using the tabs below.

Locality Shoreline Inventory

River System Shoreline Inventory

Shoreline Management Model

Select a River System

Aberdeen Creek
Shoreline Miles: 8.20

Accokeek Creek
Shoreline Miles: 9.12

Adams Creek
Shoreline Miles: 33.48

Albemarle and Chesapeake Canal
Shoreline Miles: 23.57

Antipoison Creek/Little Bay
Shoreline Miles: 25.06

Appomattox River
Shoreline Miles: 82.90

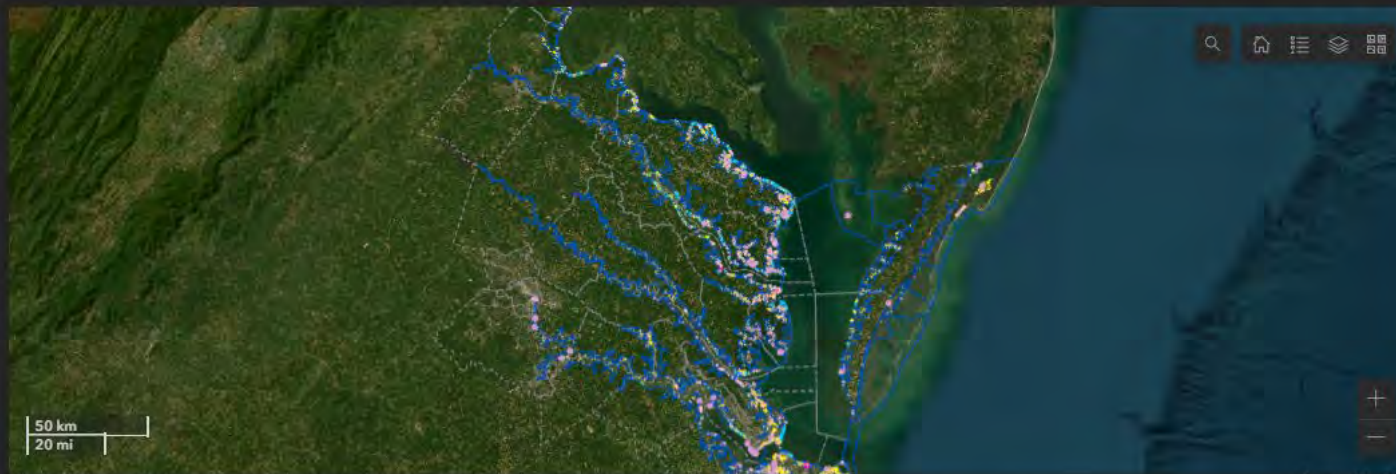
Aquia Creek
Shoreline Miles: 36.30

Ashville Bridge Creek

Living Shoreline
🌿 68.3 Miles

Beach Shoreline
🏖️ 365.2 miles

Marina Shoreline
⚓ 53.6 miles



Earthstar Geographics | Center for Coastal Resources Management (CCRM)

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Defended and Natural Shoreline



