



## MIDDLE PENINSULA PLANNING DISTRICT COMMISSION

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#### Secretary/Director

*Mr. Lewis L. Lawrence*

November 4, 2021

Virginia Department of Conservation and Recreation  
Attention: Virginia Community Flood Preparedness Fund  
Division of Dam Safety and Floodplain Management  
600 East Main Street, 24<sup>th</sup> Floor  
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Enclosed in this packet are six applications for flood protection and prevention projects that involve implementation of nature-based shoreline solutions.

Among the applications are projects which are currently at the design stage and at the construction stage. Design projects are requesting funds for professional designs and development of Joint Permit Applications which are needed before the property owner can move to construction of a nature-based flood protection solution. Construction projects are requesting funds to implement projects which have approved permits or are nearing permit approval prior to construction of a nature-based flood protection solution.

Below is short summary of proposed projects in Middlesex County:

#### A. Flood Prevention and Protection for Shore Drive for Gallimore

(CID): 510098 Total Cost (from individual project application): \$17,399

*This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. There is significant erosion along the applicant's approximately 40 feet of shoreline due to wave and wind action. One river birch tree along the shoreline is close to falling into the water. The County of Middlesex previously made the property owner's deceased husband plant two river birch trees to replace one of the river birch trees after the tree had died. The owner prefers natural solutions for this location. Given that her husband is recently deceased, she has very limited financial means to help stabilize this communal front yard area.*

#### B. Flood Prevention and Protection for Bucks Landing for Lively

(CID): 510098 Total Cost (from individual project application): \$17,399

*This proposal requests funding for the development of a nature-based shoreline*

*design solution and draft Joint Permit Application or DEQ Water Quality Impact Assessment depending on the jurisdictional determination for the application to reduce the impacts of storm events, flooding, and wetland loss. Rapid rainwater runoff is steadily eroding the property's steep bank located on Urbanna Creek, a tributary of the Rappahannock River (length of shoreline is approximately 165 feet). This has occurred over a period of years the property was purchased by the current owners. The primary concern is the flood-induced erosion that is undermining posts supporting steps to a pier and accelerated undermining tree roots causing tree loss. A steep bank under the pier steps and to each side of the pier steps is in danger of becoming a cliff that will not support pier steps or sustain plants. There is a potential design solution in mind. Enviro-Lock (Enviro-Lock.com) provides a system and products utilizing soil and sandbags that can be stacked five to eight feet and planted with natural plants creating a stable living shoreline "bank" minimizing or avoiding the utilization of traditional "rip rap" rock or other gray infrastructure.*

**C. Flood Prevention and Protection for Oakes Landing Road for Sandbach**

(CID): 510098    Total Cost (from individual project application): \$24,963  
*This proposal requests funding for the development of a nature-based shoreline design solution and draft Joint Permit Application to reduce the impacts of storm events, flooding, and wetland loss. The project is located at 1387 Oakes Landing Road, Saluda, VA 23149 (-76.5831, 37.62254). The property was purchased in 2019 and has experienced a number of issues (length of shoreline in approximately 200 feet). When the property was purchased, there was an undercut like a cave along the shoreline. Some of it has subsequently caved in. When it rains hard, the hill is eroding from the top; now lots of roots are showing on the hill. Several trees have come down and more are in danger of falling. The location is on Urbanna Creek which experiences lots of wave action from boating traffic. Mr. Michael L. Vanlandingham, the Shoreline Engineer with the Department of Conservation and Recreation Division of Soil and Water Conservation, Eastern Area Regional Office, has visited the property and his recommendation is included and incorporated into the proposal.*

**D. Flood Prevention and Protection for Wooldridge Cove Drive for Stone**

(CID): 510098    Total Cost (from individual project application): \$24,963  
*This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. Relative sea-level rise and tidal and storm surge waters are undercutting the banks along the property (length of shoreline is 540 feet). An old, deteriorating wood bulkhead has holes in it which is allowing the backfill to behind the bulkhead to erode. There are also trees falling into the water with several more having roots exposed to salt water at the base of the steep eroding bank. Chris Davis of ReadyReef Inc. has visited the site and suggested some possible nature-based solutions that made sense in lieu of riprap. As with many other properties, the last few years have been more damaging than in past decades. Therefore, Mr. Michael L. Vanlandingham, the Shoreline Engineer with the Department of Conservation and Recreation Division of Soil and Water Conservation, Eastern Area Regional Office, has visited the property and his letter of recommendation is included.*

**E. Moore Creek Nature Based Shoreline Management Construction Project**

(CID): 510098    Total Cost (from individual project application): \$86,652

*This project proposes to construct a nature-based solution on a private property located on Moore Creek in Middlesex County. The nature-based solution will involve the installation of 50 linear feet (LF) by 4 feet high of Envirolok Bags planted with marsh grass; a 179 LF perimeter of ReadyReefs to mean low water, backfilled sand and planted with marsh grass to make a living shoreline; and 143 LF by average of 3' high more Envirolok bags will be stacked to prevent erosion higher up the bank.*

**F. Middlesex County Beneficial Reuse of Dredged Material for Flood Prevention and Protection at Jackson and Broad Creeks**

(CID): 510098    Total Cost (from individual project application): \$586,064

*This proposal requests funding to address recurring coastal storm driven sand deposits impacting maritime commercial, recreational, and public safety ingress and egress from Jackson Creek and Broad Creek by utilizing sand for the creation of a public living shoreline. Specifically, this project will design two dredging and beneficial reuse projects for Jackson Creek and Broad Creek in the community of Deltaville in Middlesex County which will involve beneficial reuse of the dredged material for flood protection and prevention purposes. The dredging and beneficial reuse projects will provide immediate and much needed co-benefits for coastal resilience, flood protection, navigability, and economic resilience. Additionally, flood protection structures will be designed to provide additional resilience at the mouths of Jackson and Broad Creeks for protecting adjacent shorelines and continued shoaling of navigable channels. Draft Joint Permit Applications will be developed for all activities to position the projects for future implementation.*

The total project costs for Middlesex County Round 2 applications is **\$757,439** and MPPDC staff are requesting **\$597,482** from DCR to support this work.

We consider helping both public and private entities manage flooding a critical and essential function of government.

Thank you for considering the enclosed proposed projects. If you have any questions about the enclosed, please contact me by email at [llawrence@mppdc.com](mailto:llawrence@mppdc.com) or by phone at 804-758-2311.



Lewis Lawrence  
Executive Director

**Virginia Department of Conservation and Recreation  
Virginia Community Flood Preparedness Fund Grant Program**

**Application Form for Grant Requests for All  
Categories – Round 2**

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**I. ORGANIZATIONAL INFORMATION**

**PROJECT TITLE:** Middlesex County MPPDC Bundle

**Name of Local Government:** Middle Peninsula Planning District Commission

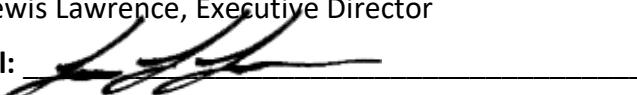
**Category of Grant Being Applied for (check one):**

Capacity Building/Planning     Project     Study

**NFIP/DCR Community Identification Number (CID):** Middlesex County (510098)

**If a state or federally recognized Indian tribe, Name of tribe:** NA

**Name of Authorized Official:** Lewis Lawrence, Executive Director

**Signature of Authorized Official:** 

**Mailing Address (1):** PO Box 286

**Mailing Address (2):** 125 Bowden Street

**City:** Saluda    **State:** VA    **Zip:** 23149

**Telephone Number:** (804) 758-2311    **Cell Phone Number:** (\_\_\_\_) \_\_\_\_\_

**Email Address:** llawrence@mppdc.com

**Contact Person (If different from authorized official):** Jackie Rickards, Senior Planning Project Manager

**Mailing Address (1):** PO Box 286

**Mailing Address (2):** 125 Bowden Street

**City:** Saluda    **State:** VA    **Zip:** 23149

**Telephone Number:** (804) 758-2311    **Cell Phone Number:** (215) 264-6451

**Email Address:** jrickards@mppdc.com

**Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes 6 are Yes 0 are No 0**

**Categories (Select applicable project): Project Grants**

**Project Grants (Check All that Apply)**

- Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- Wetland restoration.
- Floodplain restoration.
- Construction of swales and settling ponds.
- Living shorelines and vegetated buffers.
- Structural floodwalls, levees, berms, flood gates, structural conveyances.
- Storm water system upgrades.
- Medium and large-scale Low Impact Development (LID) in urban areas.
- Permanent conservation of undeveloped lands identified as having flood resilience value by ConserveVirginia Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- Dam restoration or removal.
- Stream bank restoration or stabilization.
- Restoration of floodplains to natural and beneficial function.
- Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

**Location of Project (Include Maps):** Middlesex County – 6 applications bundled. Please see the attached applications and corresponding maps for each project.

**NFIP Community Identification Number (CID#) (See appendix F):** 510098

**Is Project Located in an NFIP Participating Community?**  Yes  No

**Is Project Located in a Special Flood Hazard Area?**  Yes  No **Flood Zone(s) (If Applicable):** AE Zone

**Flood Insurance Rate Map Number(s) (If Applicable):** See each application s for specific map number.

**Total Cost of Project:** **\$ 757,439**

**Total Amount Requested:** **\$ 597,482**

*Master bundled budget next page*

Master bundled budget

	A	J	K	L
1	Middlesex County	Middlesex County Cumulative		
2		DCR	Owner	Total
3				
4	<b>Personnel Salaries/Wages</b>	\$56,653	\$14,995	\$71,648
5				
6	<b>Fringe</b>	\$14,850	\$3,929	\$18,779
7				
8	<b>Total Personnel</b>	\$71,503	\$18,924	\$90,427
9				
10	<b>Direct Costs: SubAward/SubContract Agreements</b>			
11	Construction & Design Costs (For itemized, see each proposal)	\$138,910	\$40,977	\$179,887
12	Construction & Design Costs (For itemized, see each proposal)	\$22,178	\$6,294	\$28,472
13	Construction & Design Costs (For itemized, see each proposal)	\$306,048	\$76,512	\$382,560
14	Construction & Design Costs (For itemized, see each proposal)	\$30,158	\$1,205	\$31,363
15	Construction & Design Costs (For itemized, see each proposal)	\$7,944	\$180	\$8,124
16	Construction & Design Costs (For itemized, see each proposal)	\$6,275	\$1,000	\$7,275
17	Project financial services (50000/50500/55900/56100)	\$8,049	\$9,081	\$17,130
18	Facility services (52100/52200/52400/54200/54500)	\$1,363	\$2,589	\$3,952
19	Communication services (52250/52255/55150/57100/57300)	\$528,588	\$815	\$529,403
20	Data services (53100/53101/53200/57900)	\$129	\$245	\$374
21	Material services (53400/53500/57200/57500)	\$528,666	\$963	\$529,629
22	Consulting services (55100/56300/56400/56700)	\$617	\$1,172	\$1,789
23				
24	<b>SUBTOTAL: Direct Costs</b>	\$1,650,428	\$159,957	\$1,810,385
25				
26	<b>Total</b>	<b>\$597,482</b>	<b>\$159,957</b>	<b>\$757,439</b>

**Virginia Department of Conservation and Recreation  
Virginia Community Flood Preparedness Fund Grant Program**

**Application Form for Grant Requests for All  
Categories – Round 2**

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**I. ORGANIZATIONAL INFORMATION**

**Project Title:** Flood Prevention and Protection for Shore Drive for Gallimore

**Name of Local Government:** Middle Peninsula Planning District Commission

**Category of Grant Being Applied for (check one):**

- Capacity Building/Planning  
 Project  
 Study

**NFIP/DCR Community Identification Number (CID):** 510098

**If a state or federally recognized Indian tribe, Name of tribe:** NA

**Name of Authorized Official:** Lewis Lawrence, Executive Director

**Signature of Authorized Official:** 

**Mailing Address (1):** PO Box 286

**Mailing Address (2):** 125 Bowden Street

**City:** Saluda    **State:** VA    **Zip:** 23149

**Telephone Number:** (804) 758-2311

**Cell Phone Number:** (\_\_\_\_) \_\_\_\_\_

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Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes  No

**Categories (select applicable project):** Project Grants

**Project Grants (Check All that Apply)**

- Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- Wetland restoration.
- Floodplain restoration.
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- Living shorelines and vegetated buffers.
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- Storm water system upgrades.
- Medium and large-scale Low Impact Development (LID) in urban areas.
- Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- Dam restoration or removal.
- Stream bank restoration or stabilization.
- Restoration of floodplains to natural and beneficial function.
- Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

**Location of Project (Include Maps):** Middlesex County - Please see the attached corresponding maps for this application.

**NFIP Community Identification Number (CID#):** 510098

**Is Project Located in an NFIP Participating Community?**  Yes  No

**Is Project Located in a Special Flood Hazard Area?**  Yes  No

**Flood Zone(s) (If Applicable):** AE Zone

**Flood Insurance Rate Map Number(s) (If Applicable):** 51119C0215E

**Total Cost of Project:** \$17,399

**Total Amount Requested:** \$12,180

**II. SCOPE OF WORK NARRATIVE**

## **INTRODUCTION.**

This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. There is significant erosion along the applicant's approximately 40 feet of shoreline due to wave and wind action. One river birch tree along the shoreline is close to falling into the water. The County of Middlesex previously made the property owner's deceased husband plant two river birch trees to replace one of the river birch trees after the tree had died. The owner prefers natural solutions for this location. Given that her husband is recently deceased, she has very limited financial means to help stabilize this communal front yard area, but with no guidelines the applicant must be treated as all other applicants.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered "acts of God," and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought to be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe.

Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as "hard" engineering or "gray" infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of "nature-based solutions", "ecosystem-based adaptation," "eco-DRR," or "green infrastructure" has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

#### ***PROJECT INFORMATION.***

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

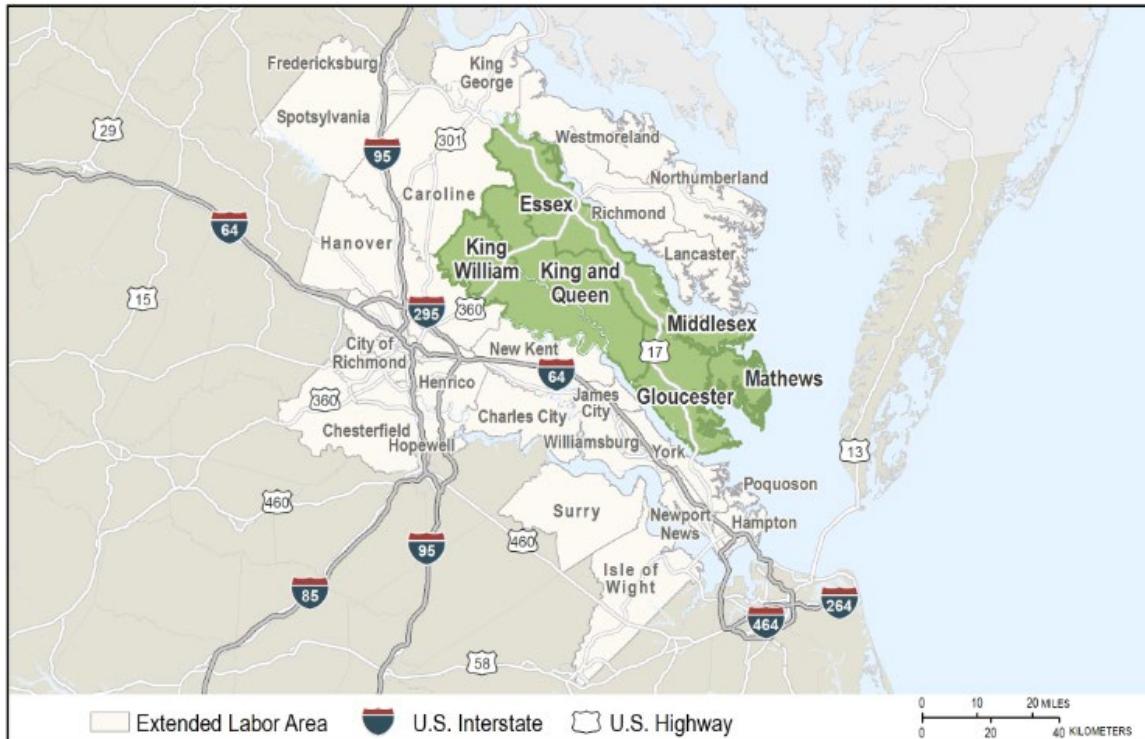
Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Shore Drive in Middlesex County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Middlesex County. See the community support letter in **Appendix 1**.

- A link or to the Middle Peninsula PCD’s Approved Regional Flood Resiliency Plan (2021) can be found at: [https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8\\_19\\_DCR-packet\\_letterandplan.pdf](https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf).
  - Please see Page 3-5, which notes the need to respond to emerging flood challenges.
- A link to the Middle Peninsula PDC’s All Hazards Mitigation Plan (2016) can be found at: [https://www.mppdc.com/articles/reports/AHMP\\_2016\\_FEMA\\_Approved\\_RED.pdf](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf).

- Please see Section 4 (page 25), which includes historical hazard data within the region.
- A link to the County of Middlesex's Comprehensive Plan can be found at:  
<https://www.co.middlesex.va.us/252/Comprehensive-Plan>.

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

**Figure 1. Middle Peninsula Geographic Area**

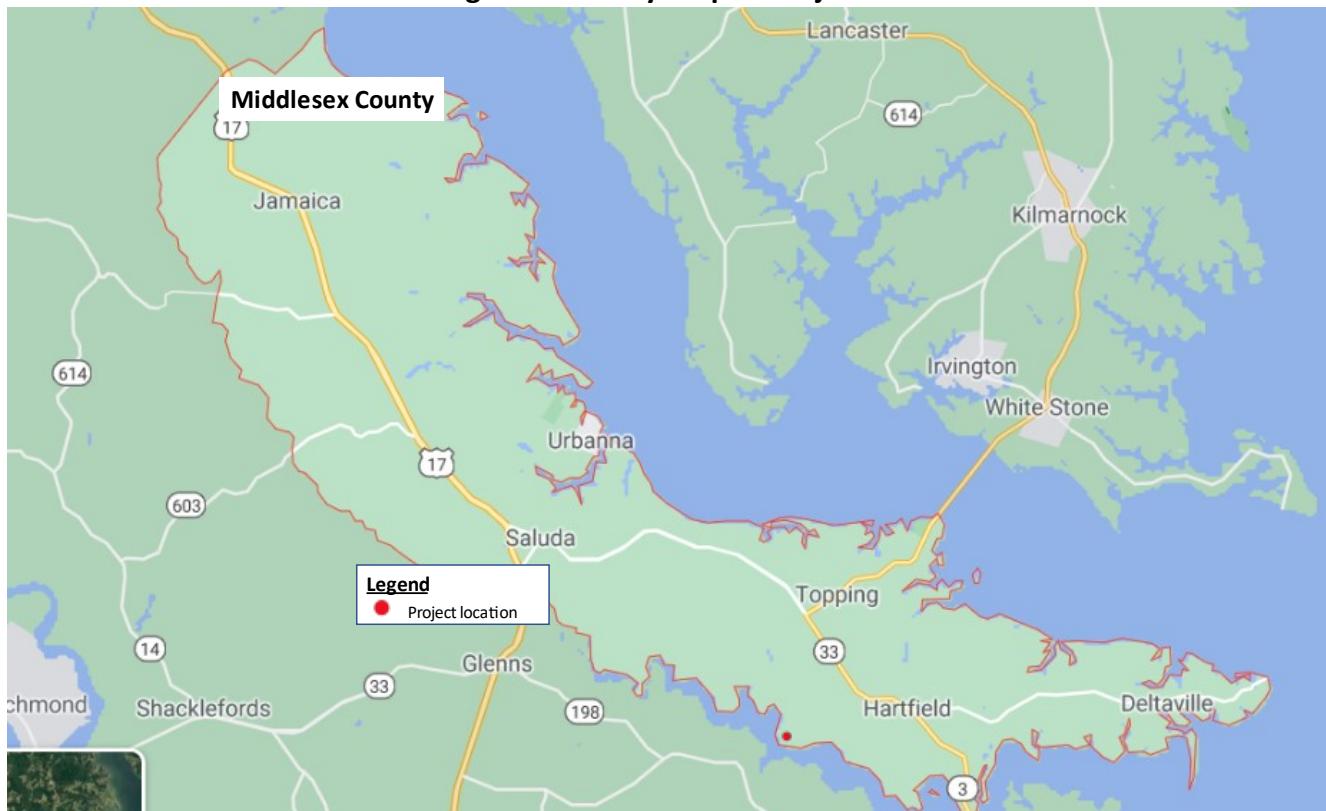


**Figure 2. Middle Peninsula Population**

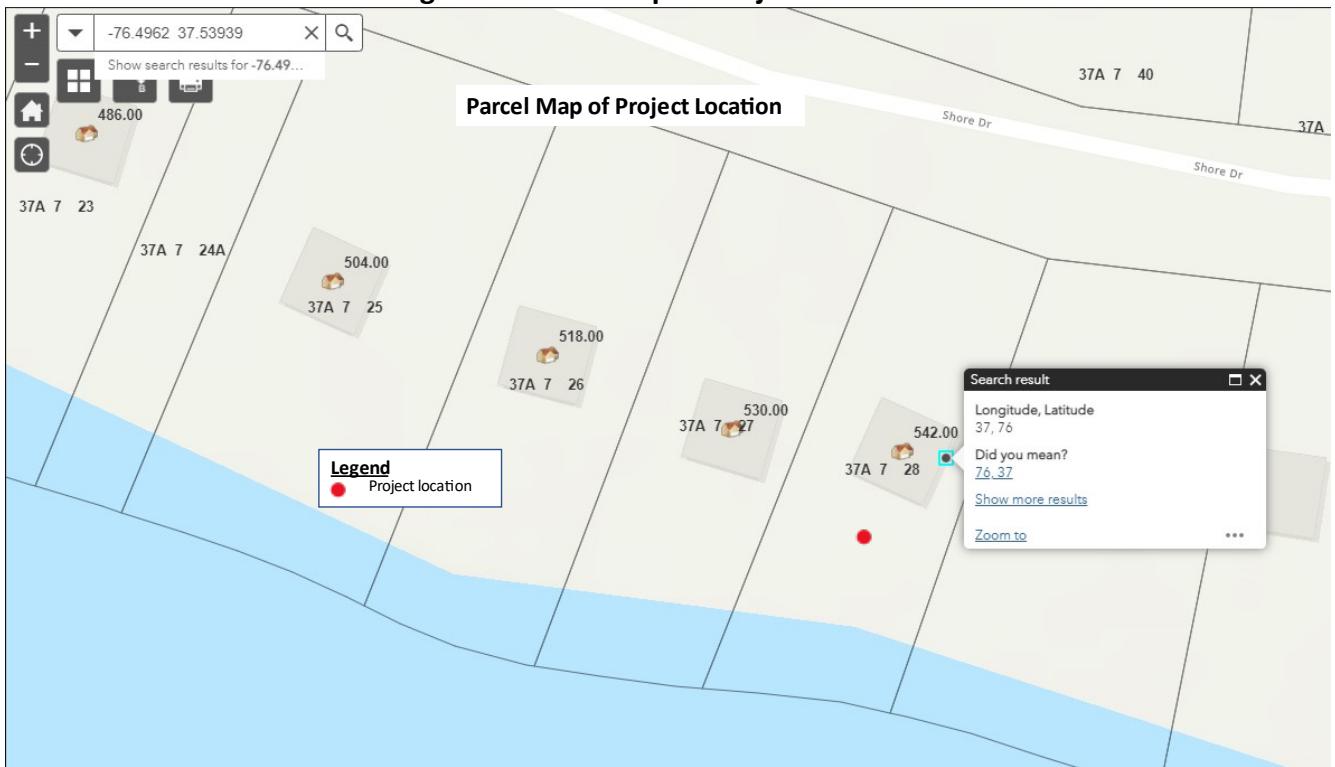
CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
<b>MPPDC Total</b>		<b>92,886</b>

This project proposes to design a nature-based solution on one private property on Shore Drive in Middlesex County as found in **Figures 3 and 4**.

**Figure 3. County Map of Project Location**



**Figure 4. Parcel Map of Project Location**



Middlesex County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 130 square miles of land 80 miles of shorelines. Based on 2020 Census Data, Middlesex County's population totals 10,625 which. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 5**, the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

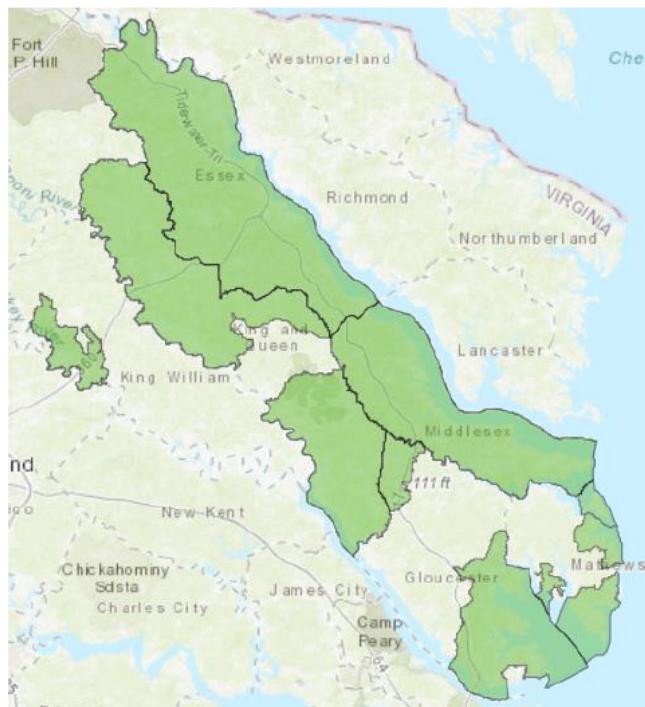
### Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas

Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	\$51,954	\$57,438	\$64,237	\$66,987	\$63,982	\$70,537
Eligible Household income	\$41,563	\$45,950	\$51,389	\$53,590	\$51,186	\$56,430

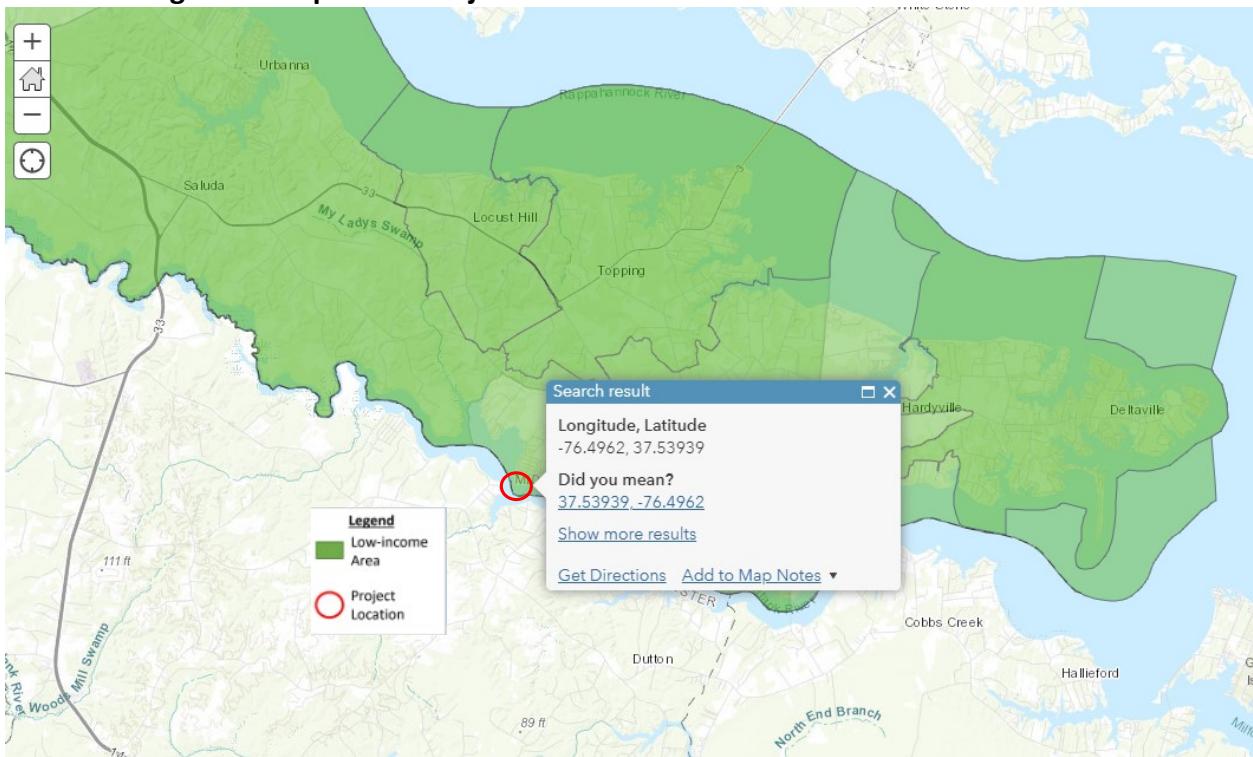
**Note:** Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.



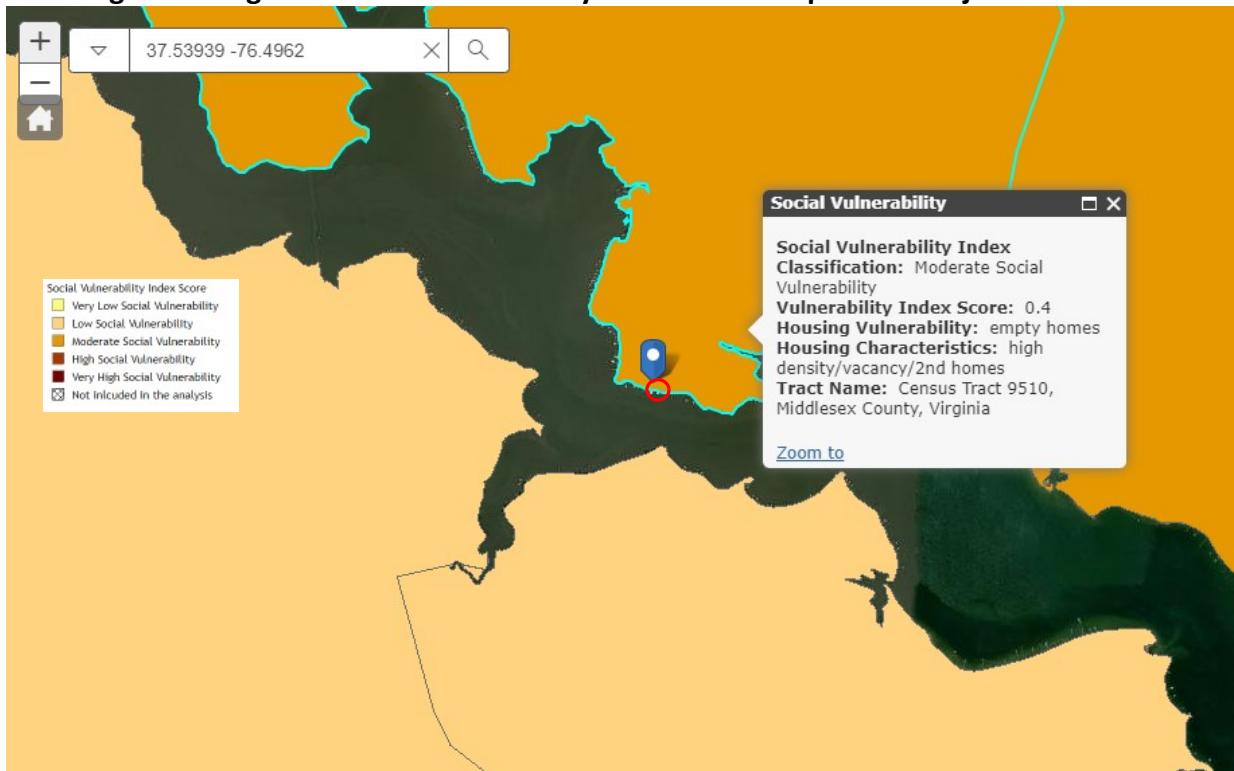
Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

**Figure 6. Map of the Project Location within the Green Low-Income Area**

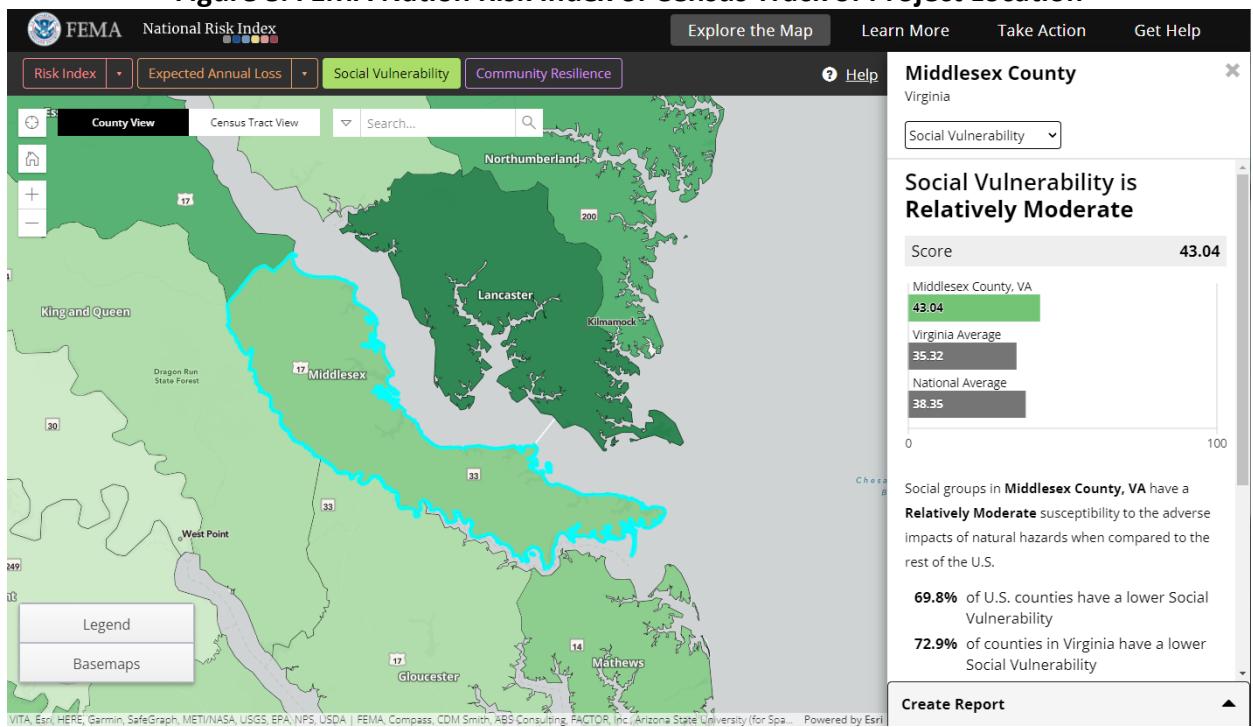


According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (<https://hazards.fema.gov/nri/map>), which assesses vulnerability at a census tract level, the social vulnerability of the County is considered to be a relatively moderate level of vulnerability as seen in **Figure 8**.

**Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location**



**Figure 8. FEMA Nation Risk Index of Census Track of Project Location**



The project is located at 542 Shore Drive, Hartfield, VA 23071 (-76.4962, 37.53939). The property was purchased in 1988 and has experienced a number of issues over the past 30 plus years. There is

significant erosion along the shoreline due to wave and wind action (length of shoreline is approximately 40 feet). One river birch tree is close to falling into the water. The County of Middlesex previously made the property owner's deceased husband planted two river birch trees to "replace" one of the river birch trees he removed after it died. Natural water plants are idea for this location as a matter of a nature-based solution. The property owner has made the pier an open access location for the community to utilize. Given that her husband is recently deceased, she has very limited financial means to help stabilize this communal front yard area. See accompanying pictures below.



Please see **Appendix 2** for additional property photos.

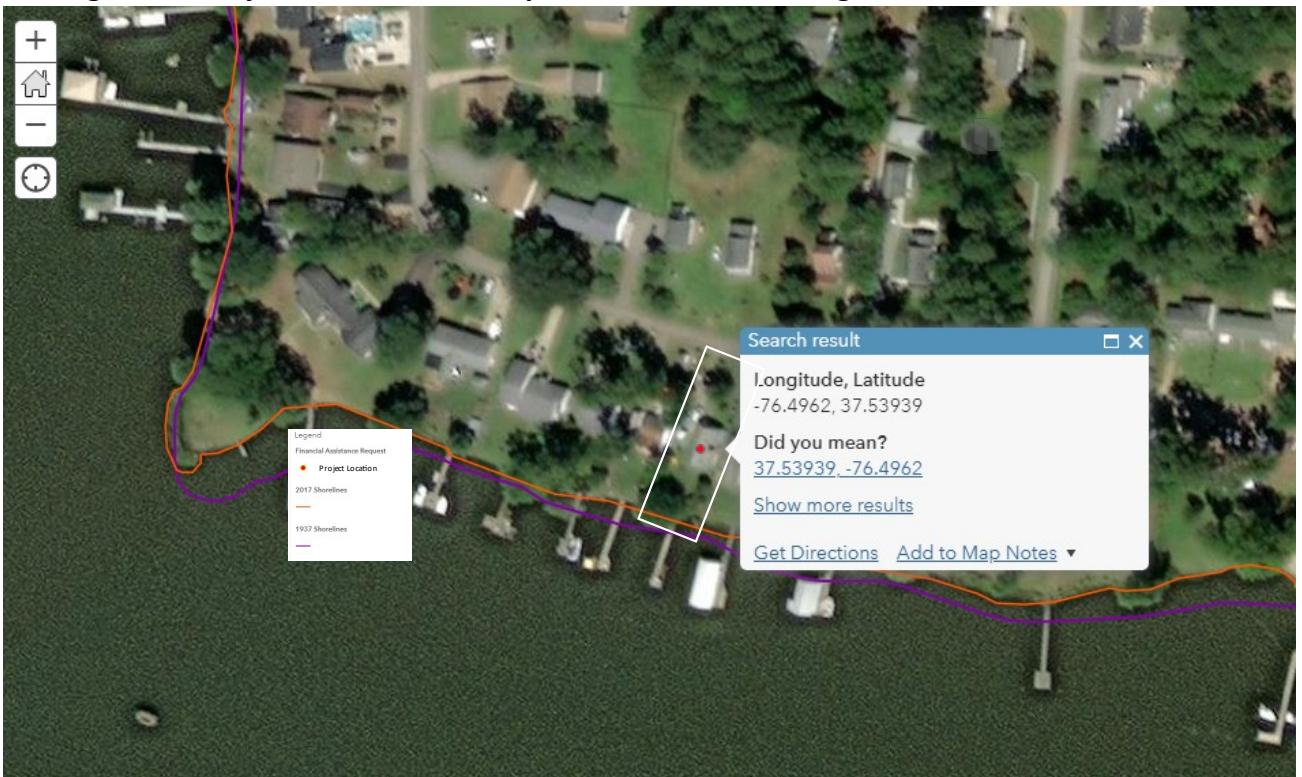
This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 3** for the FIRMettes (last mapped 5/18/2015).

**Figure 9: Map of FEMA Flood Zones**



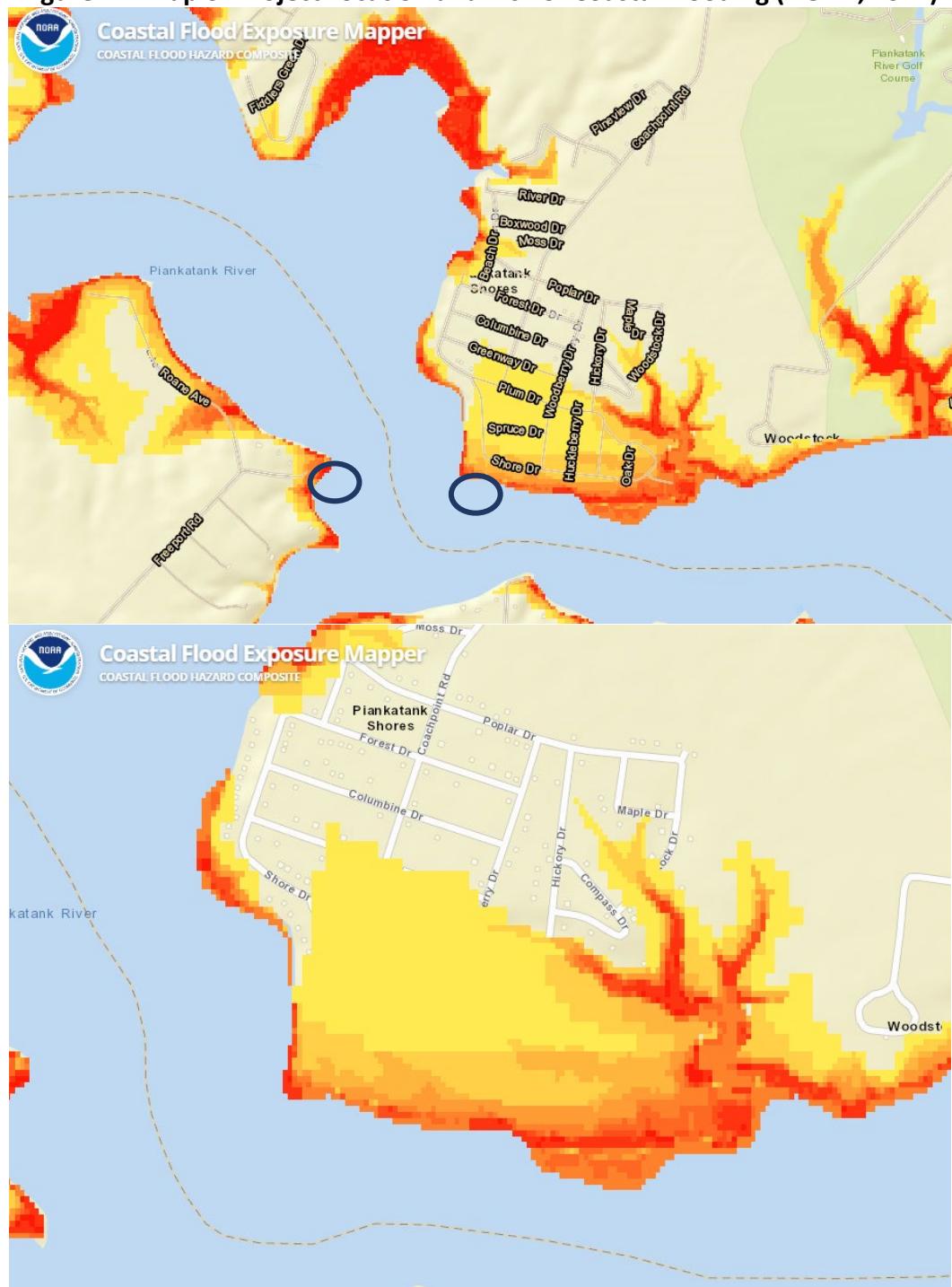
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 1,106.8 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 79 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

**Figure 10. Project Location and Map of the Shoreline Change between 1937 and 2017**



Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 11**.

**Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)**



For more information about this project area please see:

- A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: [https://www.mppdc.com/articles/reports/AHMP\\_2016\\_FEMA\\_Approved\\_RED.pdf](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf)
- A link to Middlesex County's current floodplain ordinance can be found at:

<https://www.co.middlesex.va.us/DocumentCenter/View/422/Floodplain-Management-PDF>

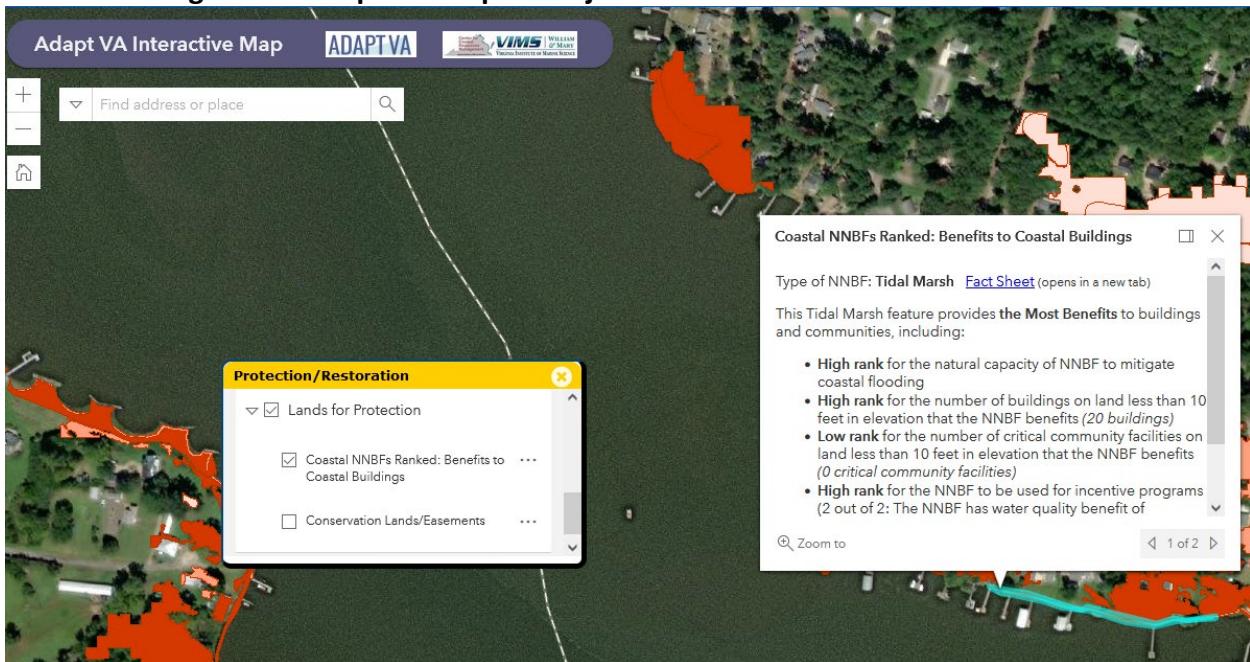
**COMMUNITY SCALE BENEFITS.**

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in Figure 12. All Round 2 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

**Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits**



### **CONCERNING ADVERSE IMPACTS.**

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, the Middle Peninsula PDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

### **ALTERNATIVES.**

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed \$3 million.

### **GOALS AND OBJECTIVES.**

The Code of Virginia § 28.2-104.1. defines "Living shoreline" as *shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.
- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Middlesex County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. For example, a proposed project of 150 linear feet of living shoreline has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to

breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

#### Goal 3: Transferability to other communities.

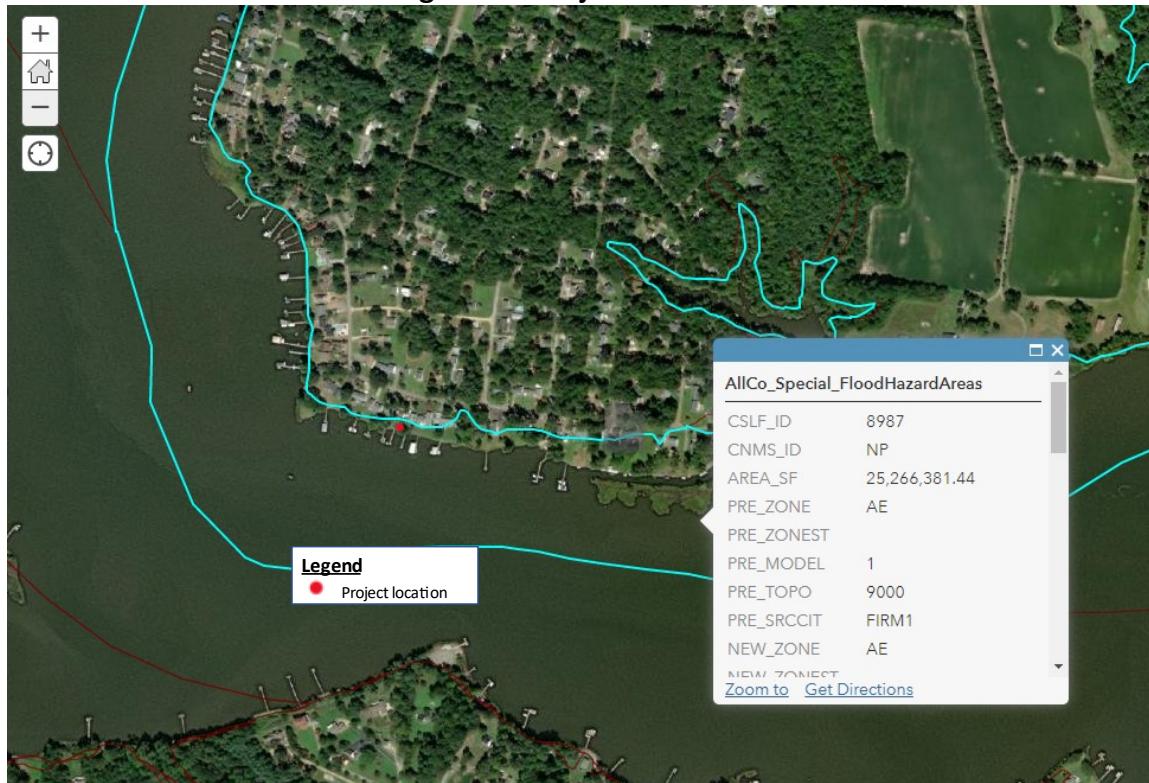
- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

#### **APPROACH, MILESTONES, AND DELIVERABLES.**

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**.

**Figure 13. Project Flood Hazard Area**



Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six-month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	M1	M2	M3	M4	M5	M6
<b>Phase 1 – Environmental Scan</b>						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
<b>Phase 2 – Solution Design</b>						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
<b>Phase 3 – Strategic Implementation</b>						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

#### ***RELATIONSHIP TO OTHER PROJECTS.***

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis

on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

#### Long Term Planning

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
  - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

#### Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 5**.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the

outcomes will help the Commonwealth meet the goals set forth in the planning framework.

**MAINTENANCE PLAN.**

A maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

**CRITERIA.**

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe)?

The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link:

[https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8\\_19\\_DCR-packet\\_letterandplan.pdf](https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf).

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6**.

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during

storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

**SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.**

<b>Applicant Name:</b>		Middle Peninsula Planning District Commission	
<b>Eligibility Information</b>			
Criterion	Description		Check One
<b>1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?</b>			
Yes	Eligible for consideration		X
No	Not eligible for consideration		
<b>2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?</b>			
Yes	Eligible for consideration under all categories		X
No	Eligible for consideration for studies, capacity building, and planning only		
<b>3. If the applicant is <u>not</u> a town, city, or county, are letters of support from all affected local governments included in this application?</b>			
Yes	Eligible for consideration		X
No	Not eligible for consideration		
<b>4. Has this or any portion of this project been included in any application or program previously funded by the Department?</b>			
Yes	Not eligible for consideration		
No	Eligible for consideration		X
<b>5. Has the applicant provided evidence of an ability to provide the required matching funds?</b>			
Yes	Eligible for consideration		X
No	Not eligible for consideration		
N/A	Match not required		

<b>Project Eligible for Consideration</b>		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Applicant Name:	<b>Middle Peninsula Planning District Commission</b>		
<b>Scoring Information</b>			
Criterion	Point Value	Points Awarded	
<b>6. Eligible Projects (Select all that apply)</b>			
<p><b>Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.</b></p>			
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	<b>50</b>		
<input type="checkbox"/> Wetland restoration, floodplain restoration <input checked="" type="checkbox"/> Living shorelines and vegetated buffers. <input type="checkbox"/> Permanent conservation of undeveloped lands identified as having flood resiliencevalue by <i>ConserveVirginia</i> Floodplain and Flooding Resilience layer or a similar datadriven analytic tool <input type="checkbox"/> Dam removal <input type="checkbox"/> Stream bank restoration or stabilization. <input type="checkbox"/> Restoration of floodplains to natural and beneficial function. <input type="checkbox"/> Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	<b>45</b>	45	
1.b. Any other nature-based approach	<b>40</b>		
All hybrid approaches whose end result is a nature-based solution	<b>35</b>		
All other projects	<b>25</b>		
<b>7. Is the project area socially vulnerable? (Based on <a href="#">ADAPT VA's Social Vulnerability Index Score.</a>)</b>			
Very High Social Vulnerability (More than 1.5)	<b>15</b>		
High Social Vulnerability (1.0 to 1.5)	<b>12</b>		
Moderate Social Vulnerability (0.0 to 1.0)	<b>8</b>	8	
Low Social Vulnerability (-1.0 to 0.0)	<b>0</b>		
Very Low Social Vulnerability (Less than -1.0)	<b>0</b>		
<b>8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?</b>			
Yes	<b>10</b>		
No	<b>0</b>	0	

<b>9. Is the proposed project in a low-income geographic area as defined in this manual?</b>		
Yes	<b>10</b>	10
No	<b>0</b>	
<b>10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?</b>		
Yes	<b>5</b>	5
No	<b>0</b>	
<b>11. Does this project provide “community scale” benefits?</b>		
Yes	<b>20</b>	20
No	<b>0</b>	
<b>Total Points</b>		<b>88</b>

**SCOPE OF WORK CHECKLIST.**

<b>Scope of Work Narrative</b>	
<b>Supporting Documentation</b>	<b>Included</b>
Detailed map of the project area(s) (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
FIRMette of the project area(s) (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Historic flood damage data and/or images (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current floodplain ordinance	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current hazard mitigation plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current comprehensive plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Social vulnerability index score(s) for the project area from <a href="#">ADAPT VA's Virginia Vulnerability Viewer</a>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
If applicant is not a town, city, or county, letters of support from affected communities	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
<b>Budget Narrative</b>	
<b>Supporting Documentation</b>	<b>Included</b>
Authorization to request funding from the Fund from governing body or chief executive of the local government	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Signed pledge agreement from each contributing organization	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

### **III. BUDGET NARRATIVE**

For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply: For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

If the applicant is determined to be low-income, MPPDC will attempt to use loan forgiveness from VRA revolving loan funding to help to reduce or eliminate the match requirement. To be able to do this, MPPDC will rely on DCR staff to advise how to determine if the applicant is low income.

- ***Estimated total project cost: \$17,399***
- ***Amount of funds requested from the Fund: \$12,180***

Budget Narrative (Category D)				Budget (Cat. D)					
Personnel Salaries/Wages		DCR %	Match %	Annual Salary		Applicant 1			
Staff		22.25%	5.57%	\$70,000		DCR	Owner	Total	
Personnel						\$957	\$410	\$1,367	
<b>Fringe, 26.21% salaries:</b>						\$957	\$410	\$1,367	
<b>Total Personnel</b>				<b>13,225.00</b>	<b>9,257.50</b>	<b>3,967.50</b>	<b>\$1,208</b>	<b>\$517</b>	<b>\$1,725</b>
<b>Direct Costs: SubAward/SubContract Agreements</b>						<b>70%</b>	<b>30%</b>		
<i>Nature Based Shoreline Design/Draft Permit JPA</i>						\$10,000	\$7,000	\$3,000	\$10,000
<i>Legal bid docs and procurement prep</i>						\$1,500	\$1,050	\$450	\$1,500
0						\$0	\$0	\$0	\$0
0						\$0	\$0	\$0	\$0
0						\$0	\$0	\$0	\$0
0						\$0	\$0	\$0	\$0
0						\$0	\$0	\$0	\$0
<i>Project financial services (50000/50500/55900/56100)</i>						\$2,550	\$1,785	\$765	\$2,550
<i>Facility services (52100/52200/52400/54200/54500)</i>						\$727	\$509	\$218	\$727
<i>Communication services (52250/52255/55150/57100/57300)</i>						\$229	\$160	\$69	\$229
<i>Data services (53100/53101/53200/57900)</i>						\$69	\$48	\$21	\$69
<i>Material services (53400/53500/57200/57500)</i>						\$270	\$189	\$81	\$270
<i>Consulting services (55100/56300/56400/56700)</i>						\$329	\$230	\$99	\$329
						<b>\$15,674</b>			
<b>SUBTOTAL: Direct Costs</b>							\$12,180	\$5,219	\$17,399
<b>Total</b>							<b>\$12,180</b>	<b>\$5,219</b>	<b>\$17,399</b>
<b>Other Match:</b>							\$0	\$0	\$0
<i>Source of Match</i>									
<b>GRAND TOTAL</b>							<b>\$12,180</b>	<b>\$5,219</b>	<b>\$17,399</b>

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Authorization to request for funding:



COMMISSIONERS

10/19/21

**Essex County**  
*Hon. Edwin E. Smith, Jr.*  
*Hon. John C. Magruder*  
*Ms. Sarah Pope*  
*Mr. Michael A. Lombardo*

**Town of Tappahannock**  
*Hon. Fleet Dillard*

**Gloucester County**  
*Hon. Ashley C. Chriscoe  
(Vice-Chairman)*  
*Hon. Michael R.  
Winebarger*  
*Dr. William G. Reay*  
*Mr. J. Brent Fedors*

**King and Queen County**  
*Hon. Sherrin C. Alsop*  
*Hon. R. F. Bailey*  
*Mr. Thomas J.  
Swartzwelder*  
*(Chairman)*

**King William County**  
*Hon. Ed Moren, Jr.*  
*Hon. Travis J. Moskalski  
(Treasurer)*  
*Mr. Otto O. Williams*

**Town of West Point**  
*Hon. James Prueett*  
*Mr. John Edwards*

**Mathews County**  
*Hon. Michael C. Rowe*  
*Hon. Melissa Mason*  
*Mr. Thornton Hill*

**Middlesex County**  
*Hon. Wayne H. Jessie, Sr.*  
*Hon. Reggie Williams, Sr.*  
*Mr. Gordon E. White*

**Town of Urbanna**  
*Hon. Marjorie Austin*

**Secretary/Director**  
*Mr. Lewis L. Lawrence*

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

REF: Authorization to request for funding

Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Signed pledge agreement from each contributing organization:

Monday, October 25, 2021

Virginia Department of Conservation and Recreation  
Attention: Virginia Community Flood Preparedness Fund  
Division of Dam Safety and Floodplain Management  
600 East Main Street, 24<sup>th</sup> Floor  
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 542 Shore Drive, Hartfield, VA 23071. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at (804) 832-3711 or by email at [mklotz66@gmail.com](mailto:mklotz66@gmail.com).

Sincerely,

Dorothy Gallimore

## I. SUPPORTING DOCUMENTATION

- Letters of support from all affected local government
- Detailed map of the project area(s)
- FIRMette of the project area(s)
- Historic flood damage data and/or images

## APPENDIX 1

### Community Support Letter

Matthew L. Walker  
County Administrator  
877 General Puller Hwy  
Saluda, VA 23149  
804-758-4330  
[m.walker@co.middlesex.va.us](mailto:m.walker@co.middlesex.va.us)



Betty S. Muncy  
Assistant County Administrator

Ann Marie S. Ricardi  
Assistant County Administrator

### County of Middlesex Office of the County Administrator

July 20, 2021

Lewis L Lawrence, Executive Director  
Middle Peninsula Planning District Commission  
P.O. Box 286  
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Mr. Lawrence:

Middlesex County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents are part of our necessary governmental functions and are consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood (FTF) Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC FTF Program provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs assist to secure the tax base of coastal localities and reduce the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types.

The FTF and the Living Shoreline programs exist to help the owners of flood-prone properties access programs and services to better manage challenges posed by flood water and to direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents, to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-758-4330.

Respectfully,

Matt Walker  
County Administrator

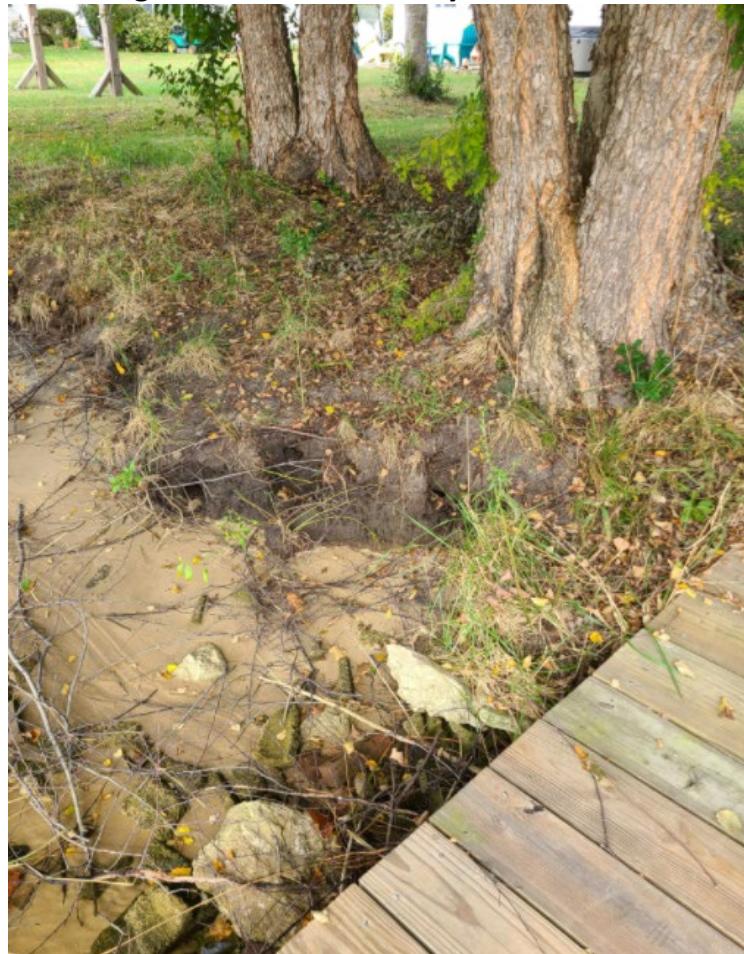
## APPENDIX 2

### Additional Property Photos

Photo of eroding shoreline.



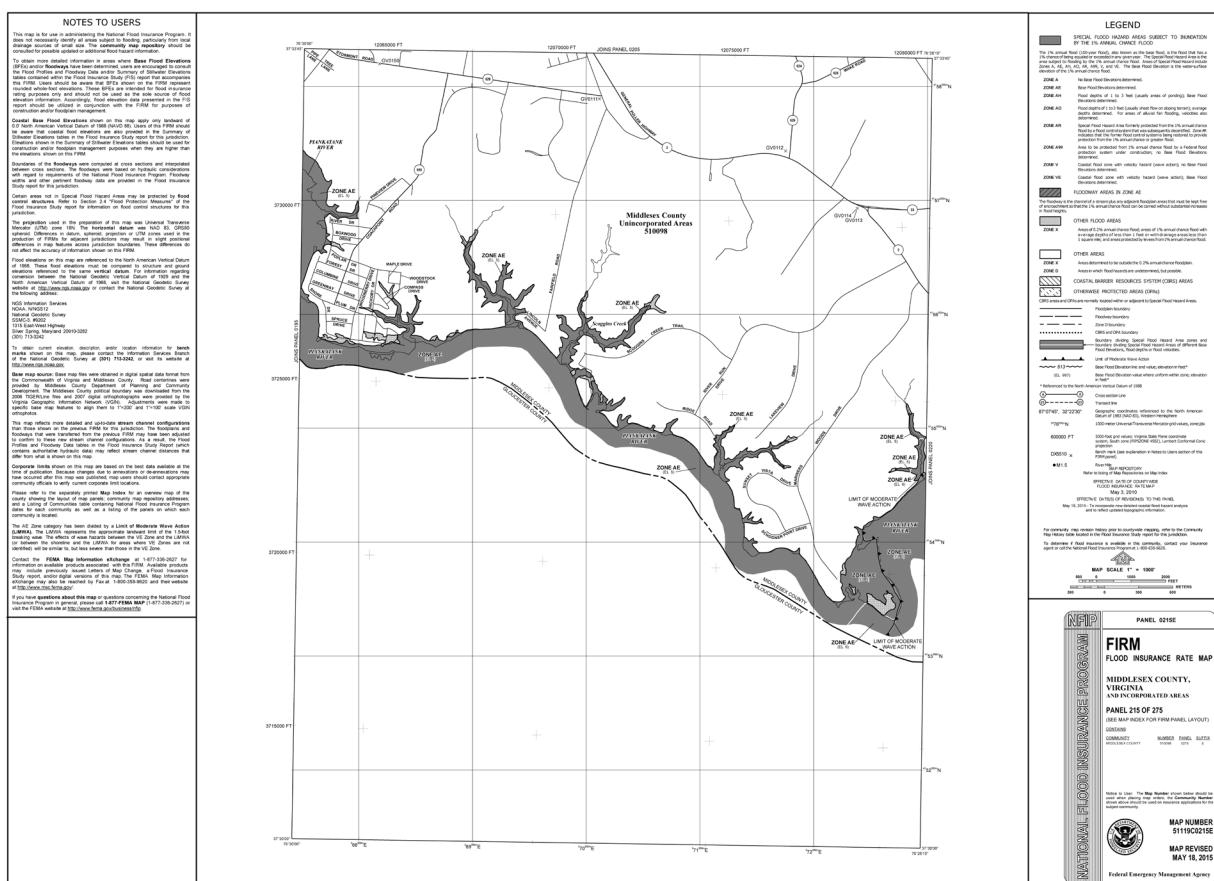
**Photo of eroding shoreline and nearby mature river branch trees.**



## **APPENDIX 3**

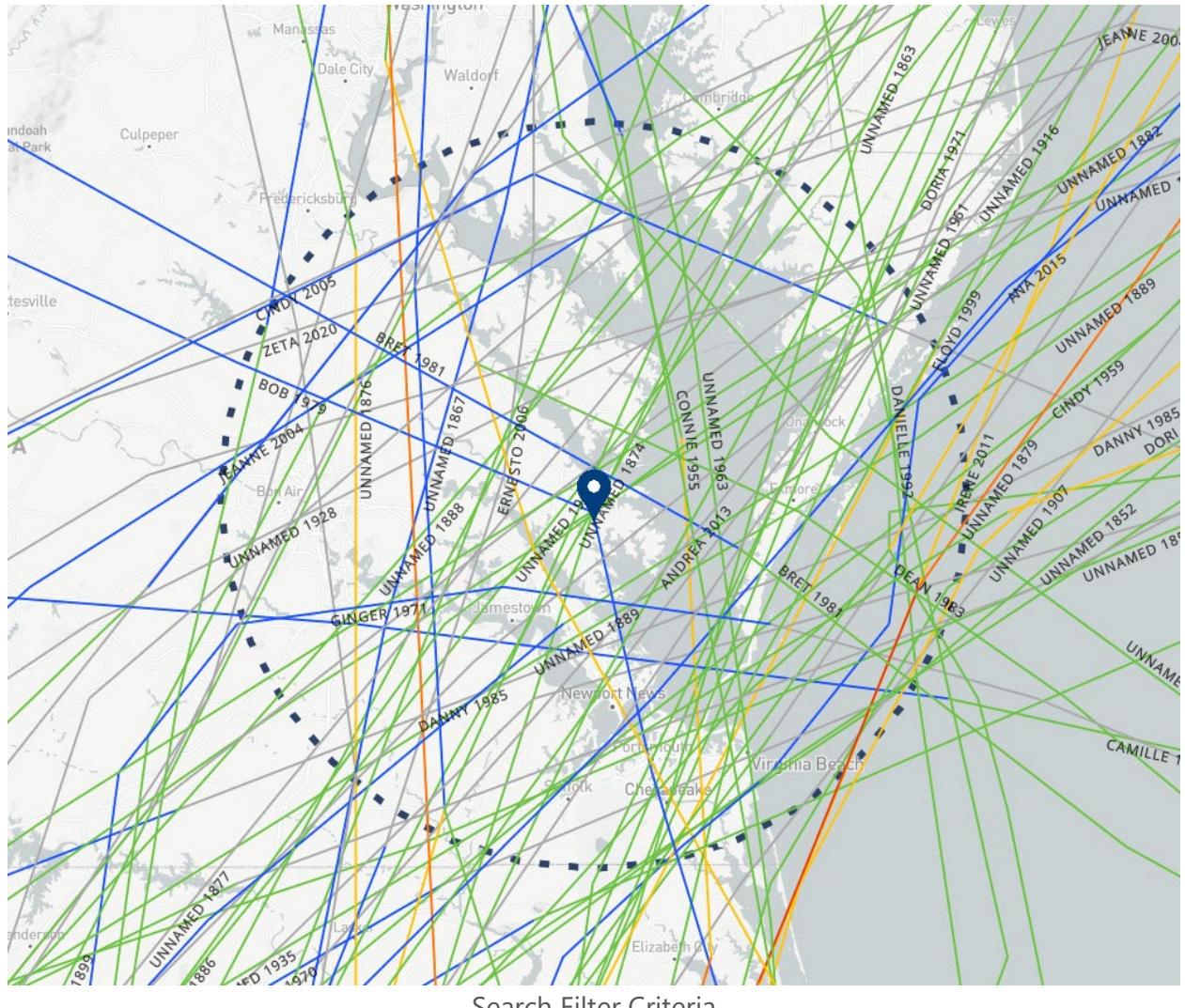
## Project Location FIRMette

(FIRMette #: 51119C0215E)



## APPENDIX 4

### List of Historic Hurricanes Impacting the Property Location



Location: 37.53939 -76.4962

Categories: H5, H4, H3, H2, H1, TS, TD, ET

Months: ALL

Years: ALL

El Niño-Southern Oscillation (ENSO): ALL

Minimum Pressure (mb) below: 1150

Include Unknown Pressure Rating: TRUE

Buffer Distance: 60

Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1883	Sep 04, 1883 to Sep 13, 1883	110	-1	H3
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

## **APPENDIX 5**

### **Flood Prevention Project and its Relevance to Other Projects**

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

#### **Climate Change and Sea Level Rise (2009 to 2012)**

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

#### **Emergency Management – Hazard Mitigation Planning (2009 to Present)**

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

#### **Land and Water Quality Protection (2014)**

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

### **Department of Conservation and Recreation Stormwater Management (2014)**

The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

### **Stormwater Management-Phase II (2014)**

Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

### **Mathews County Rural Ditch Enhancement Study (2015)**

In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

### **Drainage and Roadside Ditching Authority (2015)**

This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

### **Living Shoreline Incentive Program (2016 to present)**

In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to \$10,000 can be financed for up to 5 years (60 months). Loans over \$10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is \$1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~\$500,000 in Virginia Resources Authority loan funding and ~\$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job \$14,000- \$180,000. Middle Peninsula PDC oversees all aspects (planning, financing, construction, and loan servicing) of these projects from cradle to grave.

#### **Mathews County Ditch Project – VCPC White Papers (2017)**

This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

#### **Mathews County Ditch Mapping and Database Final Report (2017)**

This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

#### **Virginia Stormwater Nuisance Law Guidance (2018)**

This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

#### **Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)**

Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

### **Fight the Flood Program (2020)**

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

## **APPENDIX 6**

### **Match Commitment Letter**

Monday, October 25, 2021

Virginia Department of Conservation and Recreation  
Attention: Virginia Community Flood Preparedness Fund  
Division of Dam Safety and Floodplain Management  
600 East Main Street, 24<sup>th</sup> Floor  
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 542 Shore Drive, Hartfield, VA 23071. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at (804) 832-3711 or by email at [mklotz66@gmail.com](mailto:mklotz66@gmail.com).

Sincerely,

Dorothy Gallimore

**Virginia Department of Conservation and Recreation  
Virginia Community Flood Preparedness Fund Grant Program**

**Application Form for Grant Requests for All  
Categories – Round 2**

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**I. ORGANIZATIONAL INFORMATION**

**Project Title:** Flood Prevention and Protection for Bucks Landing for Lively

**Name of Local Government:** Middle Peninsula Planning District Commission

**Category of Grant Being Applied for (check one):**

- Capacity Building/Planning  
 Project  
 Study

**NFIP/DCR Community Identification Number (CID):** 510098

**If a state or federally recognized Indian tribe, Name of tribe:** NA

**Name of Authorized Official:** Lewis Lawrence, Executive Director

**Signature of Authorized Official:** 

**Mailing Address (1):** PO Box 286

**Mailing Address (2):** 125 Bowden Street

**City:** Saluda    **State:** VA    **Zip:** 23149

**Telephone Number:** (804) 758-2311

**Cell Phone Number:** (\_\_\_\_) \_\_\_\_\_

**Email Address:** llawrence@mppdc.com

**Contact Person (If different from authorized official):** Jackie Rickards, Senior Planning Project Manager

**Mailing Address (1):** PO Box 286

**Mailing Address (2):** 125 Bowden Street

**City:** Saluda    **State:** VA    **Zip:** 23149

**Telephone Number:** (804) 758-2311

**Cell Phone Number:** (215) 264-6451

**Email Address:** jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes  No

**Categories (select applicable project): Project Grants**

**Project Grants (Check All that Apply)**

- Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- Wetland restoration.
- Floodplain restoration.
- Construction of swales and settling ponds.
- Living shorelines and vegetated buffers.
- Structural floodwalls, levees, berms, flood gates, structural conveyances.
- Storm water system upgrades.
- Medium and large-scale Low Impact Development (LID) in urban areas.
- Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- Dam restoration or removal.
- Stream bank restoration or stabilization.
- Restoration of floodplains to natural and beneficial function.
- Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

**Location of Project (Include Maps):** Middlesex County - Please see the attached corresponding maps for this application.

**NFIP Community Identification Number (CID#):** 510098

**Is Project Located in an NFIP Participating Community?**  Yes  No

**Is Project Located in a Special Flood Hazard Area?**  Yes  No

**Flood Zone(s) (If Applicable):** AE Zone

**Flood Insurance Rate Map Number(s) (If Applicable):** 51119C0114E

**Total Cost of Project:** \_\_\_\_\_ \$17,399 \_\_\_\_\_

**Total Amount Requested:** \_\_\_\_\_ \$12,180 \_\_\_\_\_

## **II. SCOPE OF WORK NARRATIVE**

### ***INTRODUCTION.***

This proposal requests funding for the development of a nature-based shoreline design solution and draft Joint Permit Application or DEQ Water Quality Impact Assessment depending on the jurisdictional determination for the application to reduce the impacts of storm events, flooding, and wetland loss. Rapid rainwater runoff is steadily eroding the property's steep bank located on Urbanna Creek, a tributary of the Rappahannock River (length of shoreline is approximately 165 feet). This has occurred over a period of years the property was purchase by the current owners. The primary concern is the flood-induced erosion that is undermining posts supporting steps to a pier and accelerated undermining tree roots causing tree loss. A steep bank under the pier steps and to each side of the pier steps is in danger of becoming a cliff that will not support pier steps or sustain plants. There is a potential design solution in mind. Enviro-Lock (Enviro-Lock.com) provides a system and products utilizing soil and sandbags that can be stacked five to eight feet and planted with natural plants creating a stable living shoreline "bank" minimizing or avoiding the utilization of traditional "rip rap" rock or other gray infrastructure.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered "acts of God," and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought to be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program,

and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

#### ***PROJECT INFORMATION.***

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

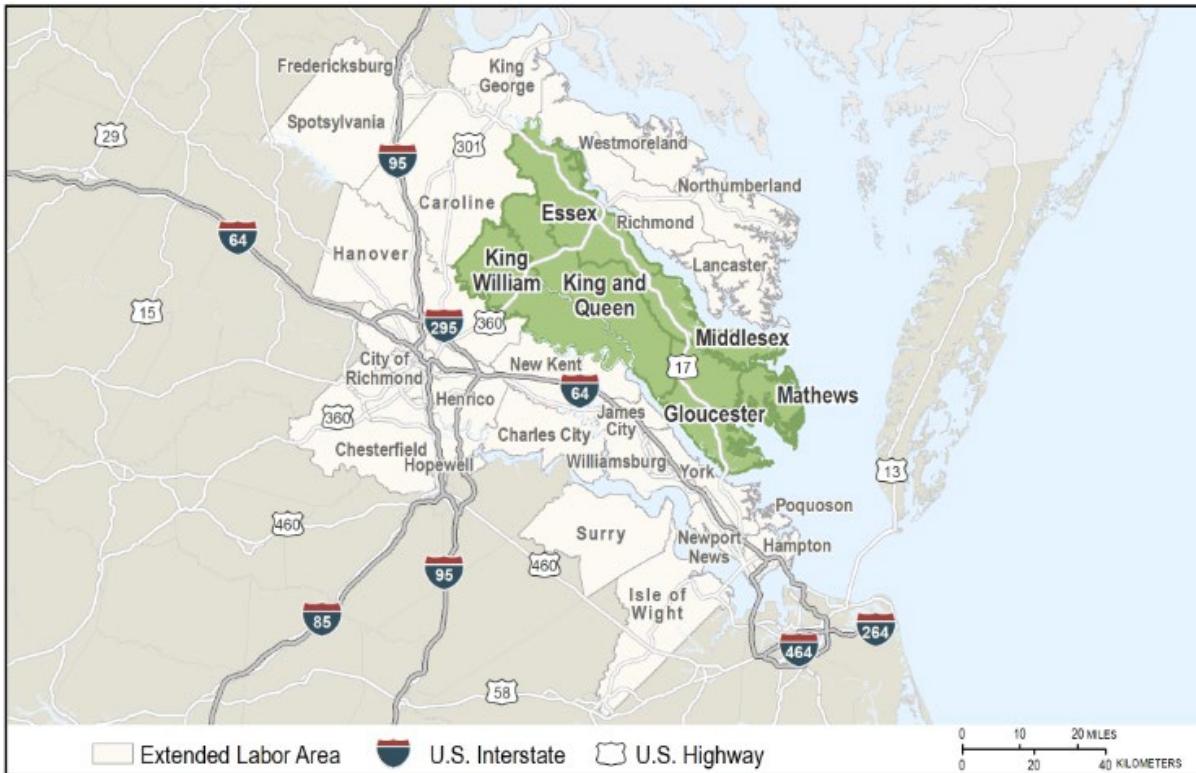
Specifically, this project proposes to investigate nature-based design solutions or, if necessary,

hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Bucks Landing in Middlesex County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Middlesex County. See the community support letter in **Appendix 1**.

- A link or to the Middle Peninsula PCD's Approved Regional Flood Resiliency Plan (2021) can be found at: [https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8\\_19\\_DCR-packet\\_letterandplan.pdf](https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf).
  - Please see Page 3-5, which notes the need to respond to emerging flood challenges.
- A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at:  
[https://www.mppdc.com/articles/reports/AHMP\\_2016\\_FEMA\\_Approved\\_RED.pdf](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf).
  - Please see Section 4 (page 25), which includes historical hazard data within the region.
- A link to the County of Middlesex's Comprehensive Plan can be found at:  
<https://www.co.middlesex.va.us/252/Comprehensive-Plan>.

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

**Figure 1. Middle Peninsula Geographic Area**

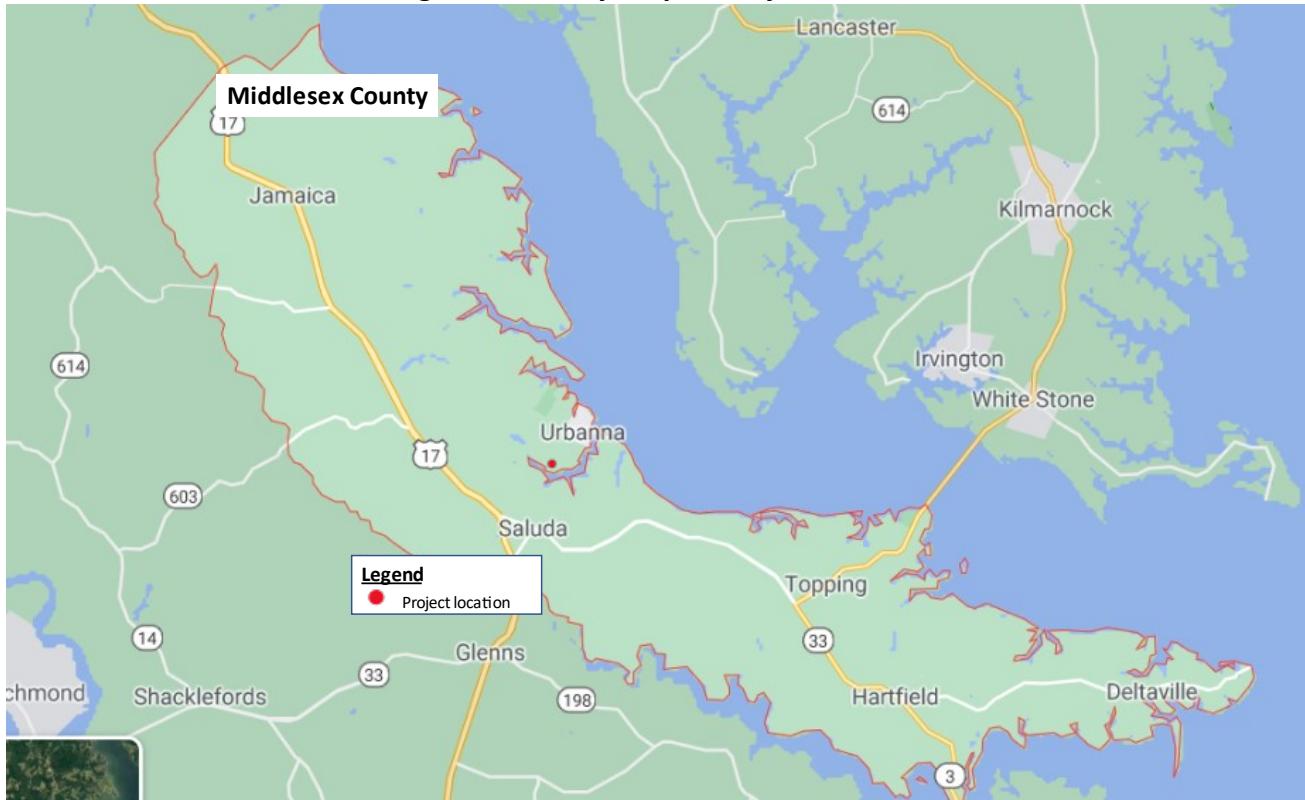


**Figure 2. Middle Peninsula Population**

CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	<b>MPPDC Total</b>	<b>92,886</b>

This project proposes to design a nature-based solution on one private property on Bucks Landing in Middlesex County as found in **Figures 3 and 4**.

**Figure 3. County Map of Project Location**



Middlesex County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 130 square miles of land 80 miles of shorelines. Based on 2020 Census Data, Middlesex County's population totals 10,625 which. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 5**, the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

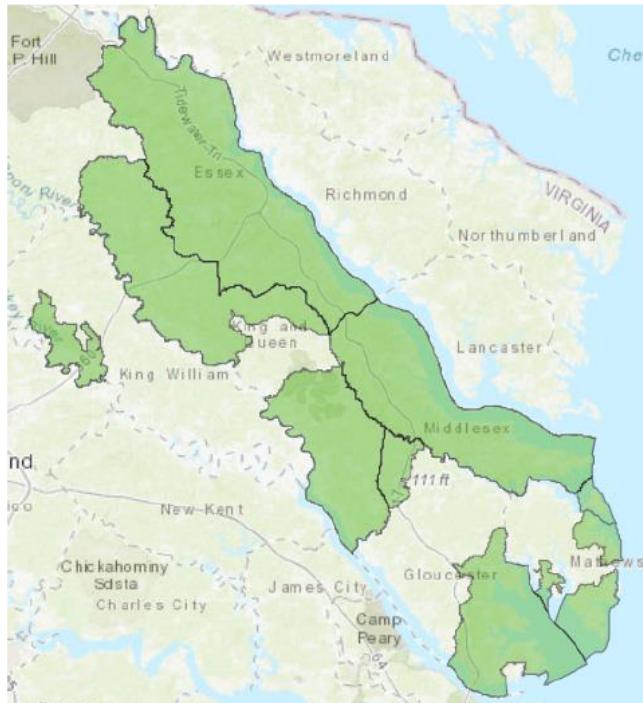
**Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas**

Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	\$51,954	\$57,438	\$64,237	\$66,987	\$63,982	\$70,537
Eligible Household income	\$41,563	\$45,950	\$51,389	\$53,590	\$51,186	\$56,430

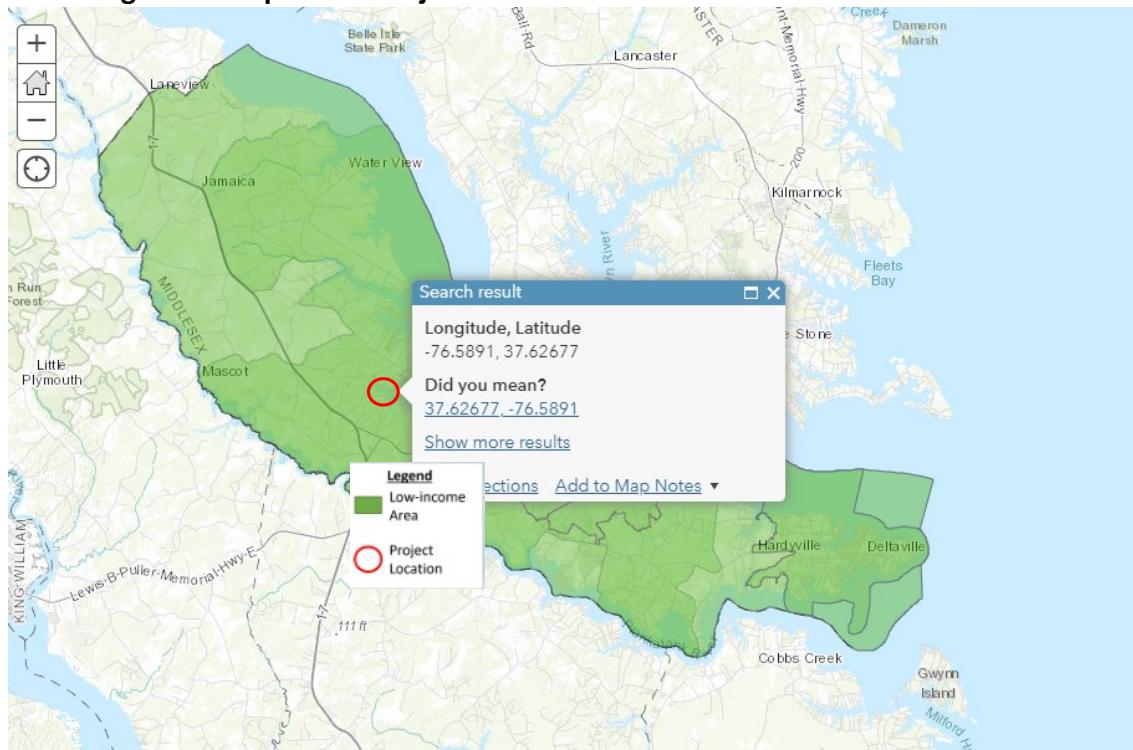
**Note:** Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.



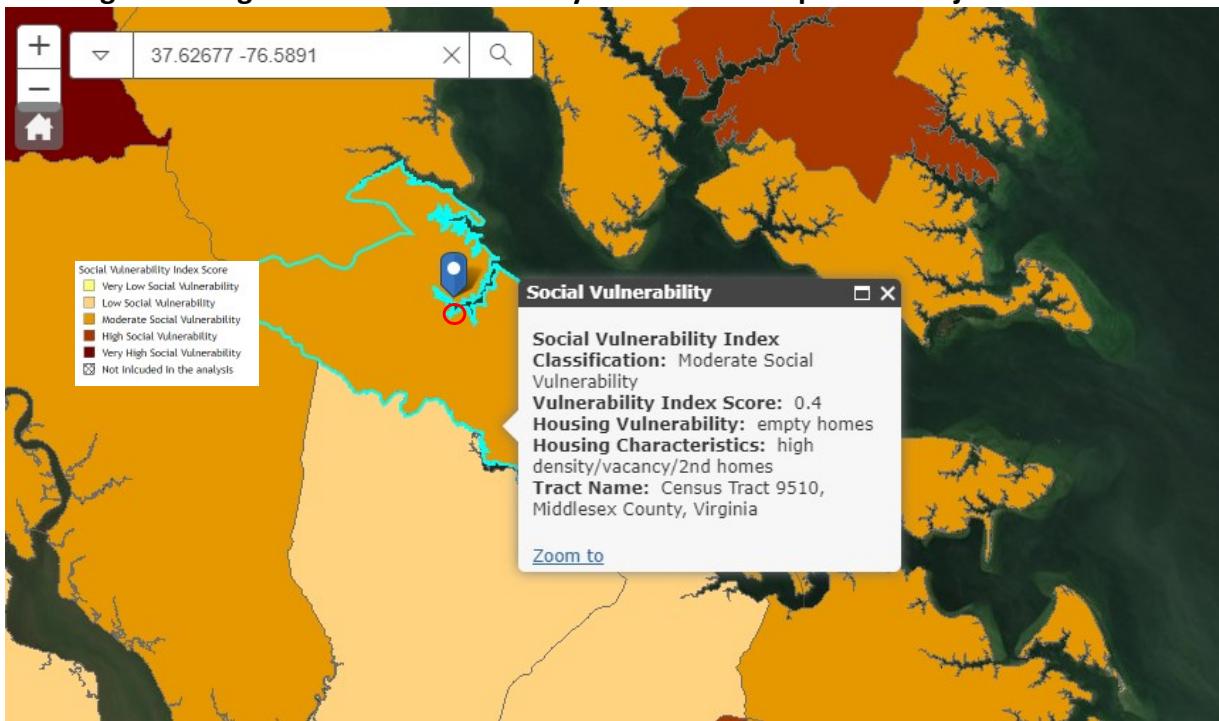
Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

**Figure 6. Map of the Project Location within the Green Low-Income Area**

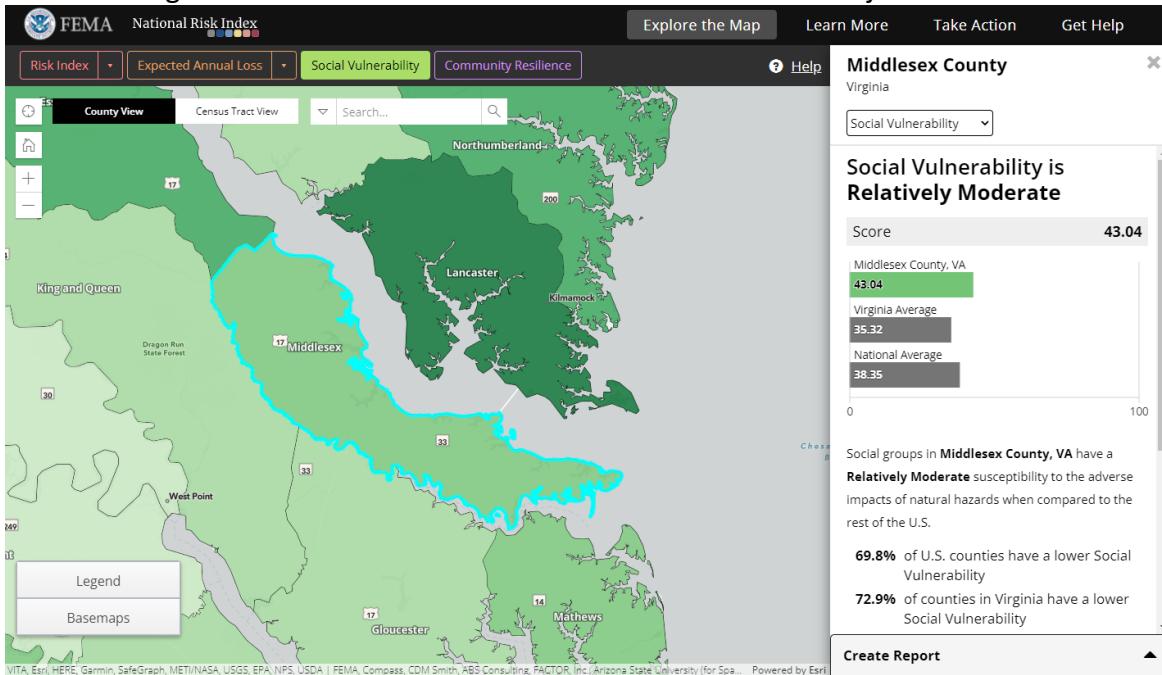


According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (<https://hazards.fema.gov/nri/map>), which assesses vulnerability at a census tract level, the social vulnerability of the County is considered to be a relatively moderate level of vulnerability as seen in **Figure 8**.

**Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location**



**Figure 8. FEMA Nation Risk Index of Census Track of Project Location**



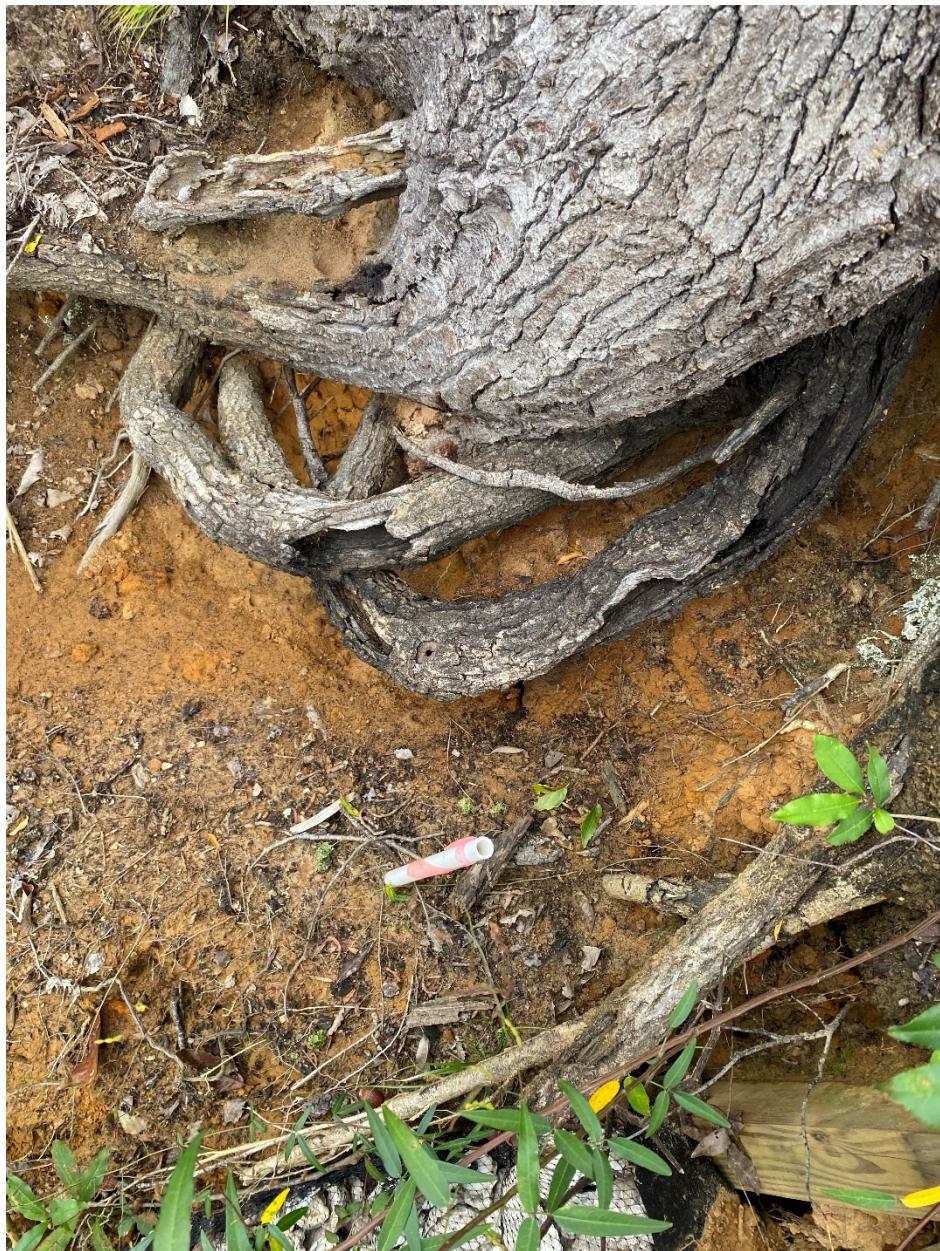
The project is located at 42 Bucks Landing, Urbanna, VA 23175 (-76.5891, 37.62677). The property was purchased in 2008 and has experienced a number of issues. Rapid rainwater runoff is steadily eroding the property's steep bank located on Urbanna Creek off of the Rappahannock River (length of shoreline is approximately 165 feet). This has occurred over a

period of years since the property was purchased by the current homeowners. The primary concern is the flood-induced erosion that is undermining posts supporting steps to a pier and undermining tree roots causing tree loss. The steep bank under pier steps and to each side of the pier steps is in danger of becoming a cliff that will not support pier steps or sustain plants. Part of the homeowner's eroding bank is in front of a neighbor's home that is located close to the bank. One tree has died (two years ago) and fallen into the water and opened up the creek bank. Three additional trees have died. One of those dead trees is about 12 feet tall with no top. The two other additional dead trees were alive last year and died this summer. Another tree was partially alive but hollow and leaning over the pier. A permit was secured for that tree as part of a "Friends of the Rappahannock" Living Shoreline project and was cut. There is a remaining tree stump and severe erosion exposed roots. There is one other live tree on the bank leaning toward the water that will likely succumb to death in the next few years. There is one other old tree stump with severe erosion exposed roots.