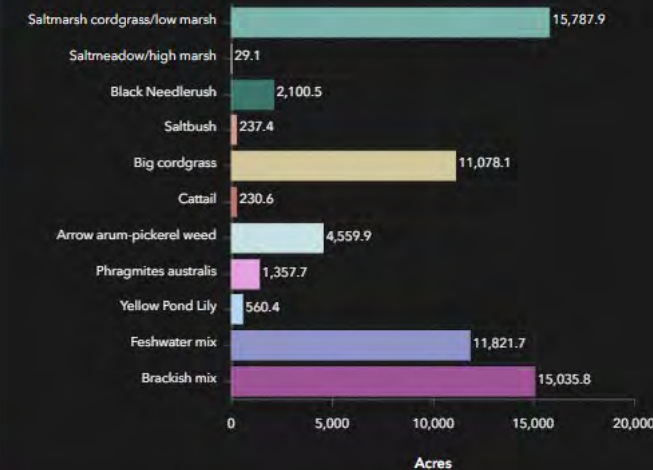
Defended 12%
Natural 88%

Tidal Marsh Shoreline
🌿 7,670.2 miles

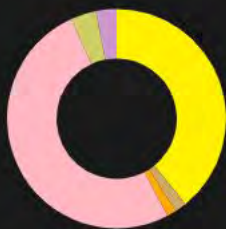
Includes Northampton seaside marshes

Tidal Marsh Area
🌿 195k acres

Tidal Marsh Community Types



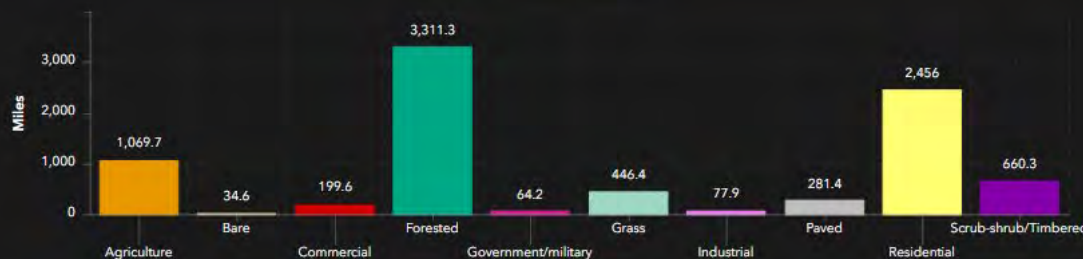
Onshore Protection Structures
🛡️ 921.3 miles



- Bulkhead 39%
- Debris 2%
- Dilapidated 1% Bulkhead
- Riprap 51%
- Unconventional 4%
- Wharf 3%

Onshore Offshore Access Structures

Riparian Land Use & Land Cover



Bar Chart Pie Chart

Unsurveyed Tidal Marsh
132,236.6 acres

DASHBOARDS

GIS Data

← Back

Select a locality or river system to view the most current summary data. Change dashboards by using the tabs below.

Locality Shoreline Inventory

River System Shoreline Inventory

Shoreline Management Model

Select a Locality

Accomack County
 Shoreline Miles: 708.78
 2016

Alexandria City
 Shoreline Miles: 8.47
 2010

Arlington County
 Shoreline Miles: 15.44
 2018

Caroline County
 Shoreline Miles: 53.93
 2018

Charles City County
 Shoreline Miles: 325.97
 2013

Chesapeake City
 Shoreline Miles: 288.73
 2016

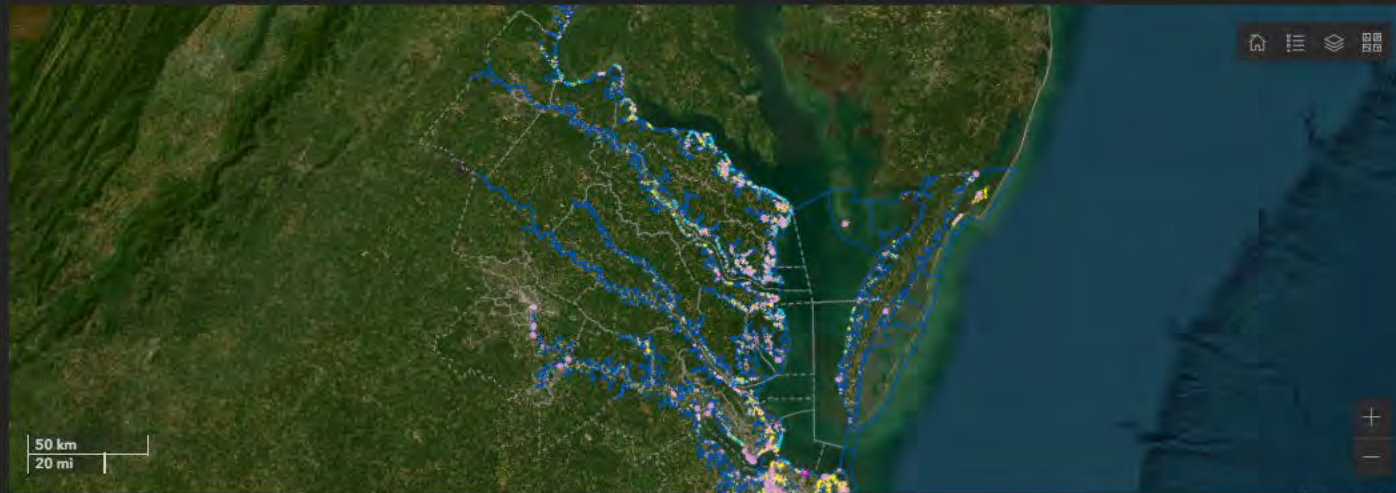
Chesterfield County
 Shoreline Miles: 160.66
 2017

Colonial Heights City
 Shoreline Miles: 19.98

Living Shoreline
 68.3 miles

Beach Shoreline
 365.2 miles

Marina Shoreline
 53.6 miles



Earthstar Geographics | Center for Coastal Resources Management (CCRM)

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Defended and Natural Shoreline



Defended 12%

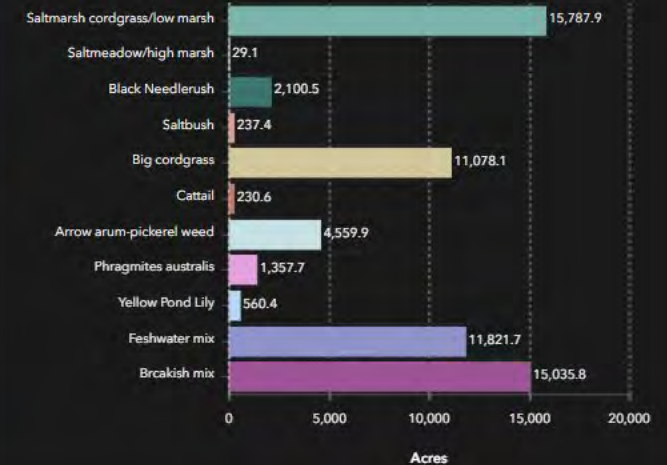
Natural 88%

Tidal Marsh Shoreline
 7,670.2 miles

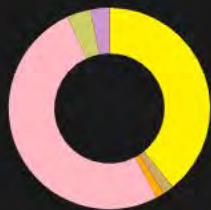
Includes Northampton seaside marshes

Tidal Marsh Area
 195,035.7 acres

Tidal Marsh Community Types



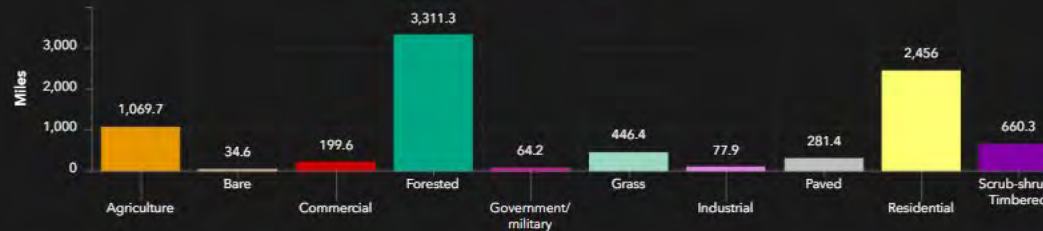
Onshore Protection Structures
 921.3 miles



- Bulkhead 39%
- Debris 2%
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- Riprap 51%
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Onshore Offshore Access Structures

Riparian Land Use/Land Cover



Bar Chart Pie Chart

Unsurveyed Tidal Marsh
 132,236.6 acres

DASHBOARDS



GIS Data

← Back

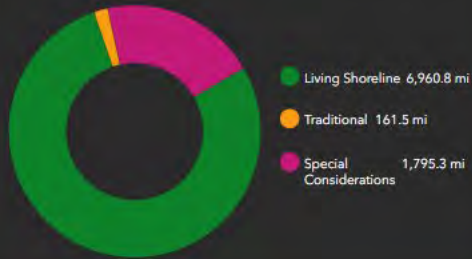
Select a locality or river system to view the most current summary data. Change dashboards by using the tabs below.