There is a potential design solution in mind. Enviro-Lock (Enviro-Lock.com) provides a system and products utilizing soil/sandbags that can be stacked five to eight feet and planted with natural plants creating a stable living shoreline "bank" minimizing or avoiding the utilization of traditional "rip rap" rock or other gray infrastructure. The homeowners have observed two creek bank erosion projects (one completed and one in the process of being completed) in Middlesex County that are using this system/product and prefer this natural solution. The preliminary plan includes additional soil and plantings of the remaining bank above the soil and sandbags and plantings. The area beneath and adjacent to the pier steps may require rock rip rap unless it is feasible to utilize the soil sand bags. The contractor, in process of completing "Friends of the Rappahannock" living shoreline project that involves oyster bag reef, sand and natural plantings, alerted homeowner to Enviro-Lock system/products and showed homeowners the other projects utilizing the Enviro-Lock system/products. The current "Friends of the Rappahannock" living shoreline project will not solve the serious erosion issue caused by the rainwater runoff. No contractor for design work has been contacted at this point.

See accompanying pictures below of the site conditions.

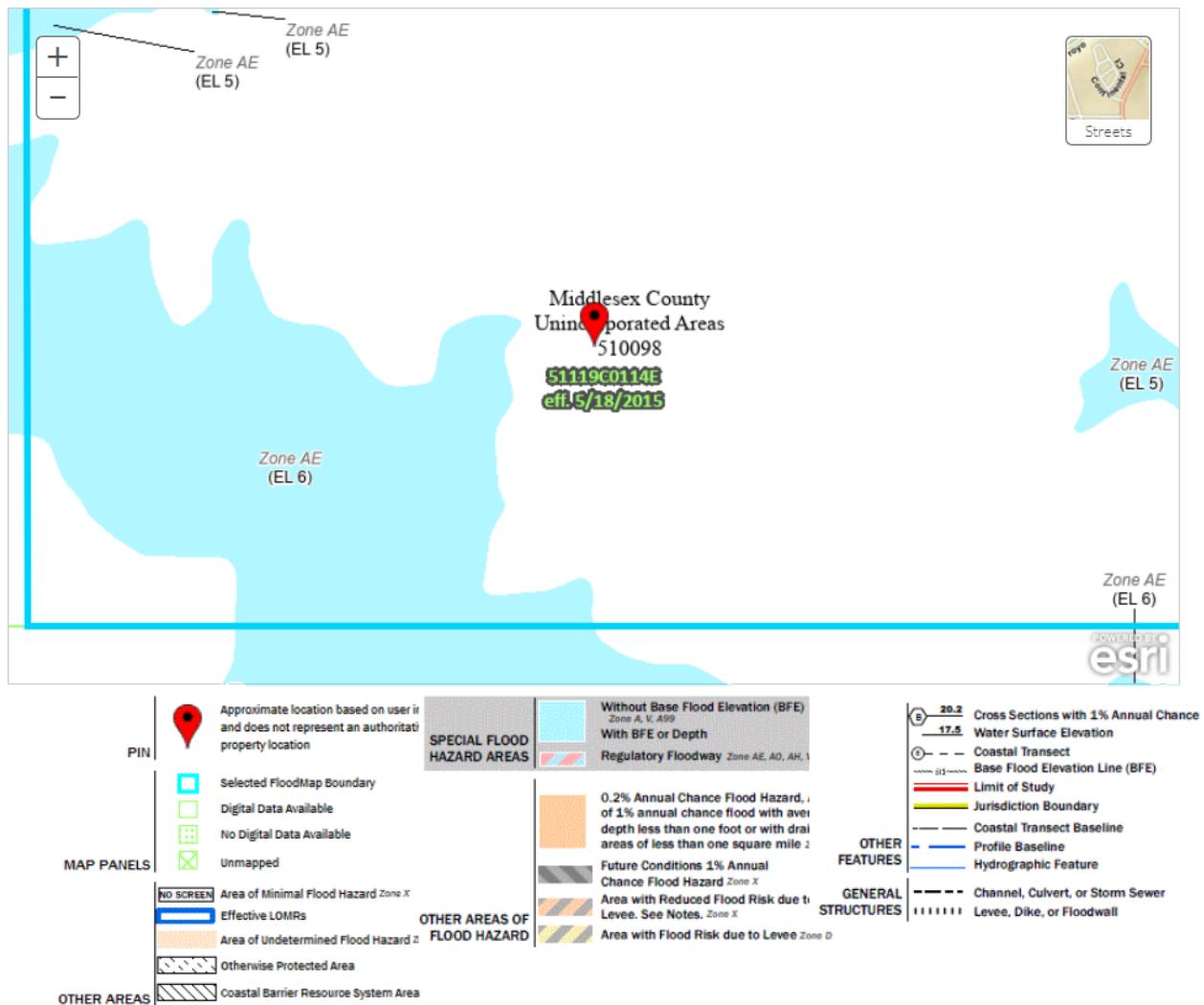




Please see **Appendix 2** for additional property photos.

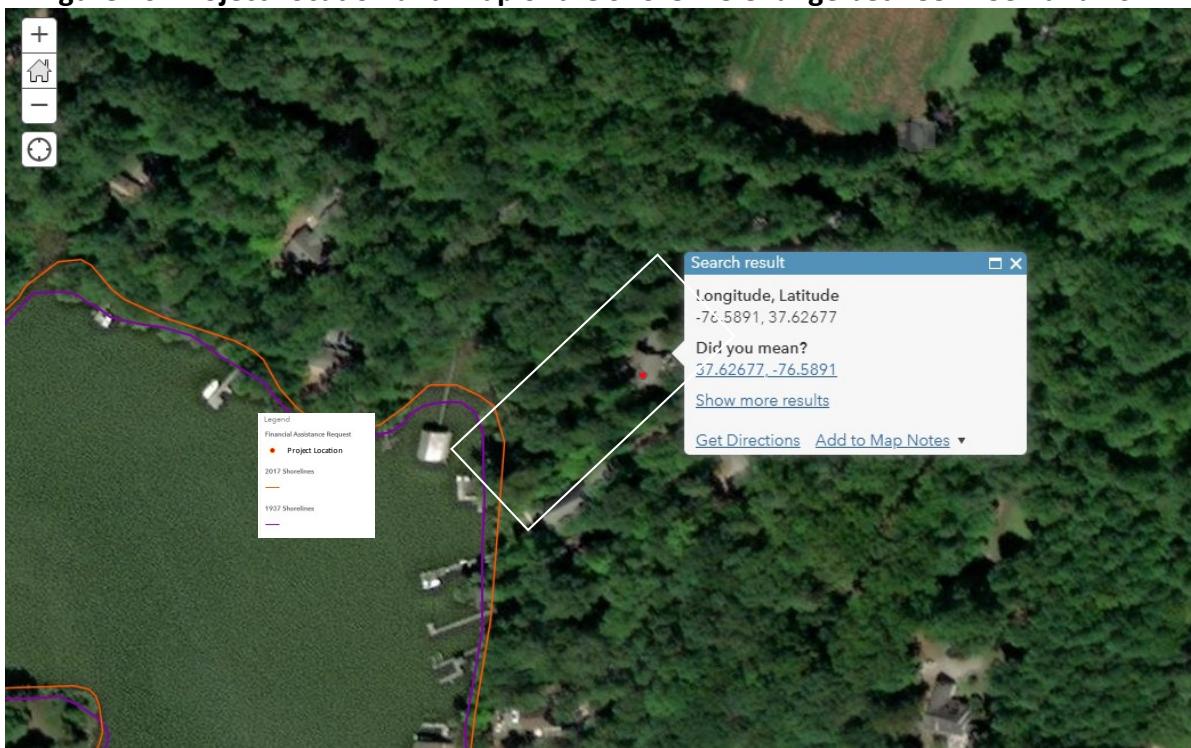
This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 3** for the FIRMettes (last mapped 5/18/2015).

**Figure 9: Map of FEMA Flood Zones**



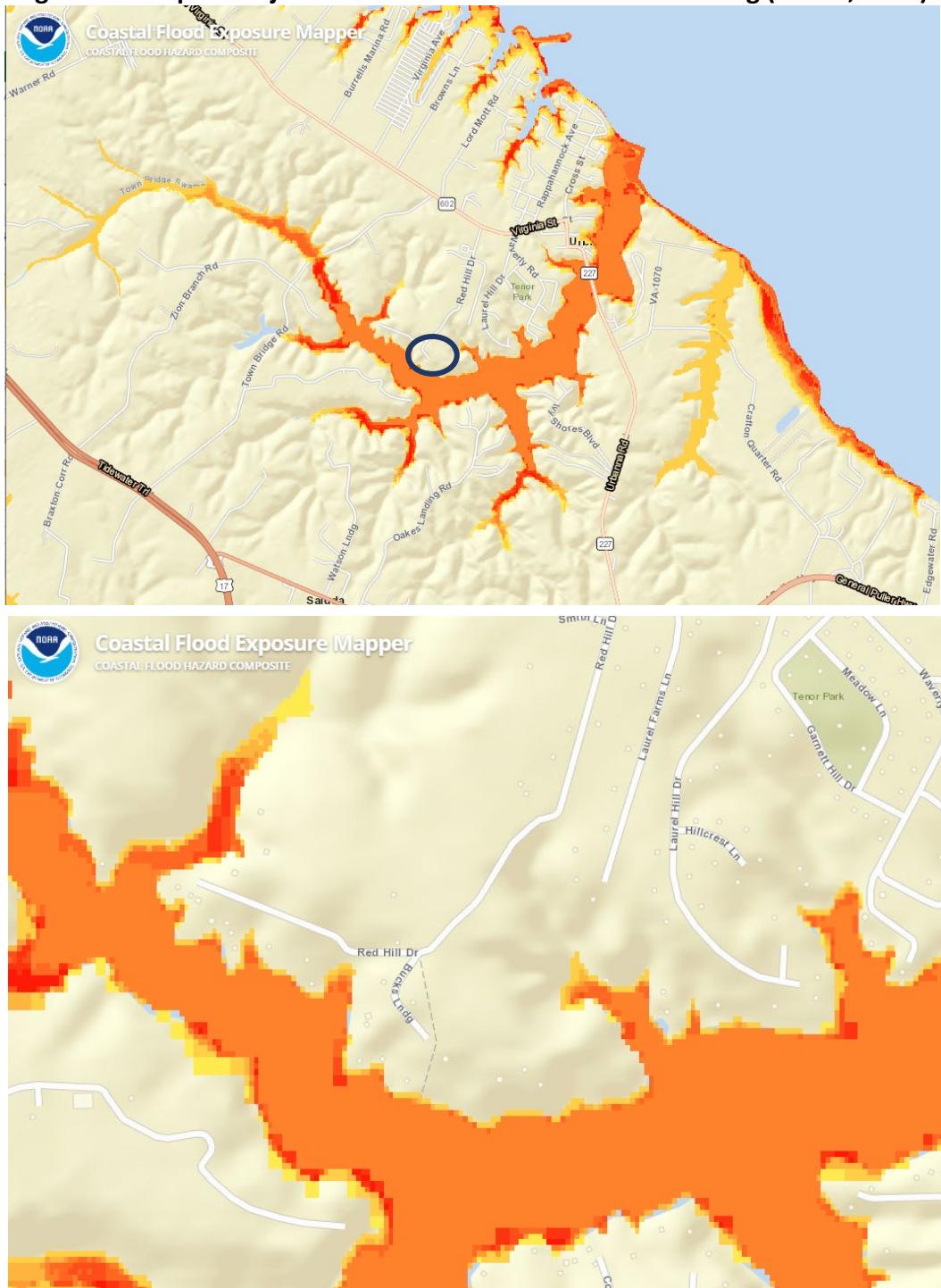
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 4,815.7 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 4** lists 74 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

**Figure 10. Project Location and Map of the Shoreline Change between 1937 and 2017**



Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 11**.

**Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)**



For more information about this project area please see:

- A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: [https://www.mppdc.com/articles/reports/AHMP\\_2016\\_FEMA\\_Approved\\_RED.pdf](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf)
- A link to Middlesex County's current floodplain ordinance can be found at:

[https://www.co.middlesex.va.us/DocumentCenter/View/422/Floodplain-Management-PDF.](https://www.co.middlesex.va.us/DocumentCenter/View/422/Floodplain-Management-PDF)

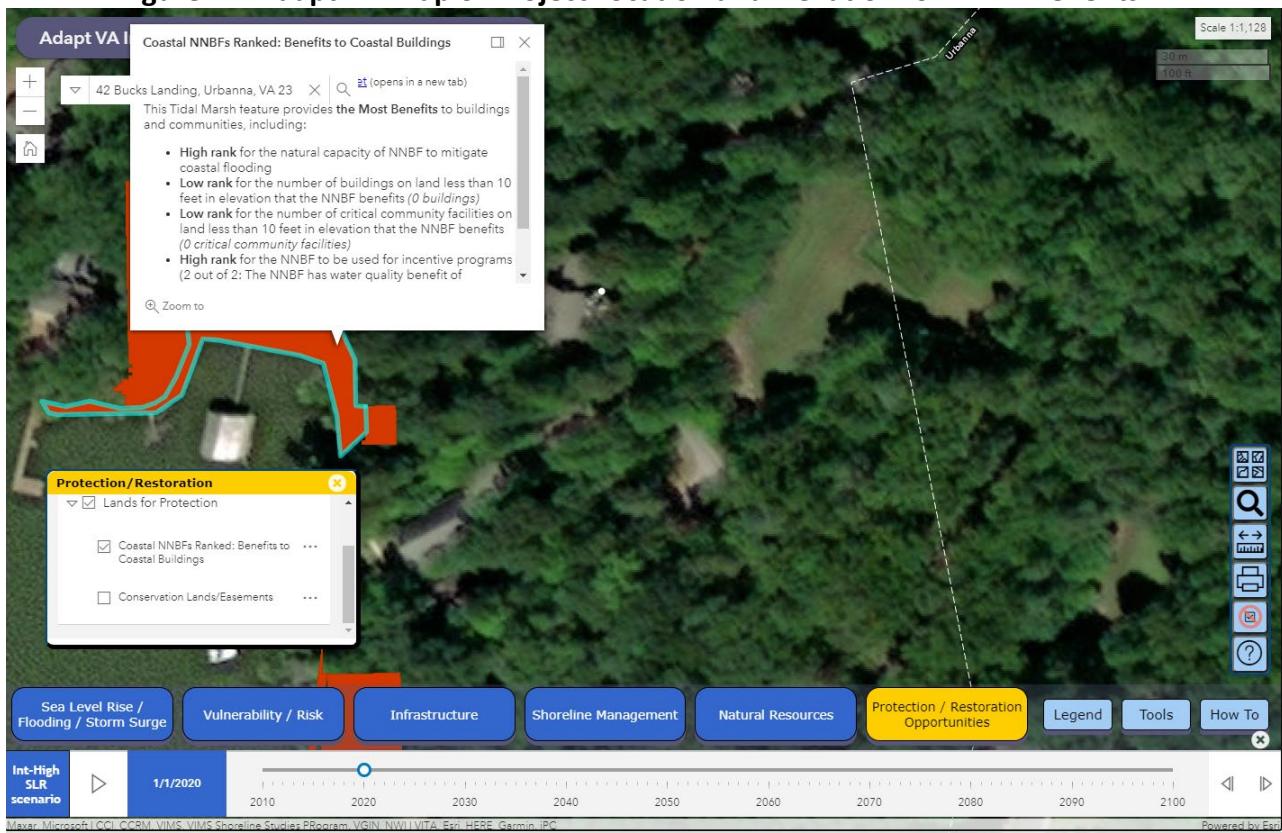
### **COMMUNITY SCALE BENEFITS.**

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, “Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines “Community Scale project” which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving “demonstrable flood reduction” benefit, rural areas will never compete.

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature-based “brick in the wall” and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in **Figure 12**. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

**Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits**



### **CONCERNING ADVERSE IMPACTS.**

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, the Middle Peninsula PDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

### **ALTERNATIVES.**

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed \$3 million.

### **GOALS AND OBJECTIVES.**

The Code of Virginia § 28.2-104.1. defines "Living shoreline" as *shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.
- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Middlesex County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. For example, a proposed project of 150 linear feet of living shoreline has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300

pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

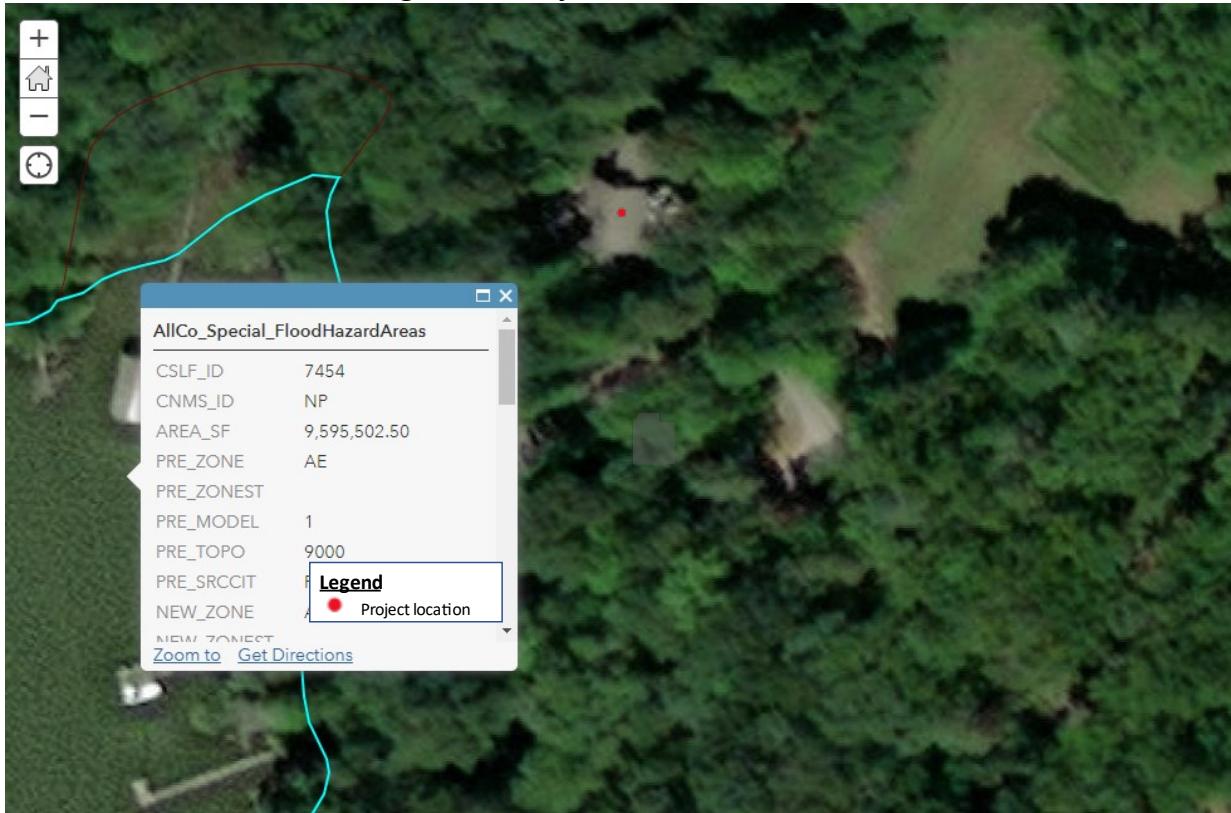
- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

#### ***APPROACH, MILESTONES, AND DELIVERABLES.***

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**.

**Figure 13. Project Flood Hazard Area**



Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	M1	M2	M3	M4	M5	M6
<b>Phase 1 – Environmental Scan</b>						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
<b>Phase 2 – Solution Design</b>						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
<b>Phase 3 – Strategic Implementation</b>						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

#### ***RELATIONSHIP TO OTHER PROJECTS.***

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
  - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

#### Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 5**.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

#### **MAINTENANCE PLAN.**

A maintenance plan is not applicable in this application. The proposed project is to develop a

nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

**CRITERIA.**

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe)?

The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link:

[https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8\\_19\\_DCR-packet\\_letterandplan.pdf](https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf).

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 6**.

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

**SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.**

<b>Applicant Name:</b>		Middle Peninsula Planning District Commission	
<b>Eligibility Information</b>			
Criterion	Description		Check One
<b>1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?</b>			
Yes	Eligible for consideration		X
No	Not eligible for consideration		
<b>2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?</b>			
Yes	Eligible for consideration under all categories		X
No	Eligible for consideration for studies, capacity building, and planning only		
<b>3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?</b>			
Yes	Eligible for consideration		X
No	Not eligible for consideration		
<b>4. Has this or any portion of this project been included in any application or program previously funded by the Department?</b>			
Yes	Not eligible for consideration		
No	Eligible for consideration		X
<b>5. Has the applicant provided evidence of an ability to provide the required matching funds?</b>			
Yes	Eligible for consideration		X
No	Not eligible for consideration		
N/A	Match not required		

<b>Project Eligible for Consideration</b>		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Applicant Name:	<b>Middle Peninsula Planning District Commission</b>		
<b>Scoring Information</b>			
Criterion	Point Value	Points Awarded	
<b>6. Eligible Projects (Select all that apply)</b>			
<p><b>Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.</b></p>			
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	<b>50</b>		
<input type="checkbox"/> Wetland restoration, floodplain restoration <input type="checkbox"/> XLiving shorelines and vegetated buffers. <input type="checkbox"/> Permanent conservation of undeveloped lands identified as having flood resiliencevalue by <i>ConserveVirginia</i> Floodplain and Flooding Resilience layer or a similar datadriven analytic tool <input type="checkbox"/> Dam removal <input type="checkbox"/> Stream bank restoration or stabilization. <input type="checkbox"/> Restoration of floodplains to natural and beneficial function. <input type="checkbox"/> Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	<b>45</b>	45	
1.b. Any other nature-based approach	<b>40</b>		
All hybrid approaches whose end result is a nature-based solution	<b>35</b>		
All other projects	<b>25</b>		
<b>7. Is the project area socially vulnerable? (Based on <a href="#">ADAPT VA's Social Vulnerability Index Score.</a>)</b>			
Very High Social Vulnerability (More than 1.5)	<b>15</b>		
High Social Vulnerability (1.0 to 1.5)	<b>12</b>		
Moderate Social Vulnerability (0.0 to 1.0)	<b>8</b>	8	
Low Social Vulnerability (-1.0 to 0.0)	<b>0</b>		
Very Low Social Vulnerability (Less than -1.0)	<b>0</b>		
<b>8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?</b>			
Yes	<b>10</b>		
No	<b>0</b>	0	

<b>9. Is the proposed project in a low-income geographic area as defined in this manual?</b>		
Yes	<b>10</b>	10
No	<b>0</b>	
<b>10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?</b>		
Yes	<b>5</b>	5
No	<b>0</b>	
<b>11. Does this project provide “community scale” benefits?</b>		
Yes	<b>20</b>	20
No	<b>0</b>	
<b>Total Points</b>		<b>88</b>

**SCOPE OF WORK CHECKLIST.**

<b>Scope of Work Narrative</b>	
<b>Supporting Documentation</b>	<b>Included</b>
Detailed map of the project area(s) (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
FIRMette of the project area(s) (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Historic flood damage data and/or images (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current floodplain ordinance	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current hazard mitigation plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current comprehensive plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Social vulnerability index score(s) for the project area from <a href="#">ADAPT VA's Virginia Vulnerability Viewer</a>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
If applicant is not a town, city, or county, letters of support from affected communities	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
<b>Budget Narrative</b>	
<b>Supporting Documentation</b>	<b>Included</b>
Authorization to request funding from the Fund from governing body or chief executive of the local government	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Signed pledge agreement from each contributing organization	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

### **III. BUDGET NARRATIVE**

For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply: For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

This project may require usage of the new DEQ State Water Control Board regulations to manage flooding within the RPA. Middlesex County will be required to make regulatory determination as to who is the permitting authority VMRC/DEQ or both.

- ***Estimated total project cost: \$17,399***
- ***Amount of funds requested from the Fund: \$12,180***

Lively						Budget (Cat. D)		
						Applicant 2		
Personnel Salaries/Wages		DCR	Match %	Annual Salary		DCR	Owner	Total
Staff		9.62%	2.35%	\$70,000		\$957	\$410	\$1,367
Personnel		<i>Proj Admin Split</i>	<b>DCR</b>	<b>Owner</b>		\$957	\$410	\$1,367
Fringe, 26.21% salaries;		Total	70%	30%		\$251	\$107	\$358
		\$11,500	8,050.00	3,450.00				
		15%	1,725.00	1,207.50	\$17.50			
Total Personnel		<b>13,225.00</b>	<b>9,257.50</b>	<b>3,967.50</b>		\$1,208	\$517	\$1,725
<b>Direct Costs: SubAward/SubContract Agreements</b>						<b>70%</b>	<b>30%</b>	
<i>Nature Based Shoreline Design/Draft Permit JPA</i>						\$10,000	\$7,000	\$3,000
<i>Legal bid docs and procurement prep</i>						\$1,500	\$1,050	\$450
0						\$0	\$0	\$0
0						\$0	\$0	\$0
0						\$0	\$0	\$0
0						\$0	\$0	\$0
0						\$0	\$0	\$0
0						\$0	\$0	\$0
<i>Project financial services (50000/50500/55900/56100)</i>						\$2,550	\$1,785	\$765
<i>Facility services (52100/52200/52400/54200/54500)</i>						\$727	\$509	\$218
<i>Communication services (52250/52255/55150/57100/57300)</i>						\$229	\$160	\$69
<i>Data services (53100/53101/53200/57900)</i>						\$69	\$48	\$21
<i>Material services (53400/53500/57200/57500)</i>						\$270	\$189	\$81
<i>Consulting services (55100/56300/56400/56700)</i>						\$329	\$230	\$99
						<b>\$15,674</b>		
SUBTOTAL: Direct Costs							\$12,180	\$5,219
Total							<b>\$12,180</b>	<b>\$5,219</b>
Other Match:								
<i>Source of Match</i>							\$0	\$0
GRAND TOTAL							<b>\$12,180</b>	<b>\$5,219</b>
								<b>\$17,399</b>

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Authroration to request for funding:



COMMISSIONERS

10/19/21

Essex County  
*Hon. Edwin E. Smith, Jr.*  
*Hon. John C. Magruder*  
*Ms. Sarah Pope*  
*Mr. Michael A. Lombardo*

Town of Tappahannock  
*Hon. Fleet Dillard*

Gloucester County  
*Hon. Ashley C. Chriscoe*  
(Vice-Chairman)  
*Hon. Michael R.*  
Winebarger  
*Dr. William G. Reay*  
*Mr. J. Brent Fedors*

King and Queen County  
*Hon. Sherrin C. Alsop*  
*Hon. R. F. Bailey*  
*Mr. Thomas J.*  
Swartzwelder  
(Chairman)

King William County  
*Hon. Ed Moren, Jr.*  
*Hon. Travis J. Moshalski*  
(Treasurer)  
*Mr. Otto O. Williams*

Town of West Point  
*Hon. James Prueett*  
*Mr. John Edwards*

Mathews County  
*Hon. Michael C. Rowe*  
*Hon. Melissa Mason*  
*Mr. Thornton Hill*

Middlesex County  
*Hon. Wayne H. Jessie, Sr.*  
*Hon. Reggie Williams, Sr.*  
*Mr. Gordon E. White*

Town of Urbanna  
*Hon. Marjorie Austin*

Secretary/Director  
*Mr. Lewis L. Lawrence*

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

REF: Authorization to request for funding

Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Signed pledge agreement from each contributing organization:

10/13/2021

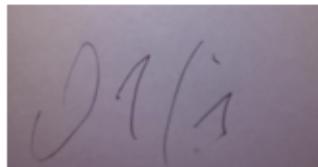
Virginia Department of Conservation and Recreation  
Attention: Virginia Community Flood Preparedness Fund  
Division of Dam Safety and Floodplain Management  
600 East Main Street, 24<sup>th</sup> Floor  
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 42 Bucks Landing, Urbanna Virginia, 23175. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at (757) 268-6479 or by email at L1vely6@aol.com.

Sincerely,

A handwritten signature in black ink, appearing to read "D G Lively".

David G. Lively

## I. SUPPORTING DOCUMENTATION

- Letters of support from all affected local government
- Detailed map of the project area(s)
- FIRMette of the project area(s)
- Historic flood damage data and/or images

## APPENDIX 1

### Community Support Letter

Matthew L. Walker  
County Administrator  
877 General Puller Hwy  
Saluda, VA 23149  
804-758-4330  
[m.walker@co.middlesex.va.us](mailto:m.walker@co.middlesex.va.us)



Betty S. Muncy  
Assistant County Administrator

Ann Marie S. Ricardi  
Assistant County Administrator

#### County of Middlesex Office of the County Administrator

July 20, 2021

Lewis L Lawrence, Executive Director  
Middle Peninsula Planning District Commission  
P.O. Box 286  
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Mr. Lawrence:

Middlesex County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents are part of our necessary governmental functions and are consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood (FTF) Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC FTF Program provide the operational and administrative oversight for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs assist to secure the tax base of coastal localities and reduce the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types.

The FTF and the Living Shoreline programs exist to help the owners of flood-prone properties access programs and services to better manage challenges posed by flood water and to direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents, to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-758-4330.

Respectfully,

Matt Walker  
County Administrator

## APPENDIX 2

### Additional Property Photos

Shoreline erosion threatening the vegetation on the bank.



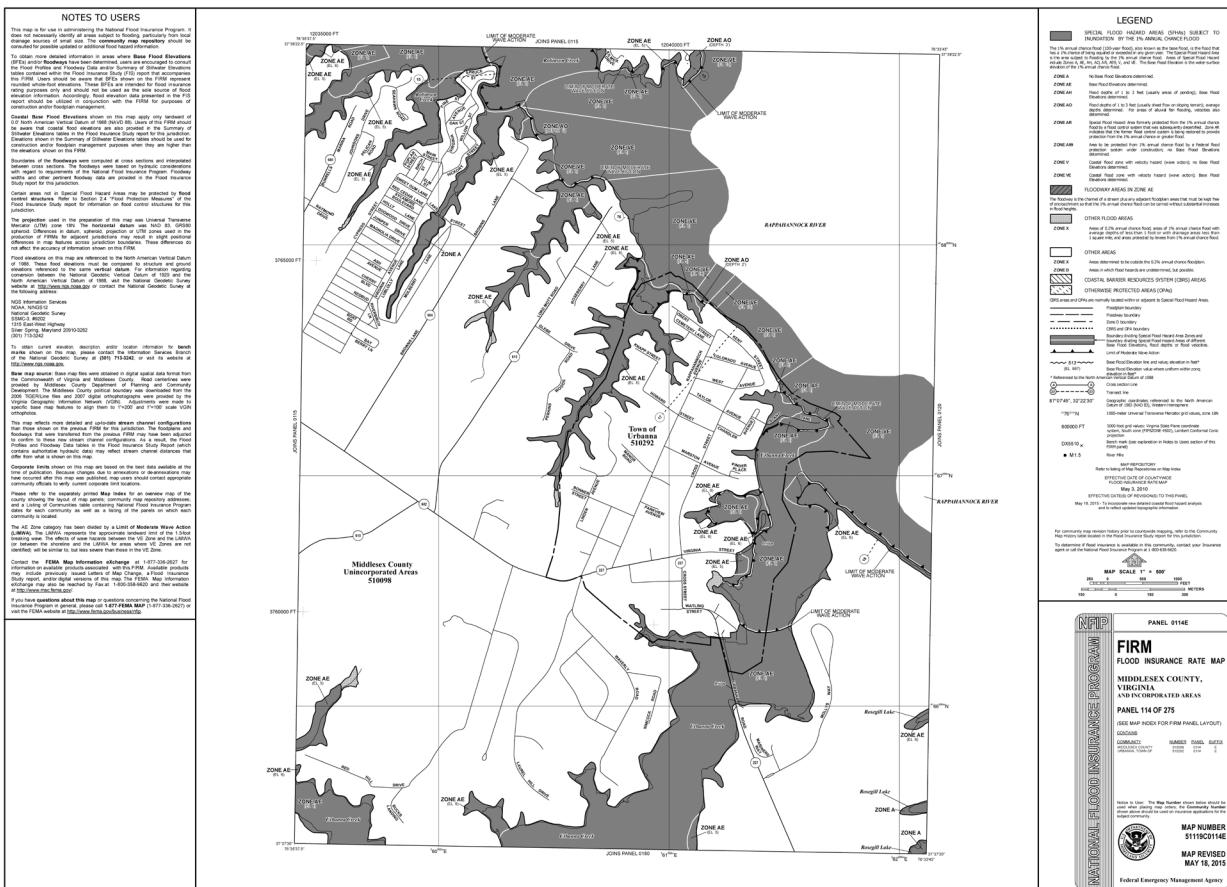
**Oyster bags on the left side of photo helps to support the eroding bank but more needs to be done to protect the shoreline.**



## **APPENDIX 3**

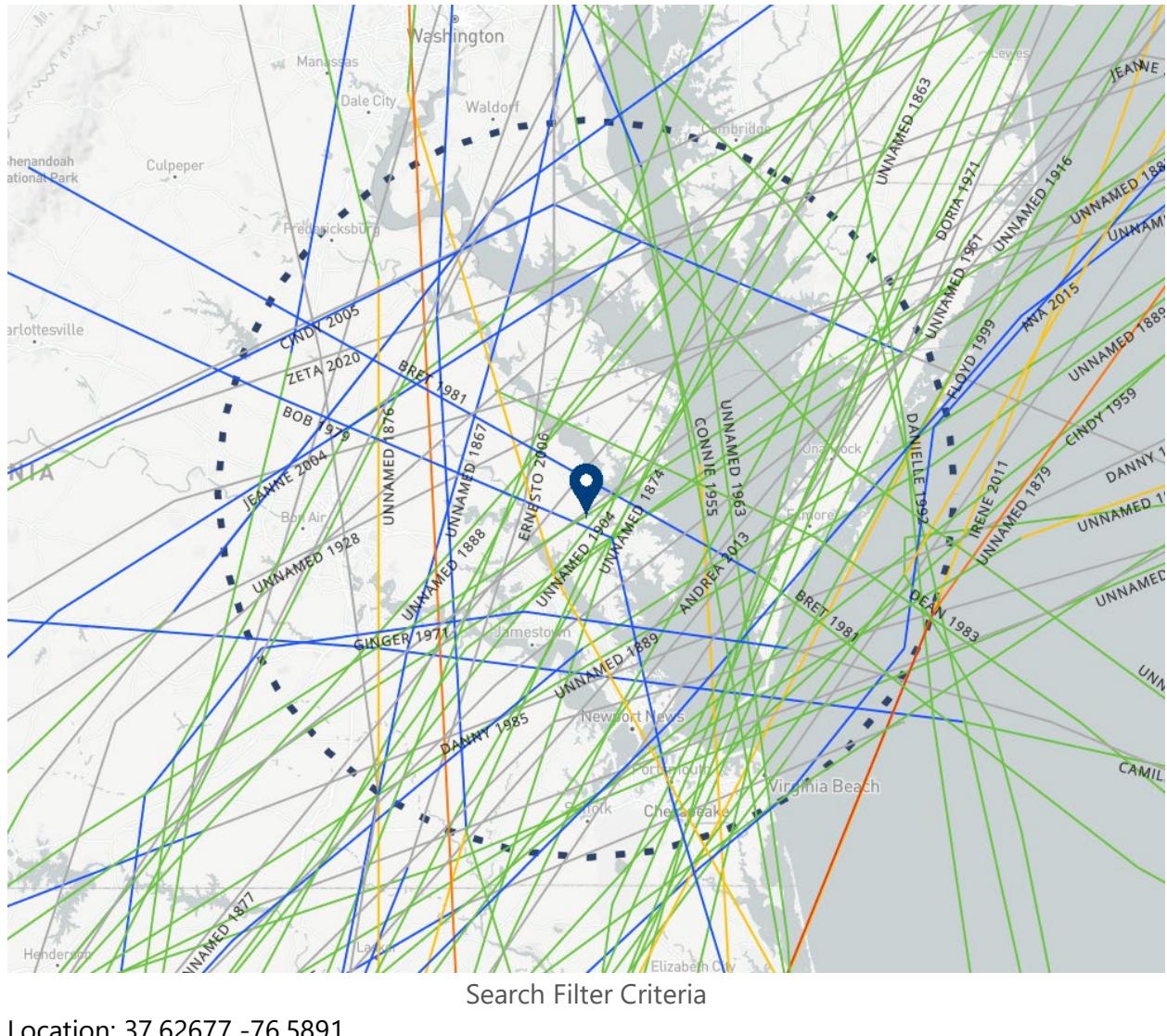
## **Project Location FIRMette**

(FIRMette #: 51119C0114E)



## APPENDIX 4

### List of Historic Hurricanes Impacting the Property Location



Location: 37.62677 -76.5891

Categories: H5, H4, H3, H2, H1, TS, TD, ET

Months: ALL

Years: ALL

El Niño-Southern Oscillation (ENSO): ALL

Minimum Pressure (mb) below: 1150

Include Unknown Pressure Rating: TRUE

Buffer Distance: 60

Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1883	Sep 04, 1883 to Sep 13, 1883	110	-1	H3
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3

## **APPENDIX 5**

### **Flood Prevention Project and its Relevance to Other Projects**

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

#### **Climate Change and Sea Level Rise (2009 to 2012)**

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

#### **Emergency Management – Hazard Mitigation Planning (2009 to Present)**

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

#### **Land and Water Quality Protection (2014)**

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

### **Department of Conservation and Recreation Stormwater Management (2014)**

The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

### **Stormwater Management-Phase II (2014)**

Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

### **Mathews County Rural Ditch Enhancement Study (2015)**

In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

### **Drainage and Roadside Ditching Authority (2015)**

This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

### **Living Shoreline Incentive Program (2016 to present)**

In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to \$10,000 can be financed for up to 5 years (60 months). Loans over \$10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is \$1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~\$500,000 in Virginia Resources Authority loan funding and ~\$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job \$14,000- \$180,000. Middle Peninsula PDC oversees all aspects (planning, financing, construction, and loan servicing) of these projects from cradle to grave.

#### **Mathews County Ditch Project – VCPC White Papers (2017)**

This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

#### **Mathews County Ditch Mapping and Database Final Report (2017)**

This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

#### **Virginia Stormwater Nuisance Law Guidance (2018)**

This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

#### **Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)**

Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

### **Fight the Flood Program (2020)**

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

## APPENDIX 6

### Match Commitment Letter

10/13/2021

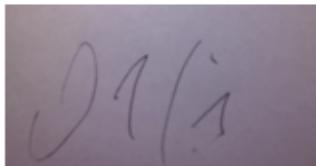
Virginia Department of Conservation and Recreation  
Attention: Virginia Community Flood Preparedness Fund  
Division of Dam Safety and Floodplain Management  
600 East Main Street, 24<sup>th</sup> Floor  
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 42 Bucks Landing, Urbanna Virginia, 23175. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at (757) 268-6479 or by email at L1vely6@aol.com.

Sincerely,

A handwritten signature in black ink, appearing to read "D G Lively".

David G. Lively

**Virginia Department of Conservation and Recreation  
Virginia Community Flood Preparedness Fund Grant Program**

**Application Form for Grant Requests for All  
Categories – Round 2**

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**I. ORGANIZATIONAL INFORMATION**

**Project Title:** Flood Prevention and Protection for Oakes Landing Road for Sandbach

**Name of Local Government:** Middle Peninsula Planning District Commission

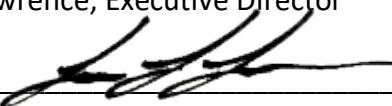
**Category of Grant Being Applied for (check one):**

- Capacity Building/Planning  
 Project  
 Study

**NFIP/DCR Community Identification Number (CID):** 510098

**If a state or federally recognized Indian tribe, Name of tribe:** NA

**Name of Authorized Official:** Lewis Lawrence, Executive Director

**Signature of Authorized Official:** 

**Mailing Address (1):** PO Box 286

**Mailing Address (2):** 125 Bowden Street

**City:** Saluda    **State:** VA    **Zip:** 23149

**Telephone Number:** (804) 758-2311

**Cell Phone Number:** (\_\_\_\_) \_\_\_\_\_

**Email Address:** llawrence@mppdc.com

**Contact Person (If different from authorized official):** Jackie Rickards, Senior Planning Project Manager

**Mailing Address (1):** PO Box 286

**Mailing Address (2):** 125 Bowden Street

**City:** Saluda    **State:** VA    **Zip:** 23149

**Telephone Number:** (804) 758-2311

**Cell Phone Number:** (215) 264-6451

**Email Address:** jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes  No

**Categories (select applicable project): Project Grants**  
**Project Grants (Check All that Apply)**

- Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- Wetland restoration.
- Floodplain restoration.
- Construction of swales and settling ponds.
- Living shorelines and vegetated buffers.
- Structural floodwalls, levees, berms, flood gates, structural conveyances.
- Storm water system upgrades.
- Medium and large-scale Low Impact Development (LID) in urban areas.
- Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- Dam restoration or removal.
- Stream bank restoration or stabilization.
- Restoration of floodplains to natural and beneficial function.
- Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

**Location of Project (Include Maps):** Middlesex County - Please see the attached corresponding maps for this application.

**NFIP Community Identification Number (CID#):** 510098

**Is Project Located in an NFIP Participating Community?**  Yes  No

**Is Project Located in a Special Flood Hazard Area?**  Yes  No

**Flood Zone(s) (If Applicable):** AE Zone

**Flood Insurance Rate Map Number(s) (If Applicable):** 51119C0180E

**Total Cost of Project:** \_\_\_\_\_ \$24,963 \_\_\_\_\_

**Total Amount Requested:** \_\_\_\_\_ \$17,475 \_\_\_\_\_

## **II. SCOPE OF WORK NARRATIVE**

### ***INTRODUCTION.***

This proposal requests funding for the development of a nature-based shoreline design solution and draft Joint Permit Application to reduce the impacts of storm events, flooding, and wetland loss. The project is located at 1387 Oakes Landing Road, Saluda, VA 23149 (-76.5831, 37.62254). The property was purchased in 2019 and has experienced a number of issues (length of shoreline in approximately 200 feet). When the property was purchased, there was an undercut like a cave along the shoreline. Some of it has subsequently caved in. When it rains hard, the hill is eroding from the top; now lots of roots are showing on the hill. Several trees have come down and more are in danger of falling. The location is on Urbanna Creek which experiences lots of wave action from boating traffic. Mr. Michael L. Vanlandingham, the Shoreline Engineer with the Department of Conservation and Recreation Division of Soil and Water Conservation, Eastern Area Regional Office, has visited the property and his recommendation is included and incorporated into the proposal.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered “acts of God,” and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought to be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards

pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

#### ***PROJECT INFORMATION.***

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

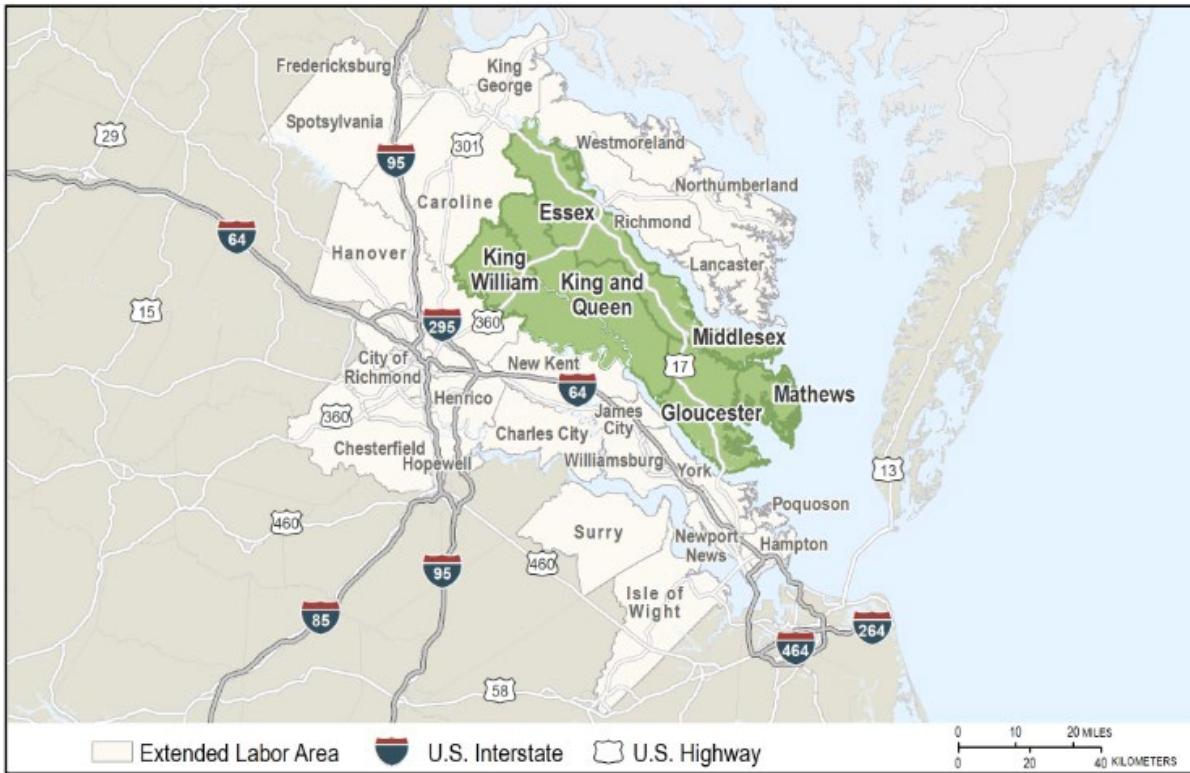
Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living

shoreline on a private property located on Oakes Landing Road in Middlesex County. This project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Middlesex County. See the community support letter in **Appendix 1**.

- A link or to the Middle Peninsula PCD's Approved Regional Flood Resiliency Plan (2021) can be found at: [https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8\\_19\\_DCR-packet\\_letterandplan.pdf](https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf).
  - Please see Page 3-5, which notes the need to respond to emerging flood challenges.
- A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at:  
[https://www.mppdc.com/articles/reports/AHMP\\_2016\\_FEMA\\_Approved\\_RED.pdf](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf).
  - Please see Section 4 (page 25), which includes historical hazard data within the region.
- A link to the County of Middlesex's Comprehensive Plan can be found at:  
<https://www.co.middlesex.va.us/252/Comprehensive-Plan>.

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

**Figure 1. Middle Peninsula Geographic Area**

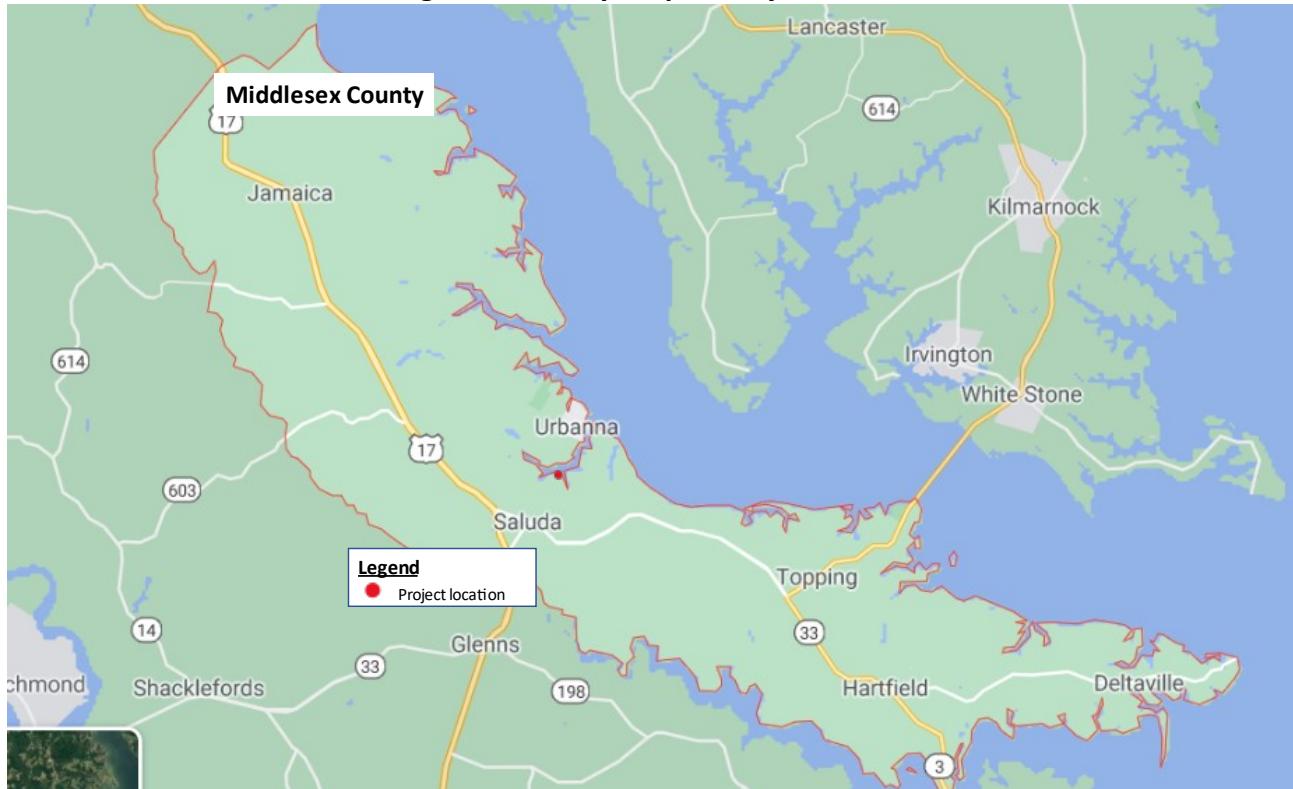


**Figure 2. Middle Peninsula Population**

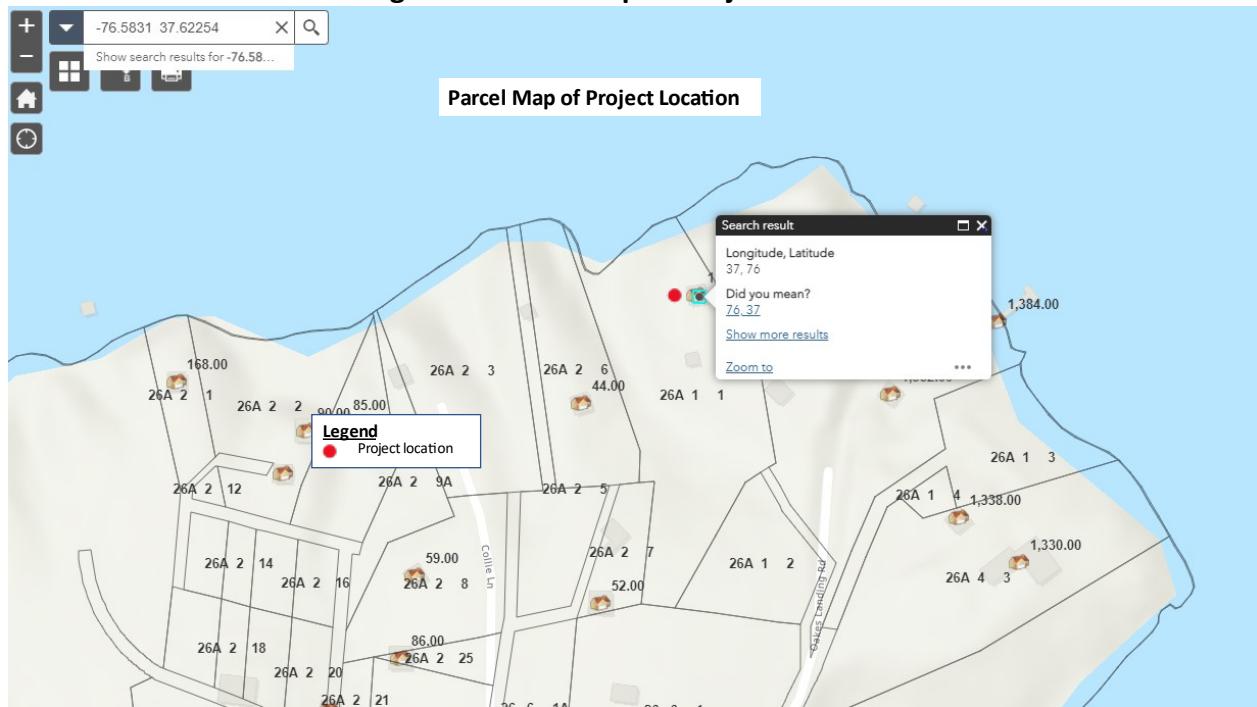
CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	<b>MPPDC Total</b>	<b>92,886</b>

This project proposes to design a nature-based solution on one private property on Oakes Landing Road in Middlesex County as found in **Figures 3 and 4**.

**Figure 3. County Map of Project Location**



**Figure 4. Parcel Map of Project Location**



Middlesex County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and

water-based economy. The County is comprised of 130 square miles of land 80 miles of shorelines. Based on 2020 Census Data, Middlesex County's population totals 10,625 which. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 5**, the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

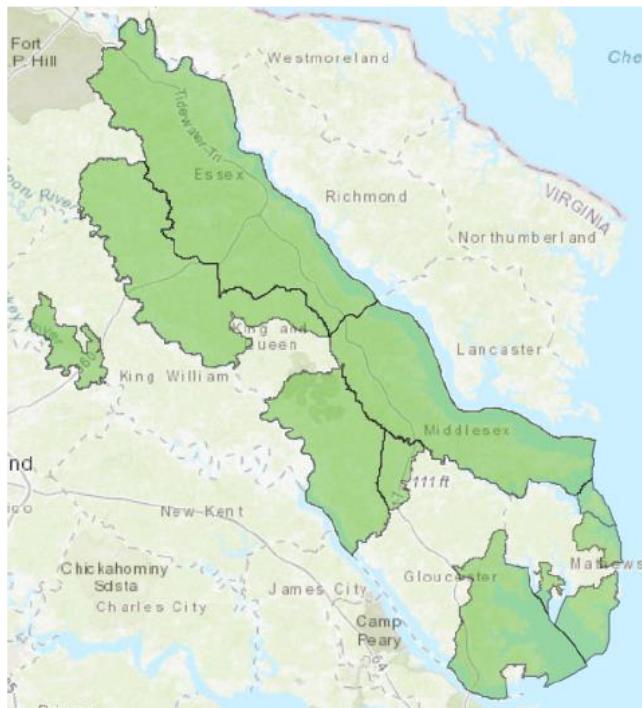
**Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas**

Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	\$51,954	\$57,438	\$64,237	\$66,987	\$63,982	\$70,537
Eligible Household income	\$41,563	\$45,950	\$51,389	\$53,590	\$51,186	\$56,430

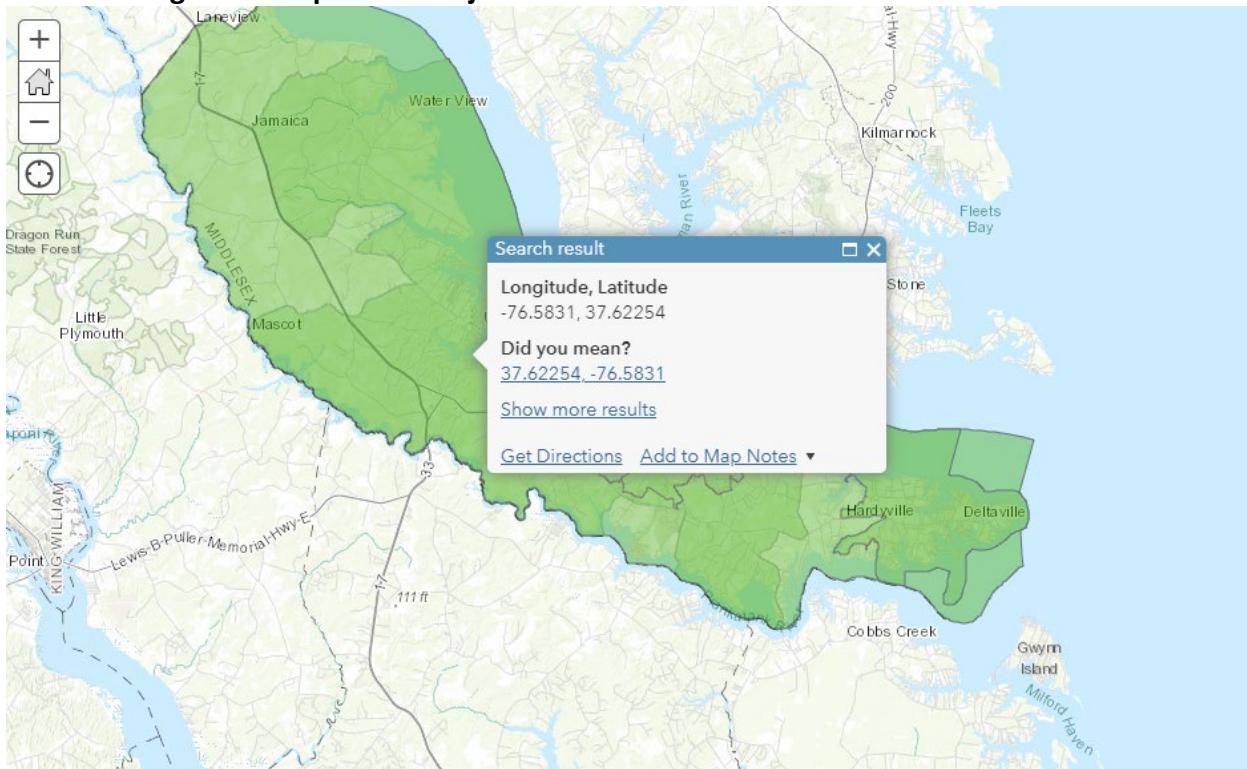
**Note:** Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.



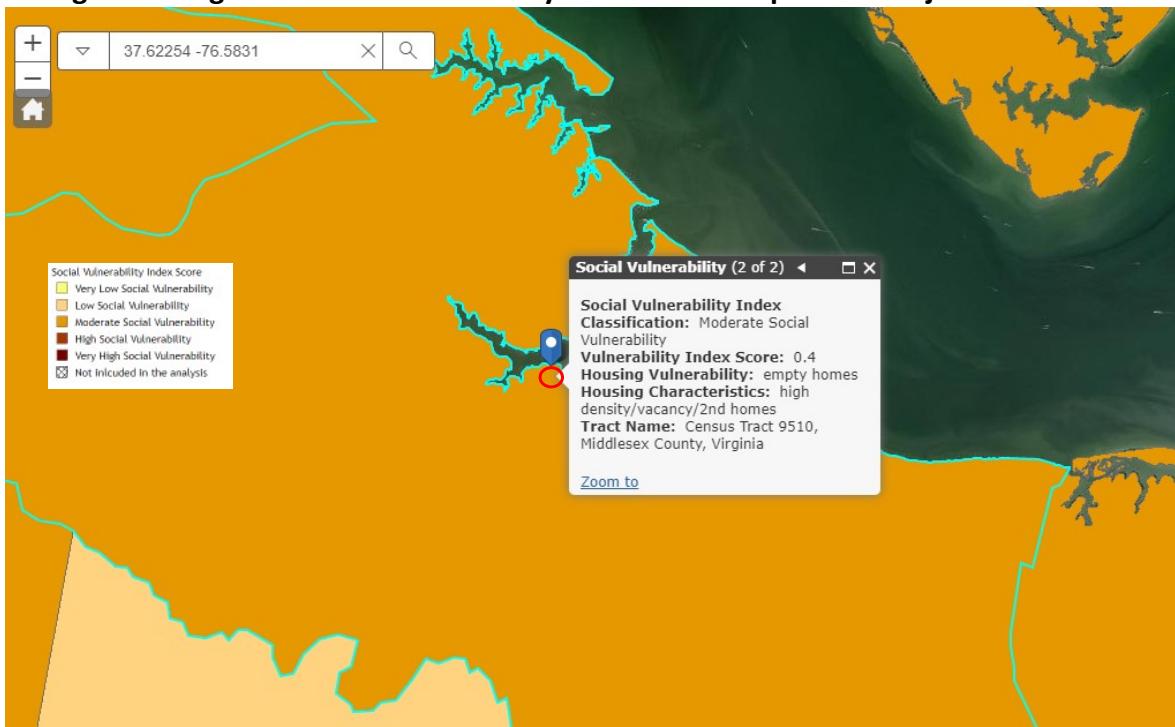
Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

**Figure 6. Map of the Project Location within the Green Low-Income Area**

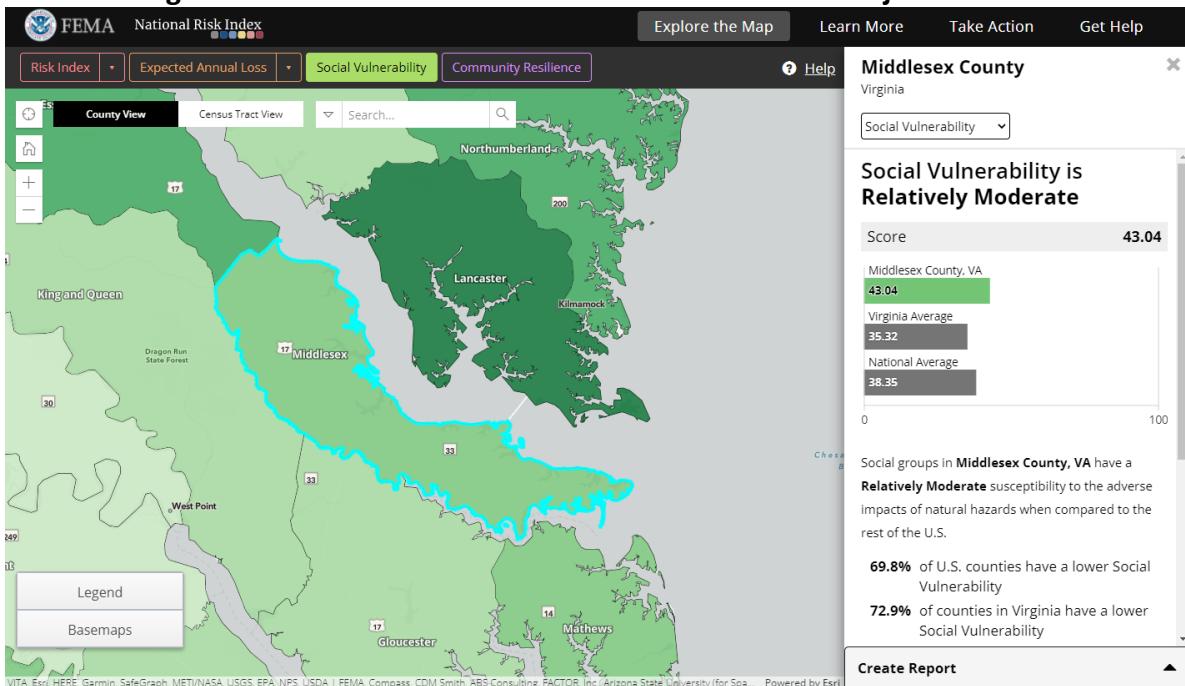


According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (<https://hazards.fema.gov/nri/map>), which assesses vulnerability at a census tract level, the social vulnerability of the County is considered to be a relatively moderate level of vulnerability as seen in **Figure 8**.

**Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location**



**Figure 8. FEMA Nation Risk Index of Census Track of Project Location**



The project is located at 1387 Oakes Landing Road, Saluda, VA 23149 (-76.5831, 37.62254). The property was purchased in 2019 and has experienced a number of issues (length of shoreline in approximately 200 feet). When the property was purchased, there was an undercut like a cave along the shoreline. Some of it has subsequently caved in. When it rains hard, the hill is eroding

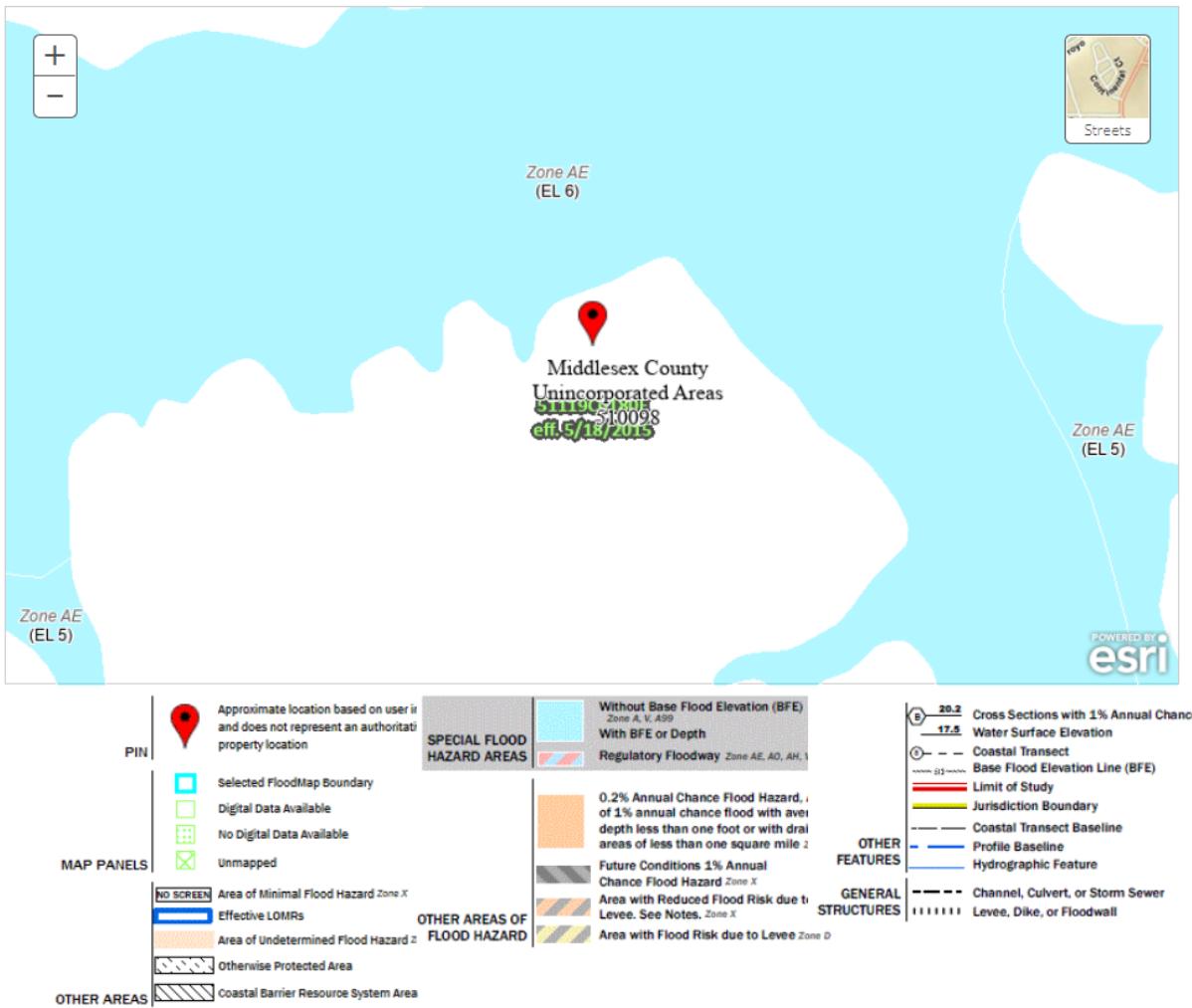
from the top; now lots of roots are showing on the hill. Several trees have come down and more are in danger of falling. The location is on Urbanna Creek and experiences lots of wave action from boating traffic. Therefore, Mr. Michael L. Vanlandingham, the Shoreline Engineer with the Department of Conservation and Recreation Division of Soil and Water Conservation, Eastern Area Regional Office, has visited the property and his letter of recommendation is included as **Appendix 2**. This recommendation is valued highly, especially the permitting process in following the recommendation of the Shoreline Engineer to construct a riprap marsh sill and breakwater. See accompanying pictures of the site conditions below.



Please see **Appendix 3** for additional property photos.

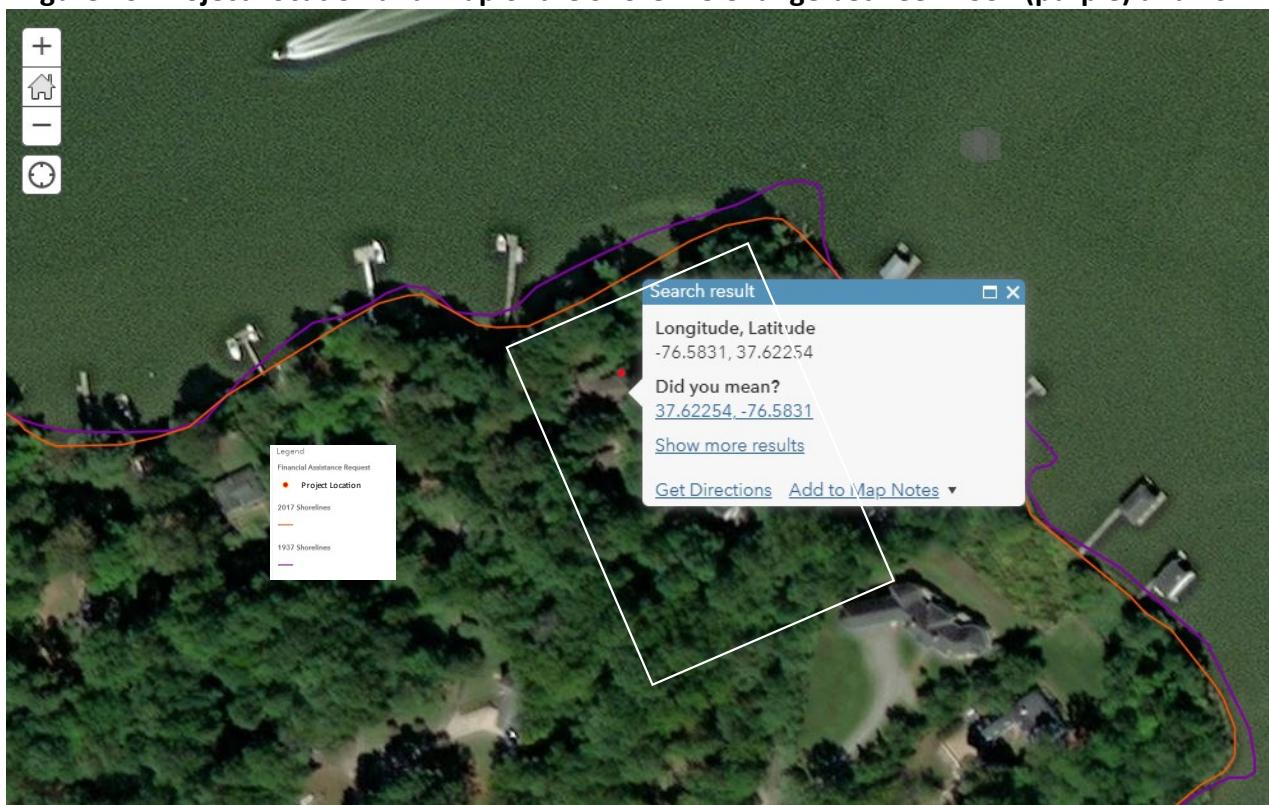
This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 4** for the FIRMettes (last mapped 5/18/2015).

**Figure 9: Map of FEMA Flood Zones**



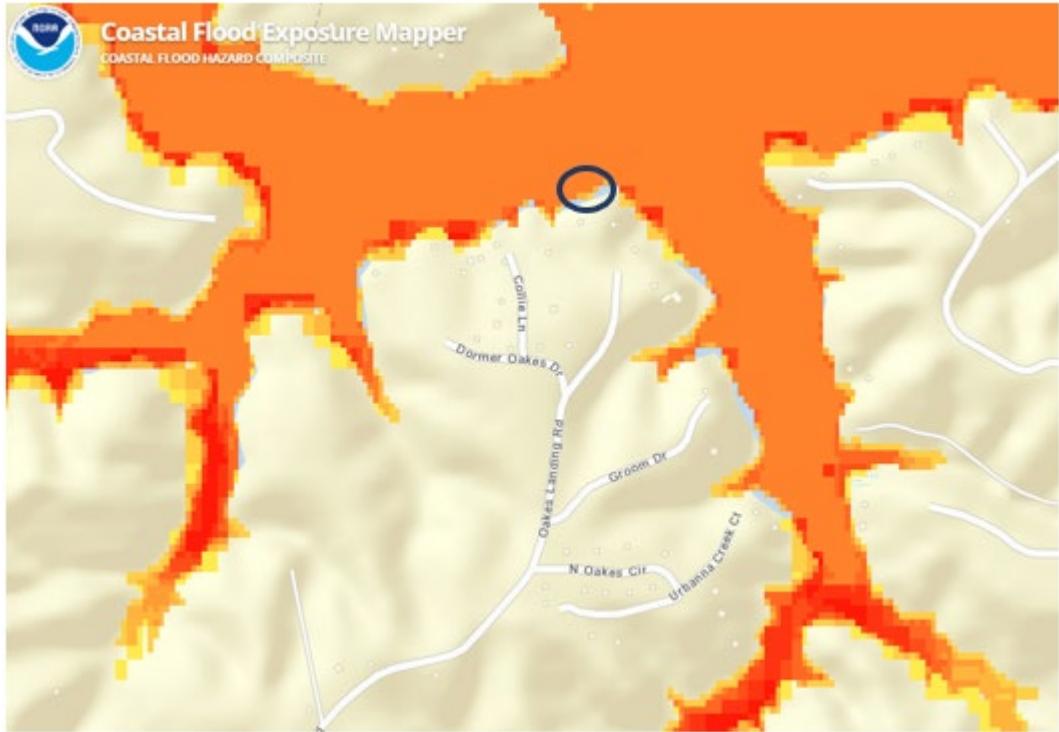
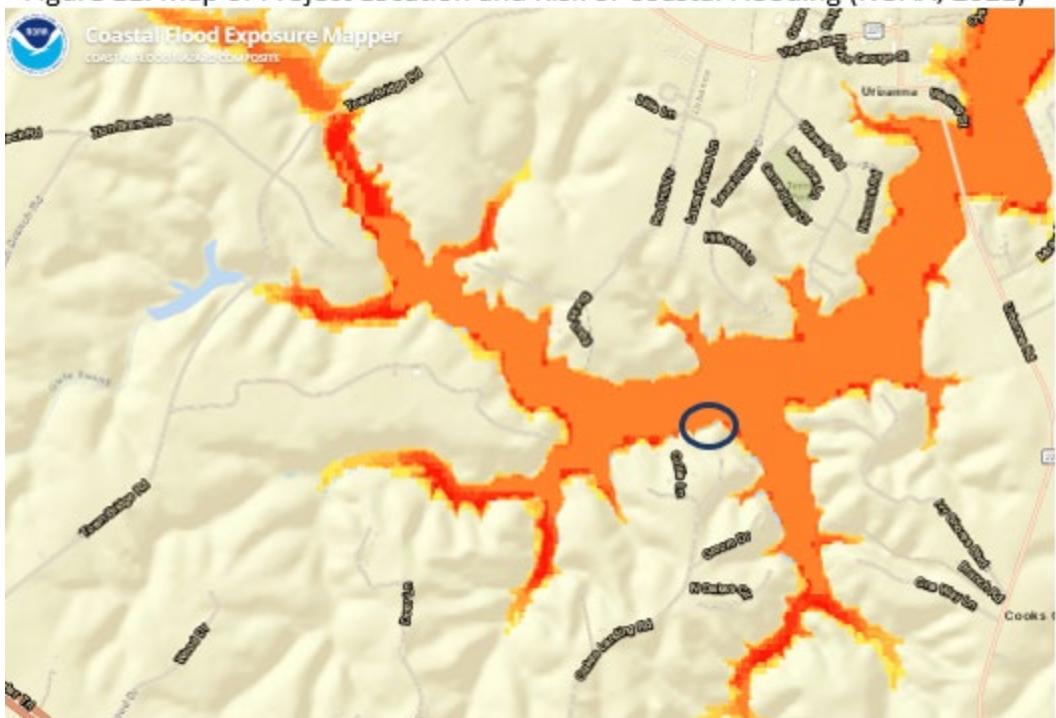
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 26,145.2 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 5** lists 75 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

**Figure 10. Project Location and Map of the Shoreline Change between 1937 (purple) and 2017**



Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 11**.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



For more information about this project area please see:

- A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: [https://www.mppdc.com/articles/reports/AHMP\\_2016\\_FEMA\\_Approved\\_RED.pdf](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf)
- A link to Middlesex County's current floodplain ordinance can be found at: <https://www.co.middlesex.va.us/DocumentCenter/View/422/Floodplain-Management-PDF>.

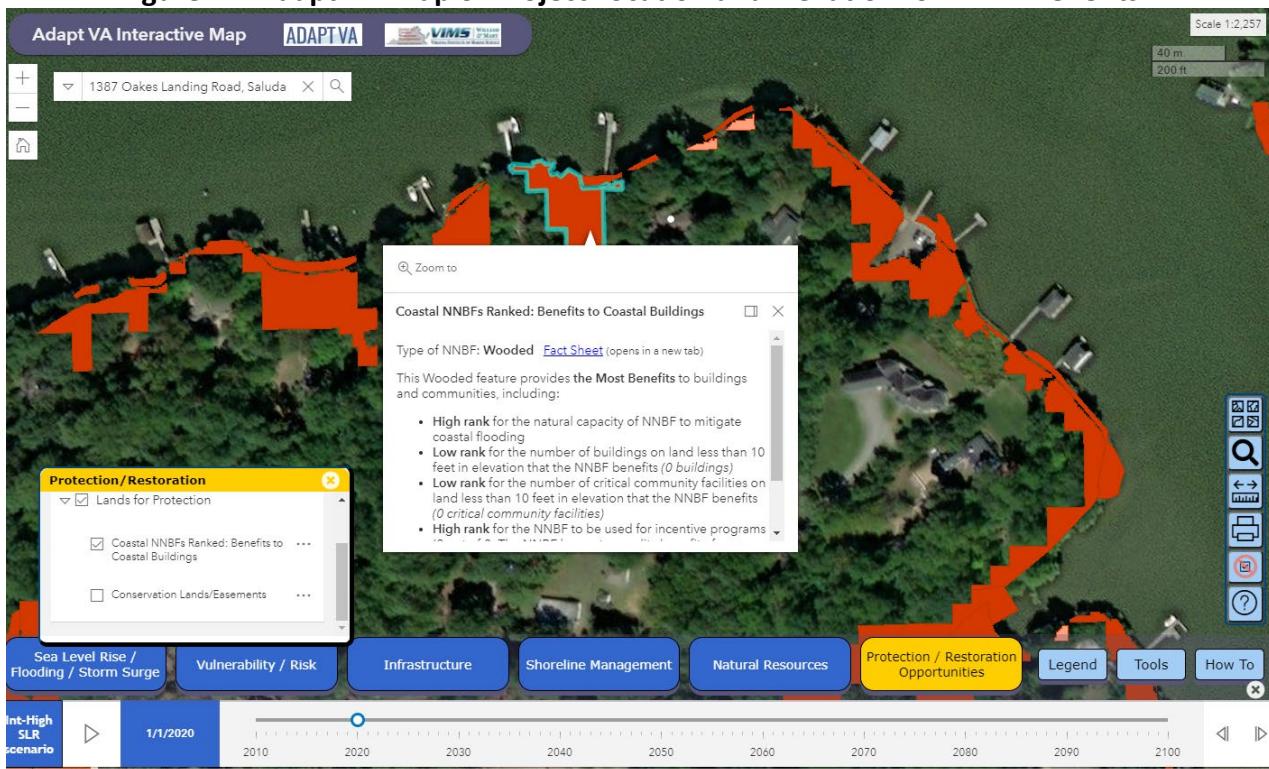
### **COMMUNITY SCALE BENEFITS.**

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature- based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in **Figure 12**. All Round 2 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

**Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits**



### **CONCERNING ADVERSE IMPACTS.**

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, the Middle Peninsula PDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

### **ALTERNATIVES.**

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed \$3 million.

### **GOALS AND OBJECTIVES.**

The Code of Virginia § 28.2-104.1. defines "Living shoreline" as *shoreline management practice*

*that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.
- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as recommended by SEAS, as the installation of a nature-based solution will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Middlesex County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. For example, a proposed project of 150 linear feet of living shoreline has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300

pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

Goal 3: Transferability to other communities.

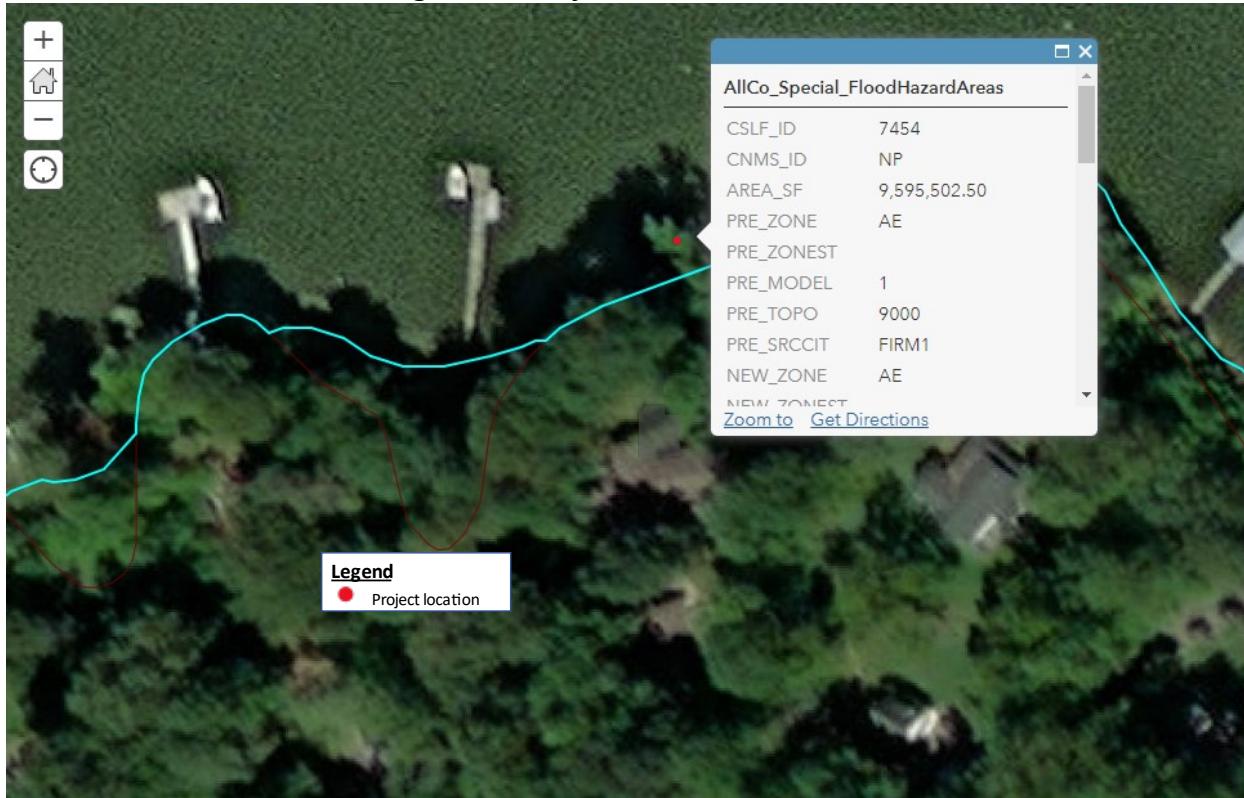
- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

#### ***APPROACH, MILESTONES, AND DELIVERABLES.***

The proposed project is to design a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**. In previous efforts the landowner has worked with a contractor to receive a cost estimate and summary (**Appendix 6**) for potential nature-based solutions to stabilize their shoreline; however more work needs to be done in order to select the appropriate nature-based or hybrid design that best suits the property.

**Figure 13. Project Flood Hazard Area**



Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	M1	M2	M3	M4	M5	M6
<b>Phase 1 – Environmental Scan</b>						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
<b>Phase 2 – Solution Design</b>						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
<b>Phase 3 – Strategic Implementation</b>						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

#### ***RELATIONSHIP TO OTHER PROJECTS.***

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
  - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

#### Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 7**.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

#### **MAINTENANCE PLAN.**

A maintenance plan is not applicable in this application. The proposed project is to develop a

nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

**CRITERIA.**

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe)?

The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link:

[https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8\\_19\\_DCR-packet\\_letterandplan.pdf](https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf).

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 8**.

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

**SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.**

<b>Applicant Name:</b>		Middle Peninsula Planning District Commission	
<b>Eligibility Information</b>			
Criterion	Description		Check One
<b>1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?</b>			
Yes	Eligible for consideration		X
No	Not eligible for consideration		
<b>2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?</b>			
Yes	Eligible for consideration under all categories		X
No	Eligible for consideration for studies, capacity building, and planning only		
<b>3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?</b>			
Yes	Eligible for consideration		X
No	Not eligible for consideration		
<b>4. Has this or any portion of this project been included in any application or program previously funded by the Department?</b>			
Yes	Not eligible for consideration		
No	Eligible for consideration		X
<b>5. Has the applicant provided evidence of an ability to provide the required matching funds?</b>			
Yes	Eligible for consideration		X
No	Not eligible for consideration		
N/A	Match not required		

Project Eligible for Consideration		X Yes <input type="checkbox"/> No
Applicant Name:	Middle Peninsula Planning District Commission	
Scoring Information		
Criterion	Point Value	Points Awarded
<b>6. Eligible Projects (Select all that apply)</b>		
<b>Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.</b>		
<b>1.a.</b> Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	<b>50</b>	
<input type="checkbox"/> Wetland restoration, floodplain restoration <input type="checkbox"/> Living shorelines and vegetated buffers. <input type="checkbox"/> Permanent conservation of undeveloped lands identified as having flood resiliencevalue by <i>ConserveVirginia</i> Floodplain and Flooding Resilience layer or a similar datadriven analytic tool <input type="checkbox"/> Dam removal <input type="checkbox"/> Stream bank restoration or stabilization. <input type="checkbox"/> Restoration of floodplains to natural and beneficial function. <input type="checkbox"/> Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	<b>45</b>	
<b>1.b.</b> Any other nature-based approach	<b>40</b>	40
All hybrid approaches whose end result is a nature-based solution	<b>35</b>	
All other projects	<b>25</b>	
<b>7. Is the project area socially vulnerable? (Based on <a href="#">ADAPT VA's Social Vulnerability Index Score.</a>)</b>		
Very High Social Vulnerability (More than 1.5)	<b>15</b>	
High Social Vulnerability (1.0 to 1.5)	<b>12</b>	
Moderate Social Vulnerability (0.0 to 1.0)	<b>8</b>	8
Low Social Vulnerability (-1.0 to 0.0)	<b>0</b>	
Very Low Social Vulnerability (Less than -1.0)	<b>0</b>	
<b>8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?</b>		
Yes	<b>10</b>	
No	<b>0</b>	0

<b>9. Is the proposed project in a low-income geographic area as defined in this manual?</b>		
Yes	<b>10</b>	10
No	<b>0</b>	
<b>10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?</b>		
Yes	<b>5</b>	5
No	<b>0</b>	
<b>11. Does this project provide “community scale” benefits?</b>		
Yes	<b>20</b>	20
No	<b>0</b>	
<b>Total Points</b>		<b>83</b>

**SCOPE OF WORK CHECKLIST.**

<b>Scope of Work Narrative</b>	
<b>Supporting Documentation</b>	<b>Included</b>
Detailed map of the project area(s) (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
FIRMette of the project area(s) (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Historic flood damage data and/or images (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current floodplain ordinance	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current hazard mitigation plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current comprehensive plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Social vulnerability index score(s) for the project area from <a href="#">ADAPT VA's Virginia Vulnerability Viewer</a>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
If applicant is not a town, city, or county, letters of support from affected communities	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
<b>Budget Narrative</b>	
<b>Supporting Documentation</b>	<b>Included</b>
Authorization to request funding from the Fund from governing body or chief executive of the local government	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Signed pledge agreement from each contributing organization	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

### **III. BUDGET NARRATIVE**

For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply: For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

- ***Estimated total project cost:*** \$24,963
- ***Amount of funds requested from the Fund:*** \$17,475

Sandbach			Budget (Cat. D)					
			Applicant 3					
Personnel Salaries/Wages			PDC %	Match %	Annual Salary	DCR	Owner	Total
Staff			16.75%	4.19%	\$70,000	\$1,373	\$588	\$1,961
Personnel						\$1,373	\$588	\$1,961
e, 26.21% salaries;						\$360	\$154	\$514
<b>Total Personnel</b>						\$1,733	\$742	\$2,475
<b>Direct Costs: SubAward/SubContract Agreements</b>						<b>70%</b>	<b>30%</b>	
<i>Nature Based design- GeoTechnical engineering evaluation</i>						\$15,000		
<i>Legal bid docs and procurement prep</i>						\$1,500	\$4,500	\$15,000
0						\$1,050	\$450	\$1,500
0						\$0	\$0	\$0
0						\$0	\$0	\$0
0						\$0	\$0	\$0
0						\$0	\$0	\$0
0						\$0	\$0	\$0
<i>Project financial services (50000/50500/55900/56100)</i>						\$3,658	\$2,561	\$1,097
<i>Facility services (52100/52200/52400/54200/54500)</i>						\$1,043	\$730	\$313
<i>Communication services (52250/52255/55150/57100/57300)</i>						\$329	\$230	\$99
<i>Data services (53100/53101/53200/57900)</i>						\$99	\$69	\$30
<i>Material services (53400/53500/57200/57500)</i>						\$388	\$271	\$116
<i>Consulting services (55100/56300/56400/56700)</i>						\$472	\$330	\$142
						<b>\$22,488</b>		
<b>SUBTOTAL: Direct Costs</b>							<b>\$17,475</b>	<b>\$7,488</b>
<b>Total</b>							<b>\$17,475</b>	<b>\$7,488</b>
<b>Other Match:</b>								
<i>Source of Match</i>							\$0	\$0
<b>GRAND TOTAL</b>							<b>\$17,475</b>	<b>\$7,488</b>

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

## Authorization to request for funding:



### COMMISSIONERS

10/19/21

**Essex County**  
*Hon. Edwin E. Smith, Jr.*  
*Hon. John C. Magruder*  
*Ms. Sarah Pope*  
*Mr. Michael A. Lombardo*

**Town of Tappahannock**  
*Hon. Fleet Dillard*

**Gloucester County**  
*Hon. Ashley C. Chriscoe  
(Vice-Chairman)*  
*Hon. Michael R.  
Winebarger*  
*Dr. William G. Reay*  
*Mr. J. Brent Fedors*

**King and Queen County**  
*Hon. Sherrin C. Alsop*  
*Hon. R. F. Bailey*  
*Mr. Thomas J.  
Swartzwelder  
(Chairman)*

**King William County**  
*Hon. Ed Moren, Jr.*  
*Hon. Travis J. Moskalski  
(Treasurer)*  
*Mr. Otto O. Williams*

**Town of West Point**  
*Hon. James Pruett*  
*Mr. John Edwards*

**Mathews County**  
*Hon. Michael C. Rowe*  
*Hon. Melissa Mason*  
*Mr. Thornton Hill*

**Middlesex County**  
*Hon. Wayne H. Jessie, Sr.*  
*Hon. Reggie Williams, Sr.*  
*Mr. Gordon E. White*

**Town of Urbanna**  
*Hon. Marjorie Austin*

**Secretary/Director**  
*Mr. Lewis L. Lawrence*

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

REF: Authorization to request for funding

Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

**Signed pledge agreement from each contributing organization:**

|October 4, 2021

Virginia Department of Conservation and Recreation  
Attention: Virginia Community Flood Preparedness Fund  
Division of Dam Safety and Floodplain Management  
600 East Main Street, 24<sup>th</sup> Floor  
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 1387 Oakes Landing Road I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 732.539.4467 or by email at [npsandbach@gmail.com..](mailto:npsandbach@gmail.com)

Sincerely,

*Norm Sandbach*

Norman Sandbach

## I. SUPPORTING DOCUMENTATION

- Letters of support from all affected local government
- Detailed map of the project area(s)
- FIRMette of the project area(s)
- Historic flood damage data and/or images

## APPENDIX 1

### Community Support Letter

Matthew L. Walker  
County Administrator  
877 General Puller Hwy  
Saluda, VA 23149  
804-758-4330  
[m.walker@co.middlesex.va.us](mailto:m.walker@co.middlesex.va.us)



Betty S. Muncy  
Assistant County Administrator

Ann Marie S. Ricardi  
Assistant County Administrator

#### County of Middlesex Office of the County Administrator

July 20, 2021

Lewis L Lawrence, Executive Director  
Middle Peninsula Planning District Commission  
P.O. Box 286  
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Mr. Lawrence:

Middlesex County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents are part of our necessary governmental functions and are consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood (FTF) Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC FTF Program provide the operational and administrative oversight for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs assist to secure the tax base of coastal localities and reduce the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types.

The FTF and the Living Shoreline programs exist to help the owners of flood-prone properties access programs and services to better manage challenges posed by flood water and to direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents, to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

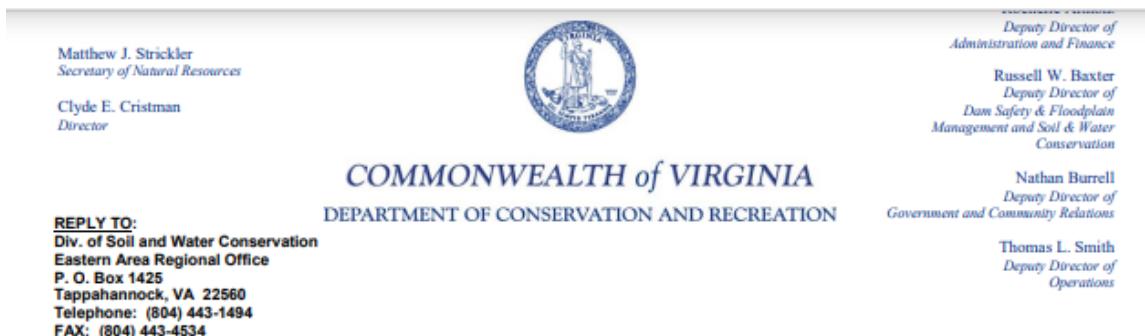
Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-758-4330.

Respectfully,

Matt Walker  
County Administrator

## APPENDIX 2

### DCR Site Visit Letter



**REPLY TO:**  
Div. of Soil and Water Conservation  
Eastern Area Regional Office  
P. O. Box 1425  
Tappahannock, VA 22560  
Telephone: (804) 443-1494  
FAX: (804) 443-4534

DEPARTMENT OF CONSERVATION AND RECREATION



### COMMONWEALTH of VIRGINIA

August 12, 2021

Mrs. Beth Sandbach  
P.O. Box 1444  
Saluda, VA 23149

RE: SEAS# T22003

Dear Mrs. Sanbach:

On June 3, 2021, I met with you and your husband, at your property, on Urbanna Creek in Middlesex County. The site visit was in response to your request for advisory assistance concerning a shoreline erosion problem.