Locality Shoreline Inventory

River System Shoreline Inventory

Shoreline Management Model

Shoreline Management Model Recommendations



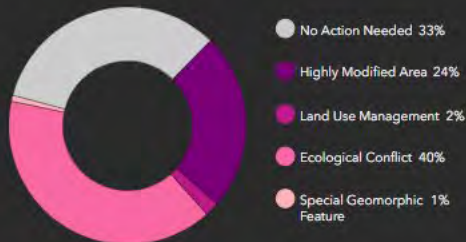
Living Shorelines



Traditional Management



Special Considerations



Select a Locality

Accomack County	2016
Alexandria City	2010
Arlington County	2018
Caroline County	2018
Charles City County	2013
Chesapeake City	2016
Chesterfield County	2017
Colonial Heights City	2017
Essex County	2018
Fairfax County	2010
Fredericksburg City	



Virginia has 8,916 miles of shoreline
Not including Eastern Shore seaside resorts

Natural Shoreline



7,858 miles



Virginia Coastal Resources Tool

The Virginia Coastal Resources Tool includes a map viewer and three dashboards. The Virginia Coastal Viewer displays shoreline conditions throughout coastal Virginia. The Shoreline Inventory Dashboards display shoreline conditions and tidal marsh inventory by locality or river system. The Shoreline Management Model Dashboard provides best management practices for all of coastal Virginia.

[Learn more about and download data for the Virginia Shoreline and Tidal Marsh Inventory and the Virginia Shoreline Management Model.](#)

The best management practices, delineated along the shoreline, reflect the preferred approach for erosion control based on observed shoreline conditions at the time of the analysis. The delineation was developed from a geo-spatial model that accounts for site characteristics such as presence of marsh, beach, and submerged aquatic vegetation, nearshore depth, exposure to waves, and location of primary structures (e.g., homes, roads). The recommendations reflect the Commonwealth's preferred approach for shoreline stabilization; using living shoreline treatments wherever adequate erosion control can be achieved. The assessment was conducted at parcel level scale, but the output represents a reach-based or cumulative approach to shoreline management. In some instances, specific site conditions, including the presence of existing erosion control structure, lot size, or proximity of primary buildings to the shoreline, may alter the recommendation. For more explicit, on-site decision making refer to the Self-Guided Decision Tools. The Shoreline Decision Support Tool leads users through a series of questions about shoreline characteristics and result in recommendations of environmentally preferable treatments for the shoreline.

For additional information please contact: CCRMinfo@vims.edu or 804-684-7380
For GIS tools and data contact Karinna Nunez karinna@vims.edu

About



Shoreline Inventory Dashboard (Living shorelines)



3 miles

Shoreline

- Developed 20%
- Natural 70%

Tidal Marsh Area
2,324 acres

Shoreline Type

- Living 100%
- Hard 0%

Shoreline and Tidal Marsh Inventory

Next Generation

- *Apply machine learning techniques to update the inventory of shoreline conditions and expand the features surveyed based on locality needs.*
- *Update the SMM to include new data inputs and advanced model approaches (additional NNBFs).*
- *Map marsh migration corridors to assist with marsh conservation and restoration decisions under multiple sea level rise scenarios.*
- *Develop and implement a community-science web application for citizens, local government, and PDC staff, where they can share information to more accurately and efficiently maintain current shoreline conditions in Virginia.*

Virginia Coastal Resources Tool



For additional information, please contact Karinna Nunez (karinna@vims.edu)