The Shoreline Studies Program, at the Virginia Institute of Marine Science, has created a Shoreline Evolution Map for tidal localities in Virginia. The map was created using aerial photography from 1937 to 2009. The map shows shoreline change over time. Based upon that map, the historical erosion rate for your area is less than 1 foot per year. The erosion on your property appears to be caused by elevated water levels and waves associated with storms. The following recommendations are made as a result of the site visit and subsequent analysis of the problem:

1. If you wish to pursue options to stabilize the bank, a geotechnical engineering evaluation should be conducted to determine the stability of the soil types and hydrology of the site. Any strategy to stabilize the slope should address the possible problem of the groundwater seeps that occur along the sand/clay interface of the slope.
2. The trees and shrubs growing on the bank and within 20 feet of the bank edge should be selectively cut or trimmed. Trees undermined by erosion displace large amounts of soil when they fall. Tree removal should decrease the weight on the bank and reduce the chance of sloughing. The additional sunlight exposure should stimulate growth of the upland ground cover and marsh fringe. Before cutting any trees, please contact Middlesex County at (804) 758-3382 for information concerning tree removal restrictions under the Chesapeake Bay Preservation Act.
3. Bank grading may not be practical due to the bank height, location of the house and depth of the lot. Although grading the entire bank may be impractical or cost prohibitive, portions of the bank may be selectively graded. In conjunction with or as an alternative to bank grading, a properly designed and constructed retaining wall system may be installed.
4. To prevent further bank erosion, we recommend a properly designed and constructed riprap (large rock) revetment. The structure should be installed to minimize encroachment beyond the mean high

600 East Main Street, 24<sup>th</sup> Floor | Richmond, Virginia 23219 | 804-786-6124

*State Parks • Soil and Water Conservation • Outdoor Recreation Planning  
Natural Heritage • Dam Safety and Floodplain Management • Land Conservation*

Mrs. Beth Sandbach  
Page 2  
August 12, 2021

water position. The riprap should be constructed on a 2:1 (horizontal/vertical) slope or flatter. A minimum of two layers of armor rock should be used. Each armor rock should weigh a minimum of 50 pounds. The toe of the riprap should be buried a minimum of 1 feet below the mean low water elevation. An alternative to the buried toe is a riprap apron. The apron consists of 2 layers of armor rock extending a minimum of 2 feet onto the bottom. A layer of filter cloth should be used under and behind the riprap. The riprap should be extended inland or properly connected to neighboring structures to prevent erosional flanking. Lists of filter cloth and riprap suppliers have been enclosed. See the enclosed cross-sectional view of a typical riprap revetment.

The above recommendations are made in my capacity as an advisory agent in shoreline erosion control matters. The suggestions should not be considered as binding you to any particular course of action, as they are intended to indicate what we think would be the best solution in terms of cost and effectiveness. Our examination of the site or this report does not constitute permission by the Commonwealth, or its agencies, to proceed with implementation of control measures. Permits from State and Federal agencies are generally required for shoreline modification.

You should also be aware that success in shoreline erosion control cannot be guaranteed, as there are many variables involved. In this regard, we suggest care in selecting a contractor. Our comments concerning construction are intended as guidelines developed from our experience in viewing structures that have been successful or have failed.

If you decide to construct a control measure, an assessment of the impacts of the project on the environment will be given by the regulatory agencies. Our advice is given with the idea of reducing environmental impacts associated with our recommendations. Although this has been considered in our recommendations, the permit reviewing agencies may desire additional information or measures.

Services available through this office include: review of the permit application; review of design and construction plans; and inspection of structures under construction when plans have been reviewed by this office. We recommend that a copy of this report be attached to the permit application.

If we may be of further assistance or if you have any questions, please let me know.

Sincerely,



Michael L. Vanlandingham  
Shoreline Engineer

Enclosures (5)

## APPENDIX 3

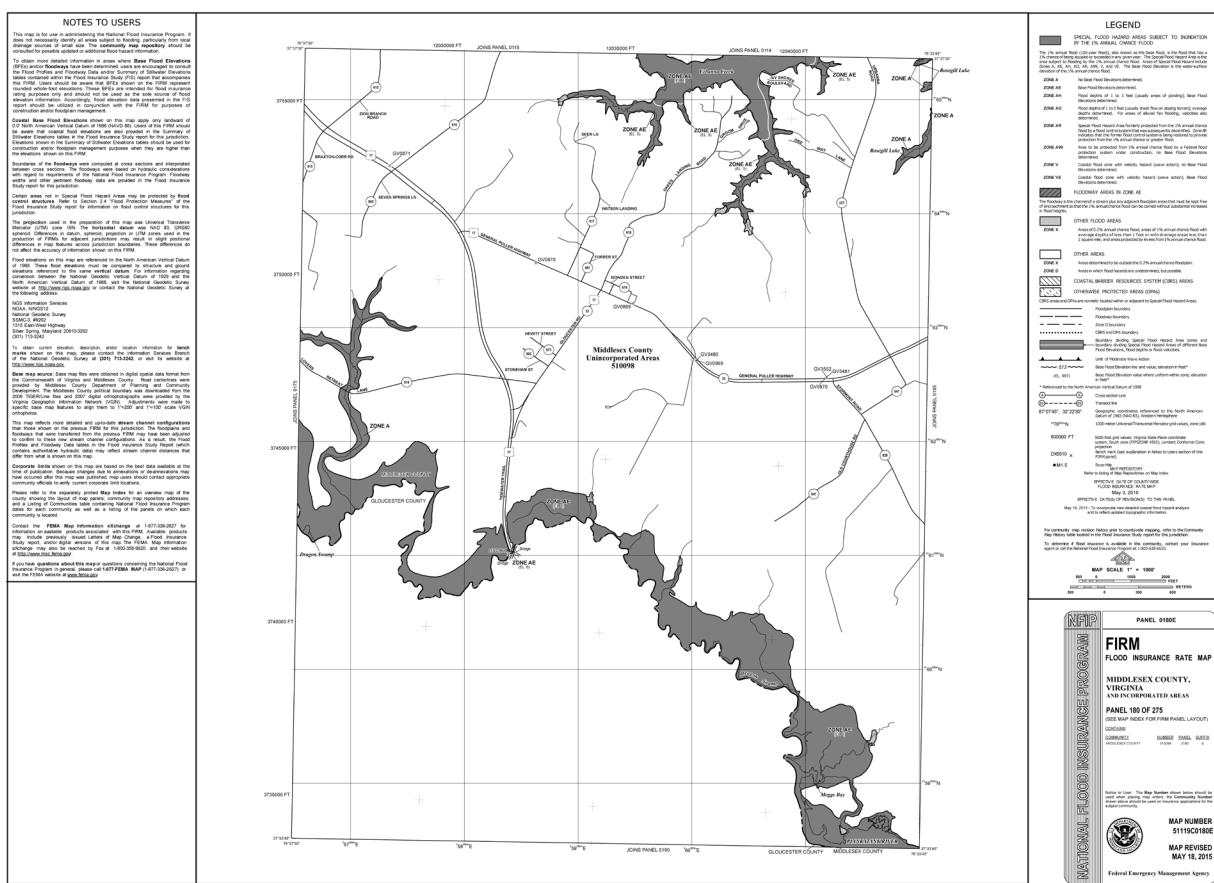
### Additional Property Photos



## **APPENDIX 4**

## Project Location FIRMette

(FIRMette #: 51119C0180E)



## APPENDIX 5

### List of Historic Hurricanes Impacting the Property Location



Location: 37.62254 -76.5831

Categories: H5, H4, H3, H2, H1, TS, TD, ET

Months: ALL

Years: ALL

El Niño-Southern Oscillation (ENSO): ALL

Minimum Pressure (mb) below: 1150

Include Unknown Pressure Rating: TRUE

Buffer Distance: 60

Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1883	Sep 04, 1883 to Sep 13, 1883	110	-1	H3
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

## APPENDIX 6

Estimate



Chris Davis <chris.readyreef@gmail.com>  
To: Beth Sandbach

[Reply](#) [Reply All](#) [Forward](#) [...](#)  
Mon 11/23/2020 7:49 AM



I have attached some sketches of various configurations I have proposed to another customer.  
It shows large and small reefs, Envirolok bags, combinations, etc.  
This cliff is not as large as yours, not as undercut, and without the big bare slope.  
The various configurations are all in the same ballpark. I do think an all Envirolok bag solution is not optimum for you due to high boat wake activity. We will break wave energy with marsh grass in front of the bags and steep slope.

I may be able to reduce with more precise measurements (especially re Envirolok bags and sand feed from bank top)

Using 2' high reefs and 1.5' of sand backfill.

Reefs: \$15,500

Envirolok bags: \$20,000

Sand: \$1470

Install sand (from dump pile on driveway): \$3500

Plant Living Shoreline: \$2052

Clear bank, including big downed tree and haul away: \$2500

Equipment rentals and fees: \$3000

(Barge, crane truck, sand conveyor/feeder, Bobcat, Haul trucks and trailers, slurry piping, pumps, sand chutes, material pallets, yard mats)

Overhead and profit: \$14354

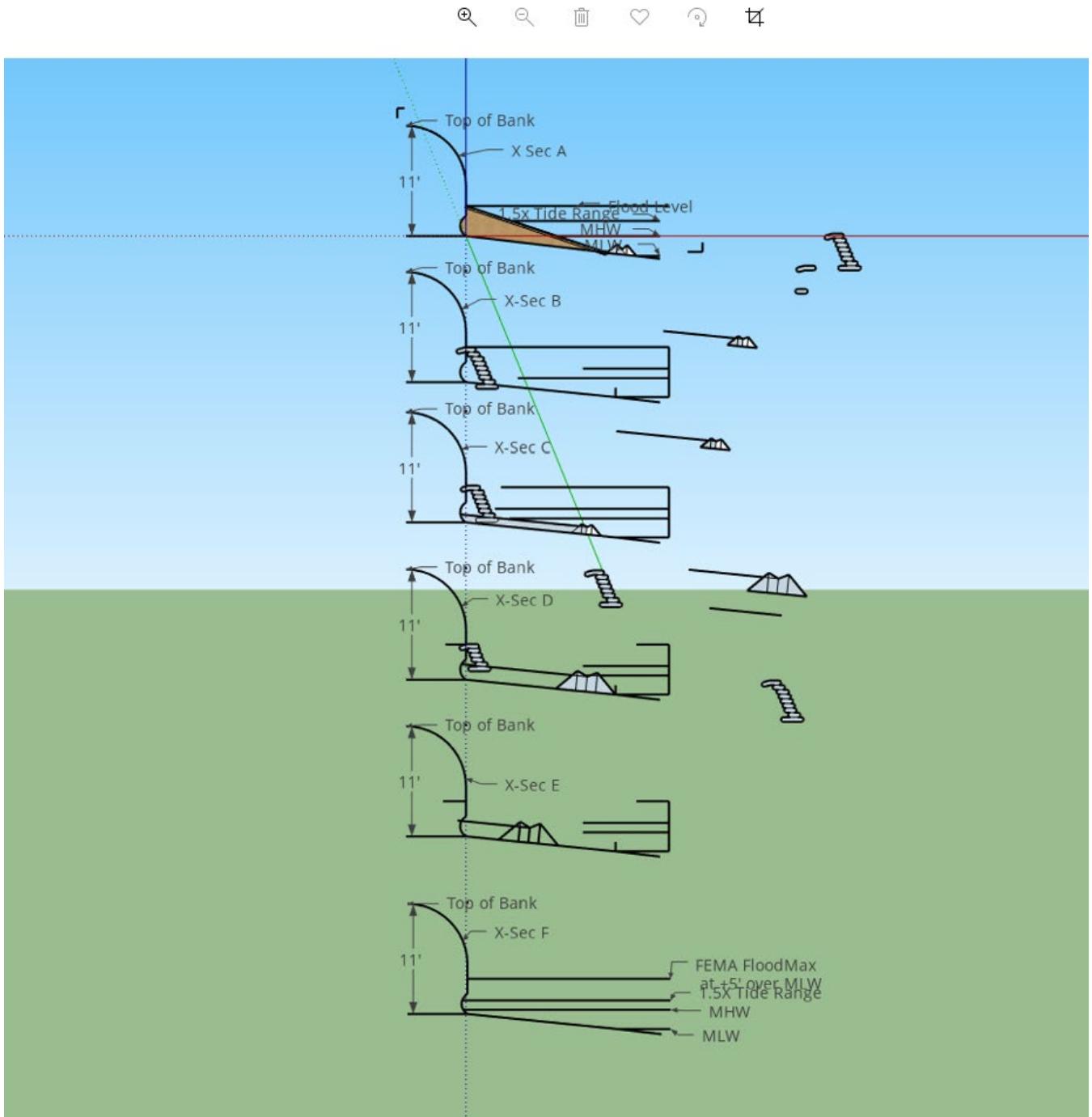
Total: \$62,201

Lawn repair not included

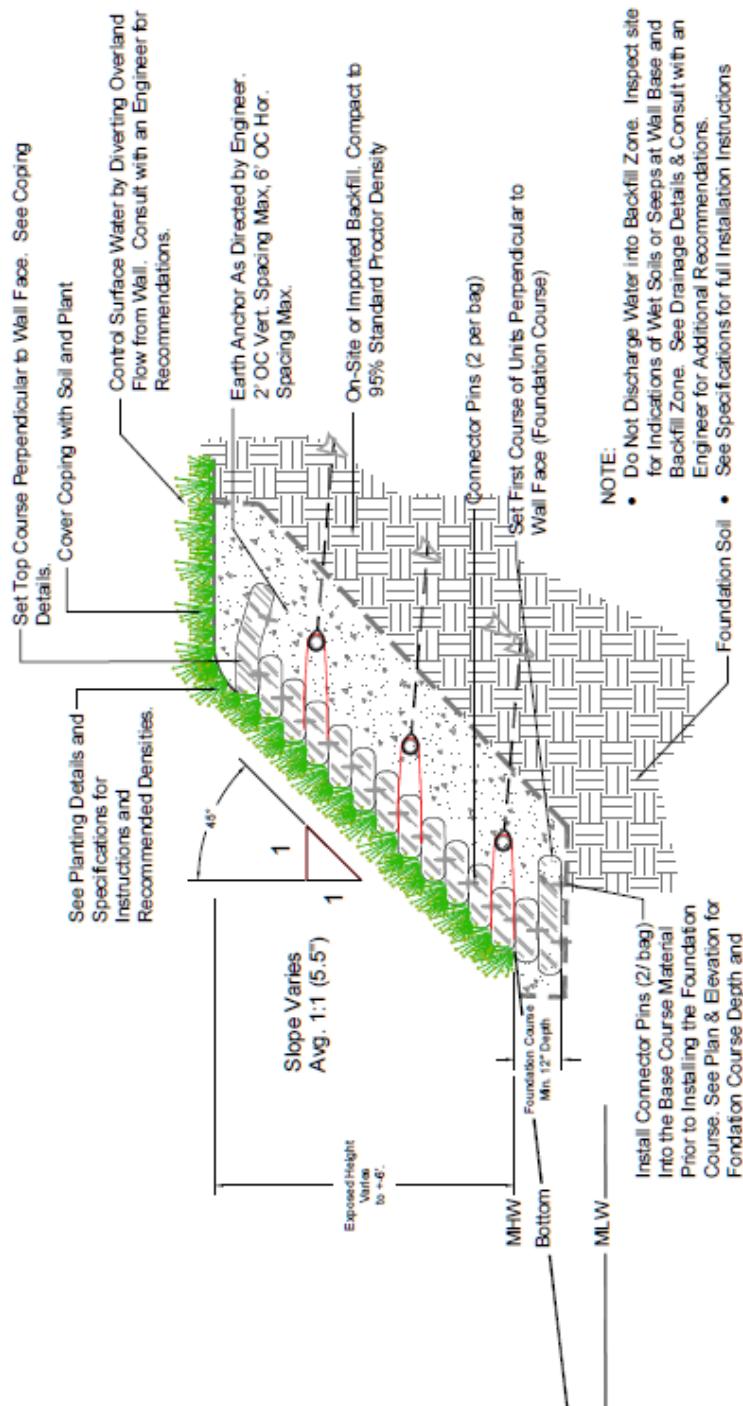
Permit and Agent Fee: \$800 (does not include Middlesex County Wetlands fee, about \$275).

This project could be done in phases. It could earn the \$15,000 grant money if that is restored , and it would be eligible for the low cost (at prime rate) living shoreline loans from the MPPD. The grant possibility is complex, but it might be possible to know by March before construction. However, I would need a commitment from you to go ahead with the project even if you do not get the grant. We could hold off construction until mid-summer, for example, if the bank will hold that long.

Email Attachment – “configurations I have proposed to another customer”



## Envirolok Bag shoreline stabilization option:



## **APPENDIX 7**

### **Flood Prevention Project and its Relevance to Other Projects**

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

#### **Climate Change and Sea Level Rise (2009 to 2012)**

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

#### **Emergency Management – Hazard Mitigation Planning (2009 to Present)**

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

#### **Land and Water Quality Protection (2014)**

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

### **Department of Conservation and Recreation Stormwater Management (2014)**

The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

### **Stormwater Management-Phase II (2014)**

Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

### **Mathews County Rural Ditch Enhancement Study (2015)**

In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

### **Drainage and Roadside Ditching Authority (2015)**

This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

### **Living Shoreline Incentive Program (2016 to present)**

In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to \$10,000 can be financed for up to 5 years (60 months). Loans over \$10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is \$1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~\$500,000 in Virginia Resources Authority loan funding and ~\$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job \$14,000- \$180,000. Middle Peninsula PDC oversees all aspects (planning, financing, construction, and loan servicing) of these projects from cradle to grave.

#### **Mathews County Ditch Project – VCPC White Papers (2017)**

This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

#### **Mathews County Ditch Mapping and Database Final Report (2017)**

This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

#### **Virginia Stormwater Nuisance Law Guidance (2018)**

This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

#### **Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)**

Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

### **Fight the Flood Program (2020)**

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

## APPENDIX 8

### Match Commitment Letter

October 4, 2021

Virginia Department of Conservation and Recreation  
Attention: Virginia Community Flood Preparedness Fund  
Division of Dam Safety and Floodplain Management  
600 East Main Street, 24<sup>th</sup> Floor  
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 1387 Oakes Landing Road I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 732.539.4467 or by email at [npsandbach@gmail.com..](mailto:npsandbach@gmail.com..)

Sincerely,

*Norm Sandbach*

Norman Sandbach

**Virginia Department of Conservation and Recreation  
Virginia Community Flood Preparedness Fund Grant Program**

**Application Form for Grant Requests for All  
Categories – Round 2**

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**I. ORGANIZATIONAL INFORMATION**

**Project Title:** Flood Prevention and Protection for Wooldridge Cove Drive for Stone

**Name of Local Government:** Middle Peninsula Planning District Commission

**Category of Grant Being Applied for (check one):**

- Capacity Building/Planning  
 Project  
 Study

**NFIP/DCR Community Identification Number (CID):** 510098

**If a state or federally recognized Indian tribe, Name of tribe:** NA

**Name of Authorized Official:** Lewis Lawrence, Executive Director

**Signature of Authorized Official:** 

**Mailing Address (1):** PO Box 286

**Mailing Address (2):** 125 Bowden Street

**City:** Saluda    **State:** VA    **Zip:** 23149

**Telephone Number:** (804) 758-2311      **Cell Phone Number:** (\_\_\_\_) \_\_\_\_\_

**Email Address:** llawrence@mppdc.com

**Contact Person (If different from authorized official):** Jackie Rickards, Senior Planning Project Manager

**Mailing Address (1):** PO Box 286

**Mailing Address (2):** 125 Bowden Street

**City:** Saluda    **State:** VA    **Zip:** 23149

**Telephone Number:** (804) 758-2311      **Cell Phone Number:** (215) 264-6451

**Email Address:** jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes  No

**Categories (select applicable project): Project Grants**

**Project Grants (Check All that Apply)**

- Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- Wetland restoration.
- Floodplain restoration.
- Construction of swales and settling ponds.
- Living shorelines and vegetated buffers.
- Structural floodwalls, levees, berms, flood gates, structural conveyances.
- Storm water system upgrades.
- Medium and large-scale Low Impact Development (LID) in urban areas.
- Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- Dam restoration or removal.
- Stream bank restoration or stabilization.
- Restoration of floodplains to natural and beneficial function.
- Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

**Location of Project (Include Maps):** Middlesex County - Please see the attached corresponding maps for this application.

**NFIP Community Identification Number (CID#):** 510098

**Is Project Located in an NFIP Participating Community?**  Yes  No

**Is Project Located in a Special Flood Hazard Area?**  Yes  No

**Flood Zone(s) (If Applicable):** AE Zone

**Flood Insurance Rate Map Number(s) (If Applicable):** 51119C0240E

**Total Cost of Project:** \_\_\_\_\_ \$24,963 \_\_\_\_\_

**Total Amount Requested:** \_\_\_\_\_ \$17,475 \_\_\_\_\_

## **II. SCOPE OF WORK NARRATIVE**

### ***INTRODUCTION.***

This proposal requests funding for the development of a nature-based shoreline design solution and draft JPA permit application to reduce the impacts of storm events, flooding, and wetland loss. Relative sea-level rise and tidal and storm surge waters are undercutting the banks along the property (length of shoreline is 540 feet). An old, deteriorating wood bulkhead has holes in it which is allowing the backfill to behind the bulkhead to erode. There are also trees falling into the water with several more having roots exposed to salt water at the base of the steep eroding bank. Chris Davis of ReadyReef Inc. has visited the site and suggested some possible nature-based solutions that made sense in lieu of riprap. As with many other properties, the last few years have been more damaging than in past decades. Therefore, Mr. Michael L. Vanlandingham, the Shoreline Engineer with the Department of Conservation and Recreation Division of Soil and Water Conservation, Eastern Area Regional Office, has visited the property and his letter of recommendation is included.

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered “acts of God,” and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought to be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories

and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based solutions”, “ecosystem-based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

#### ***PROJECT INFORMATION.***

This design proposal application is a nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

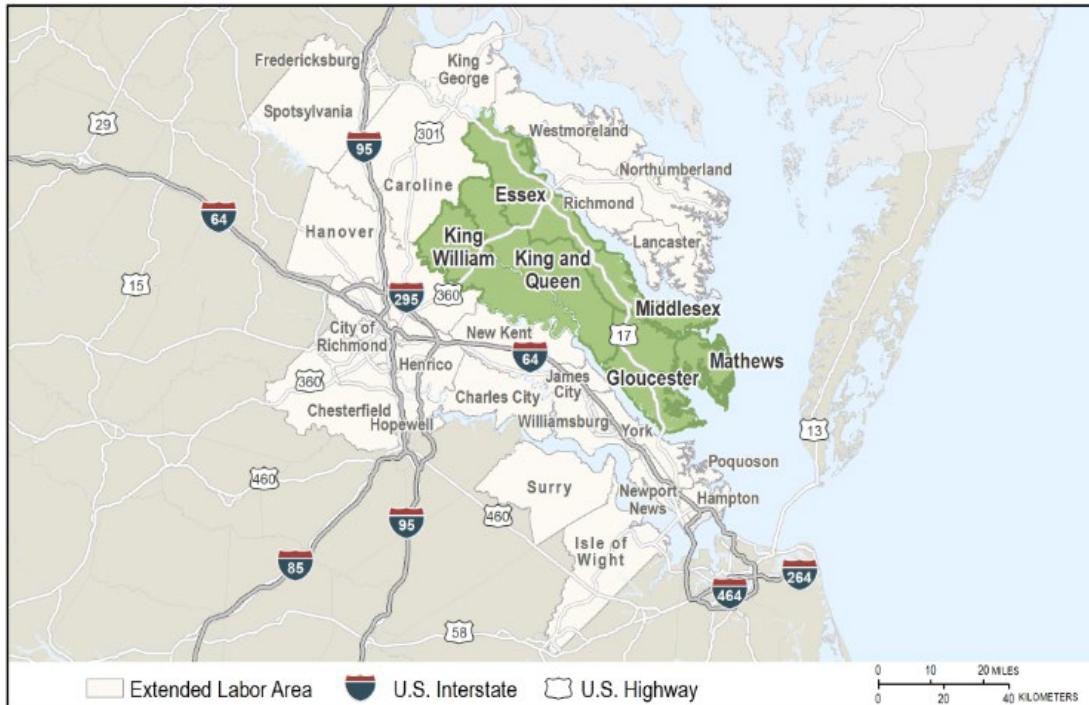
Specifically, this project proposes to investigate nature-based design solutions or, if necessary, hybrid design solutions when nature-based design solutions are not preferable, to a living shoreline on a private property located on Wooldridge Cove Drive in Middlesex County. This

project will be a partnership between the Middle Peninsula PDC and one private property owner and is supported by Middlesex County. See the community support letter in **Appendix 1**.

- A link or to the Middle Peninsula PCD's Approved Regional Flood Resiliency Plan (2021) can be found at: [https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8\\_19\\_DCR-packet\\_letterandplan.pdf](https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf).
  - Please see Page 3-5, which notes the need to respond to emerging flood challenges.
- A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at:  
[https://www.mppdc.com/articles/reports/AHMP\\_2016\\_FEMA\\_Approved\\_RED.pdf](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf).
  - Please see Section 4 (page 25), which includes historical hazard data within the region.
- A link to the County of Middlesex's Comprehensive Plan can be found at:  
<https://www.co.middlesex.va.us/252/Comprehensive-Plan>.

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

**Figure 1. Middle Peninsula Geographic Area**

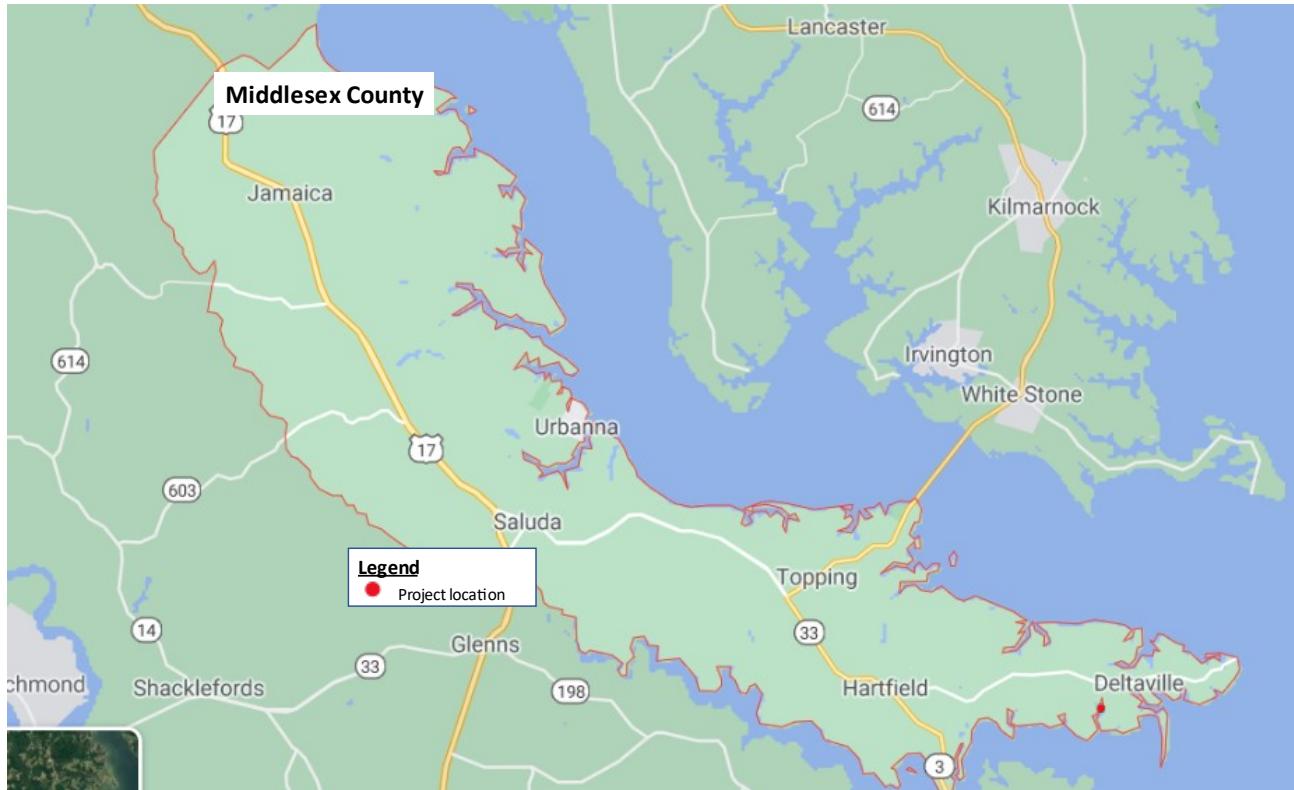


**Figure 2. Middle Peninsula Population**

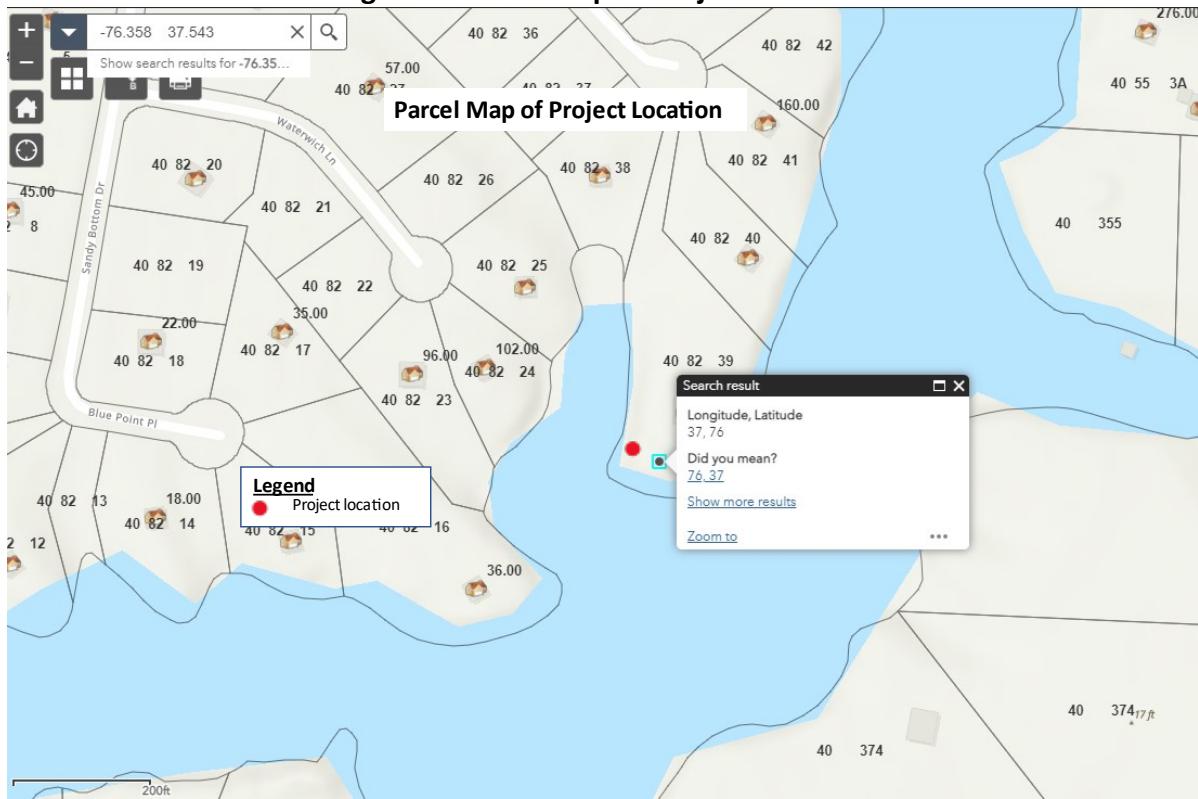
CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
	<b>MPPDC Total</b>	<b>92,886</b>

This project proposes to design a nature-based solution on one private property on Wooldridge Cove Drive in Middlesex County as found in **Figures 3 and 4**.

**Figure 3. County Map of Project Location**



**Figure 4. Parcel Map of Project Location**



Middlesex County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 130 square miles of land 80 miles of shorelines. Based on 2020 Census Data, Middlesex County's population totals 10,625 which. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 5**, the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

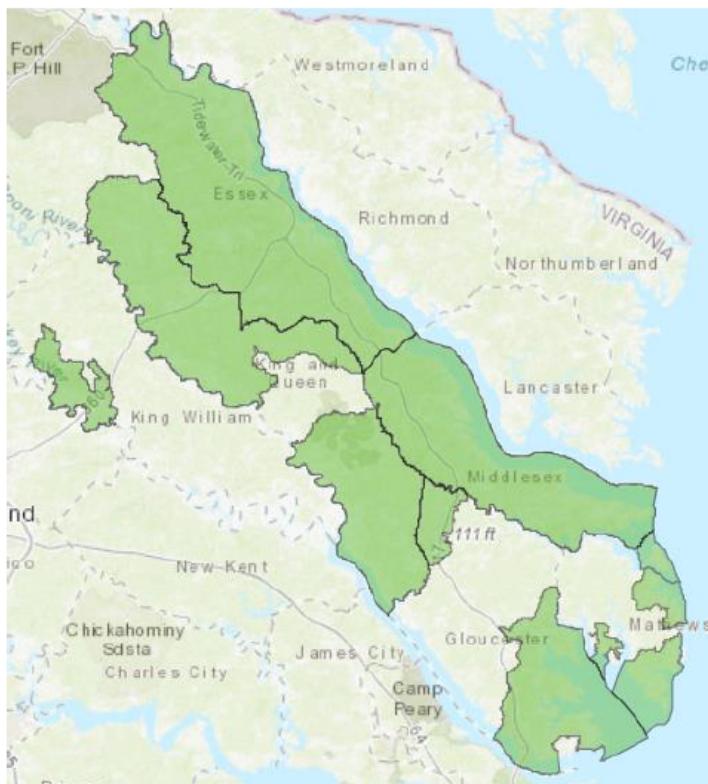
### Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas

Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	\$51,954	\$57,438	\$64,237	\$66,987	\$63,982	\$70,537
Eligible Household income	\$41,563	\$45,950	\$51,389	\$53,590	\$51,186	\$56,430

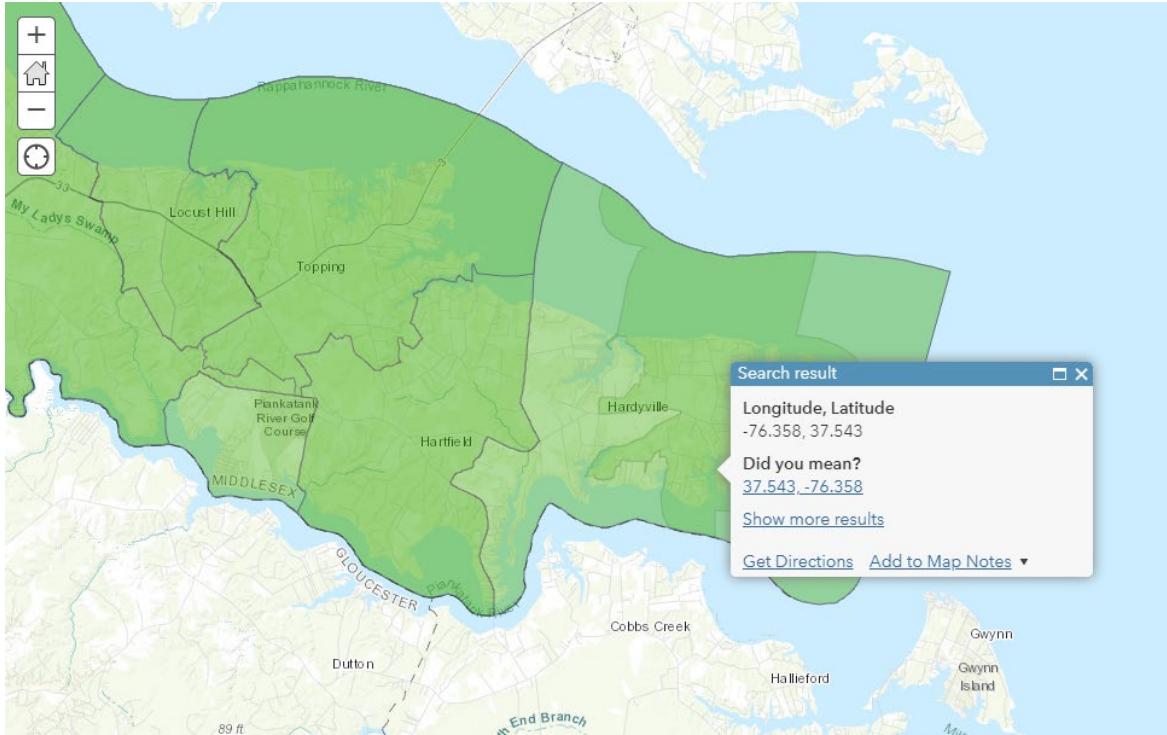
**Note:** Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.



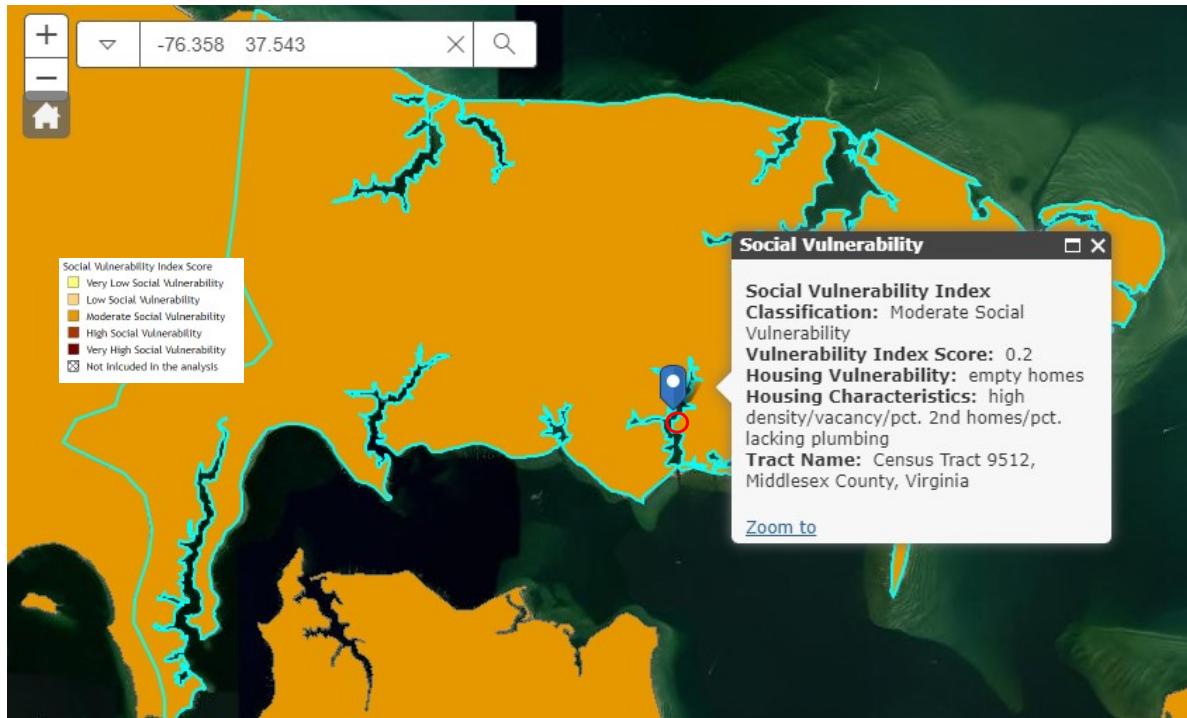
Please see **Figure 6** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

**Figure 6. Map of the Project Location within the Green Low-Income Area**

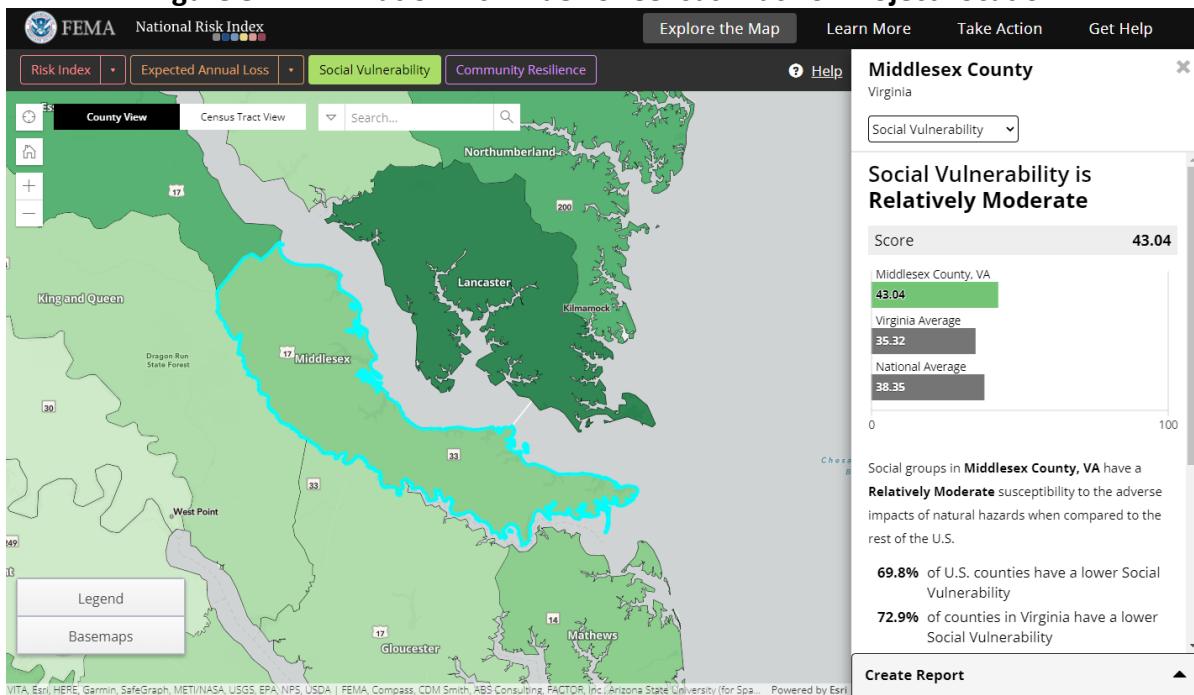


According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (<https://hazards.fema.gov/nri/map>), which assesses vulnerability at a census tract level, the social vulnerability of the County is considered to be a relatively moderate level of vulnerability as seen in **Figure 8**.

**Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location**



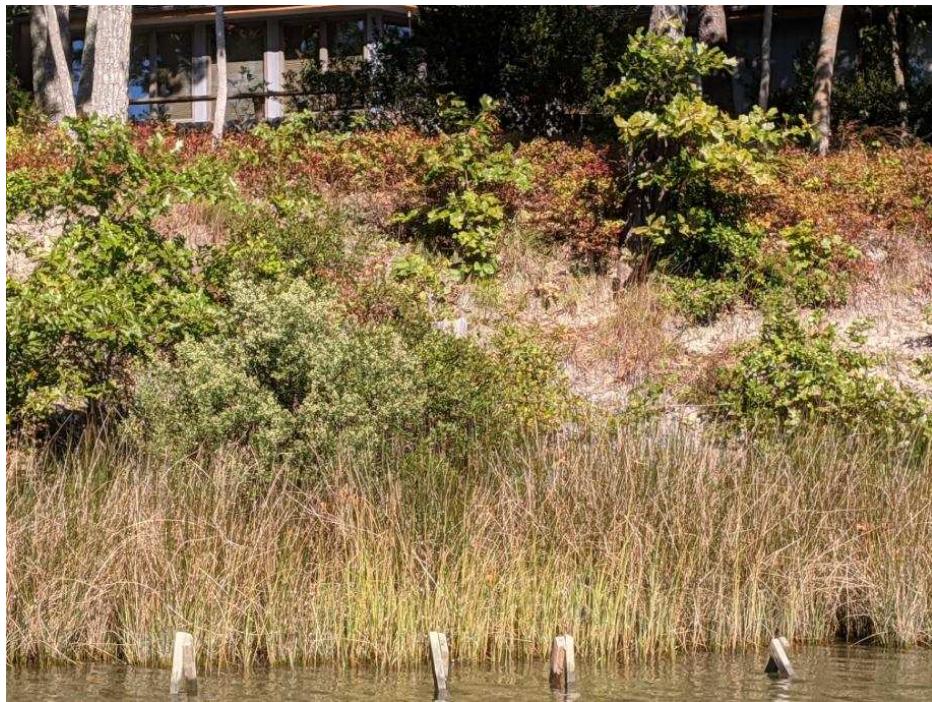
**Figure 8. FEMA Nation Risk Index of Census Track of Project Location**



The project is located at 156 Wooldridge Cove Drive, Deltaville, VA 23043 (-76.358, 37.543).

The property was purchased in 2020 and has experienced a number of issues. Relative sea-level rise and tidal and storm surge waters are undercutting the banks along the property (length of shoreline is 540 feet). An old, deteriorating wood bulkhead is failing and has holes in it which is allowing the backfill bulkhead to erode. There are also trees falling into the water with several more having roots exposed to salt water at the base of the steep eroding bank. Chris Davis of ReadyReef Inc. has visited the site and suggested some possible nature-based solutions that made sense in lieu of riprap. As with many other properties, the last few years have been more damaging than in past decades. Therefore, Mr. Michael L. Vanlandingham, the Shoreline Engineer with the Department of Conservation and Recreation Division of Soil and Water Conservation, Eastern Area Regional Office, has visited the property and his letter of recommendation is included as **Appendix 2**. This recommendation is valued highly, especially the permitting process in following the recommendation of the Shoreline Engineer to construct a riprap marsh sill and breakwater. See accompanying pictures showing site conditions below.

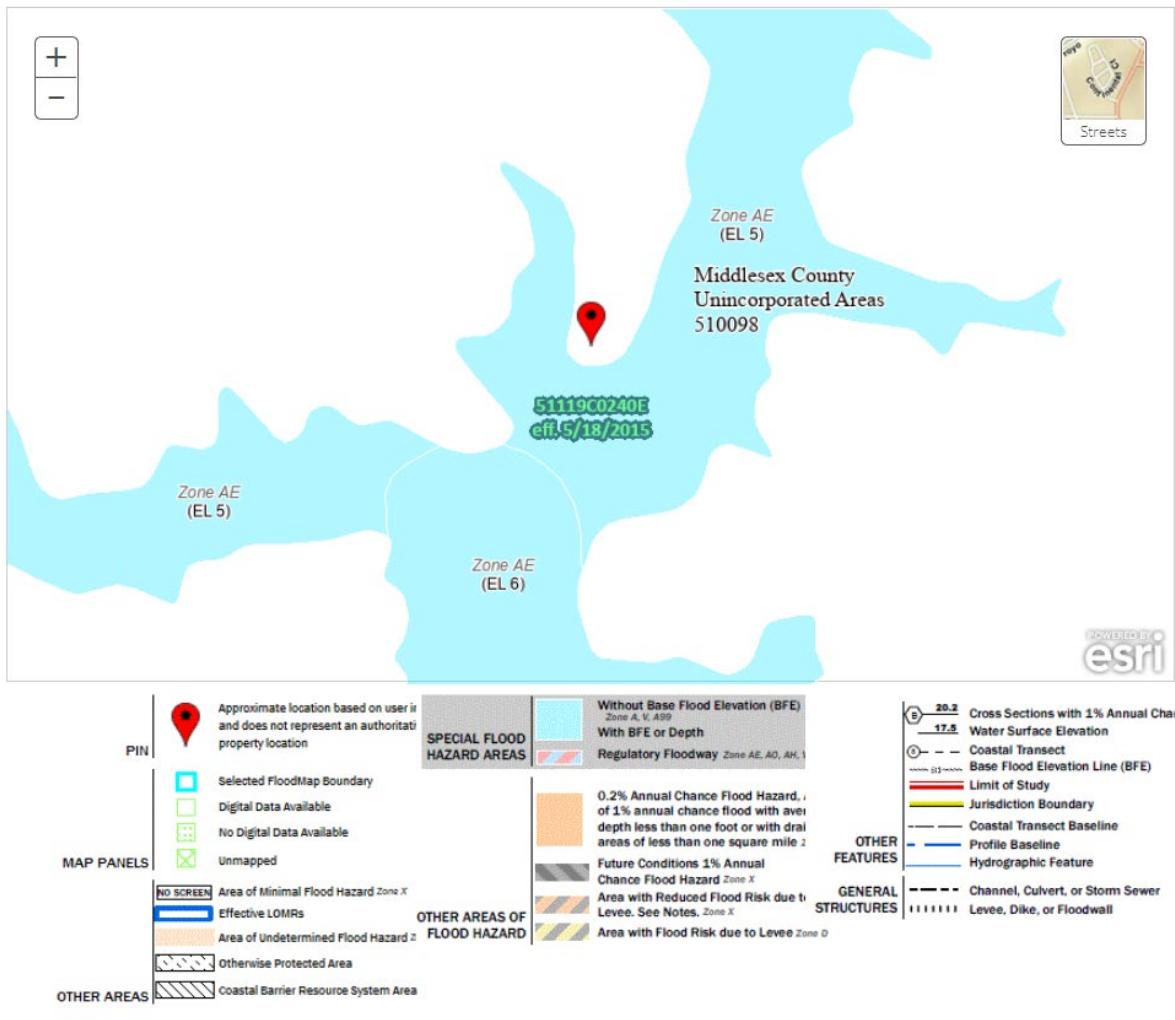




Please see **Appendix 3** for additional property photos.

This site is located within the AE flood zone as seen in **Figure 9**. Please see **Appendix 4** for the FIRMettes (last mapped 5/18/2015).

**Figure 9: Map of FEMA Flood Zones**



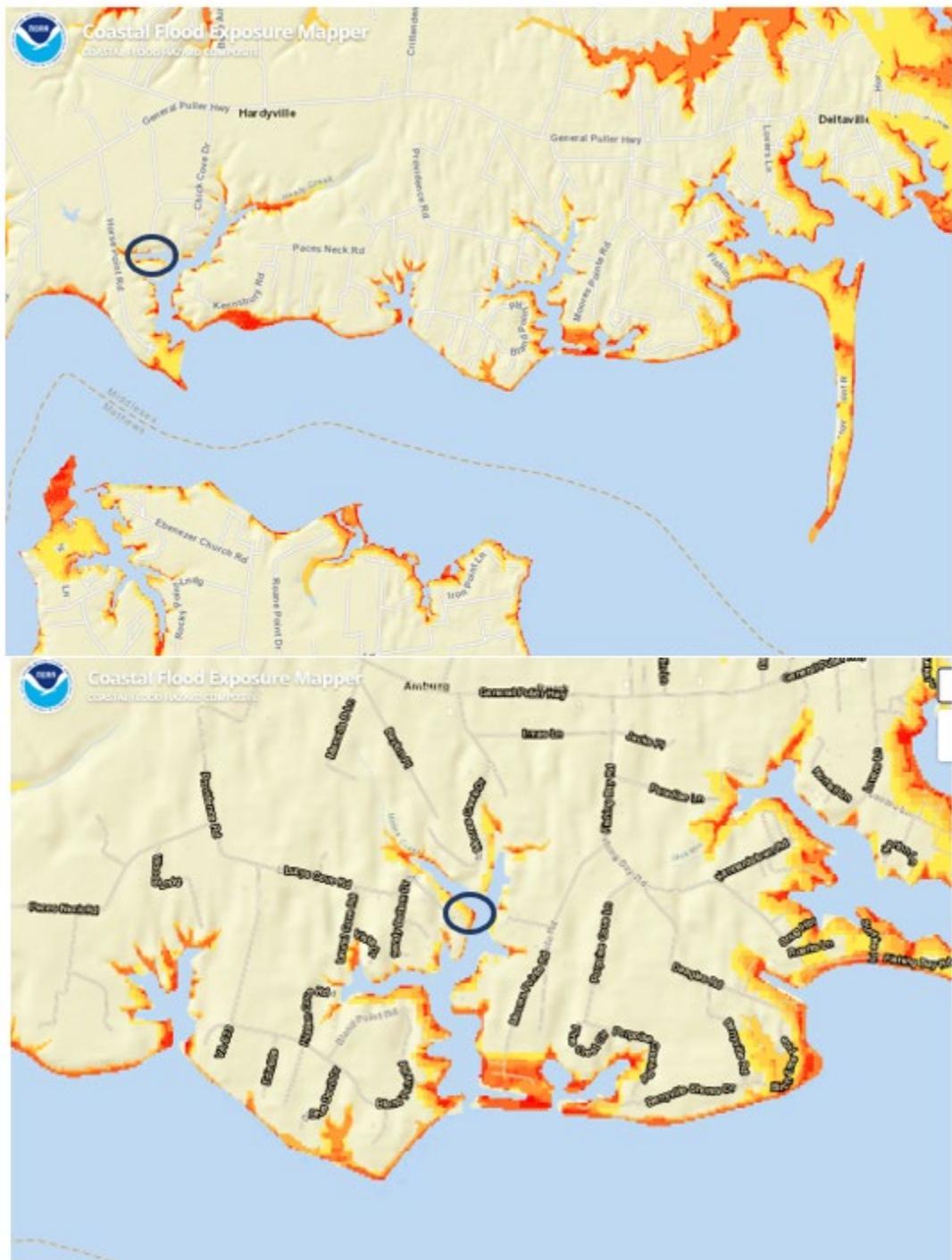
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 7,353.2 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Appendix 5** lists 79 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

**Figure 10. Project Location and Map of the Shoreline Change between 1937 and 2017**



Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 11**.

**Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)**



For more information about this project area please see:

- A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: [https://www.mppdc.com/articles/reports/AHMP\\_2016\\_FEMA\\_Approved\\_RED.pdf](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf)
- A link to Middlesex County's current floodplain ordinance can be found at: <https://www.co.middlesex.va.us/DocumentCenter/View/422/Floodplain-Management-PDF>.

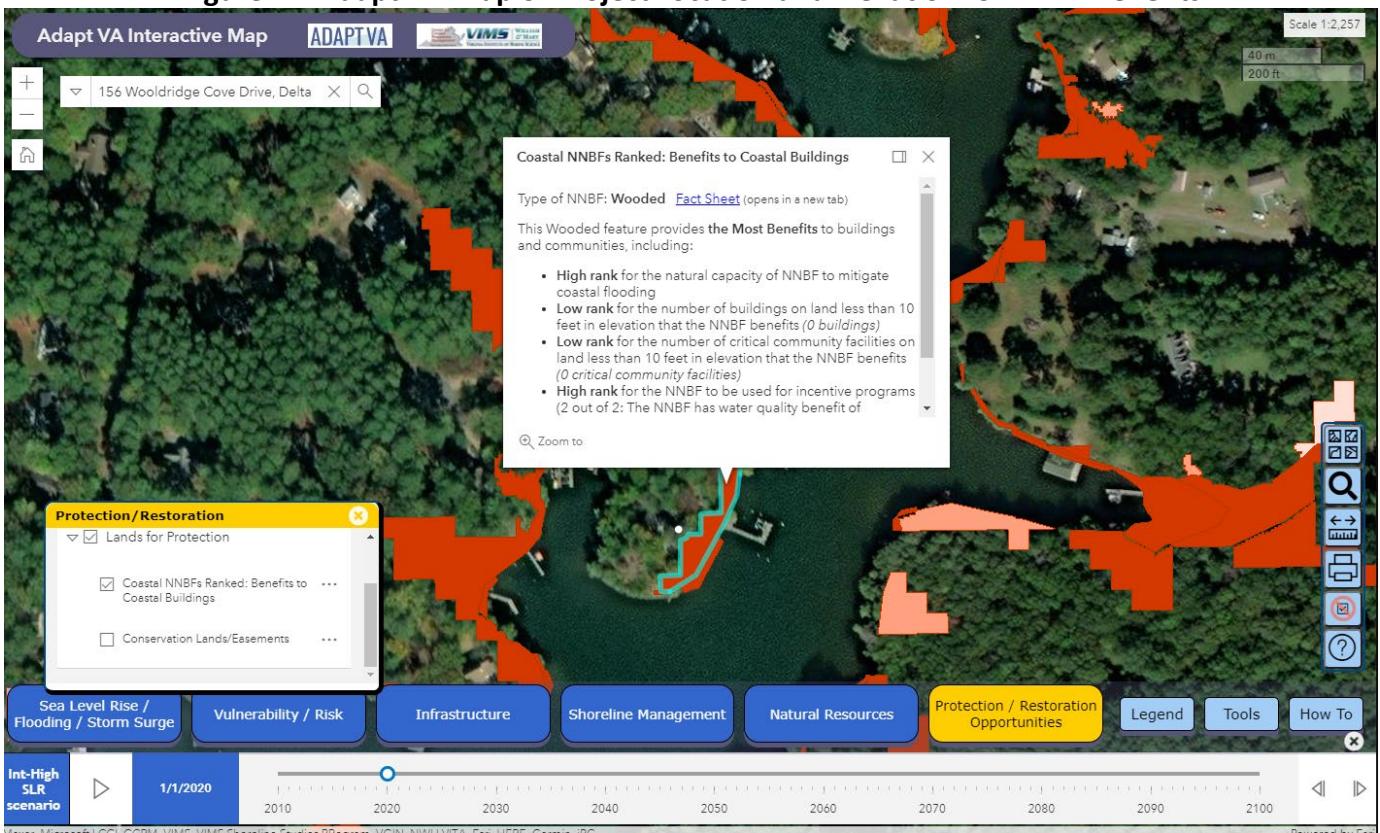
### **COMMUNITY SCALE BENEFITS.**

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, "Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines "Community Scale project" which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving "demonstrable flood reduction" benefit, rural areas will never compete.

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature-based "brick in the wall" and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in **Figure 12**. All Round 2 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

**Figure 12. Adapt VA Map of Project Location and Elevation for NNBF Benefits**



### **CONCERNING ADVERSE IMPACTS.**

The Middle Peninsula PDC recognizes that VMRC is the permit issuing authority for all shoreline projects and by statute the local wetlands board and VMRC Commission must utilize the best available science when evaluating each project including how the project impacts up stream and down steam impacts. This might include modifying any aspect of a Flood Fund design to ensure that impacts are mitigated. With that said, the Middle Peninsula PDC proposes that prior to requesting final reimbursement from DCR for any design proposal funded under the Flood Fund, the Middle Peninsula PDC staff will send the proposed design to the Shoreline Erosion Advisory Service (SEAS) for review. This will require the Department of Conservation and Recreation (DCR) SEAS staff to work directly with the private project designer to address impacts that DCR staff has concerns with to ensure that impacts stemming from any design permitted by VMRC are lessened to a degree that is satisfactory by DCR.

### **ALTERNATIVES.**

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed \$3 million.

## **GOALS AND OBJECTIVES.**

The Code of Virginia § 28.2-104.1. defines "Living shoreline" as *shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.
- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline/nature solution will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Middlesex County, which is local government.

Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861

lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. For example, a proposed project of 150 linear feet of living shoreline has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

#### Goal 3: Transferability to other communities.

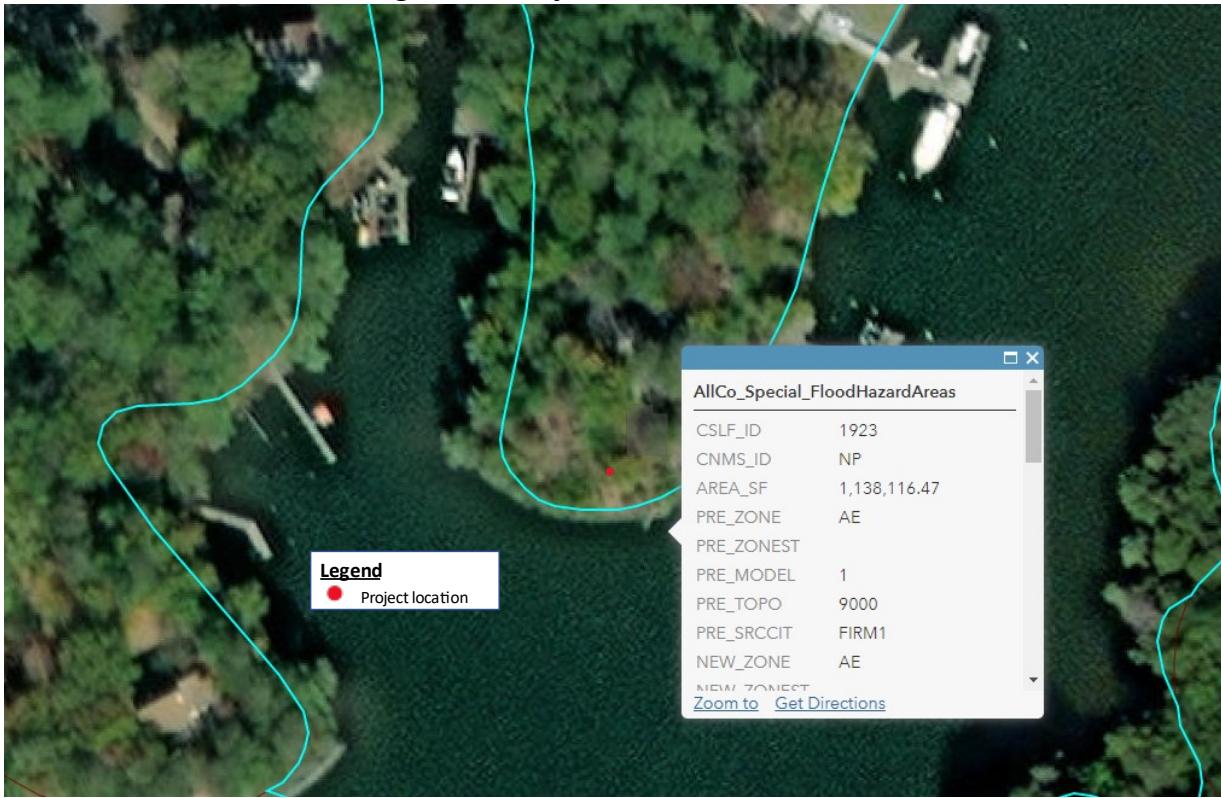
- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

#### ***APPROACH, MILESTONES, AND DELIVERABLES.***

The proposed project is to develop a nature-based or hybrid design solutions in flood prevention and protection to living shorelines and vegetated buffers in the flood hazard area as seen in **Figure 13**.

**Figure 13. Project Flood Hazard Area**



Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with the property owner of the specified location.

The proposed project includes three phases of activities over the course of a six-month period. The anticipated timeline for the proposed project could be as quick as 3 months, but no more than six months. The timeline range is due to the potential for delays in project initiation, contractor availability, procurement of materials, and permitting.

It is anticipated that the proposed project will commence in December 2021 and be completed by May 2022.

Action Item	M1	M2	M3	M4	M5	M6
<b>Phase 1 – Environmental Scan</b>						
Hold administrative project kick off meeting	X					
Conduct environmental scan of property location in need of a flood resiliency design solution	X					
Select contractor to provide potential nature-based or hybrid design solutions	X					
Coordinate with property owner and contractor on project expectations	X	X	X	X	X	
Apply for any necessary permits	X	X	X			
<b>Phase 2 – Solution Design</b>						
Discuss nature-based or hybrid design solutions with contractor and property owner		X	X			
Select which nature-based or hybrid design solution is most appropriate		X	X			
Have contractor develop selected nature-based or hybrid design solution			X	X		
<b>Phase 3 – Strategic Implementation</b>						
Share nature-based or hybrid design solution with property owner					X	
Discuss strategies in moving forward with implementing the nature-based or hybrid design solution					X	X
Provide a digital close out report and copy of the completed nature-based or hybrid design solution along with the completed Certificate of Approval Floodplain Management form to the funding agency						X
Hold administrative project close out meeting						X

#### ***RELATIONSHIP TO OTHER PROJECTS.***

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

Long Term Planning

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016
  - The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

#### Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 6**.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

#### **MAINTENANCE PLAN.**

A maintenance plan is not applicable in this application. The proposed project is to develop a

nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

**CRITERIA.**

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe)?

The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link:

[https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8\\_19\\_DCR-packet\\_letterandplan.pdf](https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf).

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 7**.

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

**SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.**

<b>Applicant Name:</b>		Middle Peninsula Planning District Commission	
<b>Eligibility Information</b>			
Criterion	Description		Check One
<b>1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?</b>			
Yes	Eligible for consideration		X
No	Not eligible for consideration		
<b>2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?</b>			
Yes	Eligible for consideration under all categories		X
No	Eligible for consideration for studies, capacity building, and planning only		
<b>3. If the applicant is <u>not</u> a town, city, or county, are letters of support from all affected local governments included in this application?</b>			
Yes	Eligible for consideration		X
No	Not eligible for consideration		
<b>4. Has this or any portion of this project been included in any application or program previously funded by the Department?</b>			
Yes	Not eligible for consideration		
No	Eligible for consideration		X
<b>5. Has the applicant provided evidence of an ability to provide the required matching funds?</b>			
Yes	Eligible for consideration		X
No	Not eligible for consideration		
N/A	Match not required		

<b>Project Eligible for Consideration</b>		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Applicant Name:	<b>Middle Peninsula Planning District Commission</b>		
<b>Scoring Information</b>			
Criterion	Point Value	Points Awarded	
<b>6. Eligible Projects (Select all that apply)</b>			
<p><b>Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.</b></p>			
1.a. Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	<b>50</b>		
<input type="checkbox"/> Wetland restoration, floodplain restoration <input checked="" type="checkbox"/> Living shorelines and vegetated buffers. <input type="checkbox"/> Permanent conservation of undeveloped lands identified as having flood resiliencevalue by <i>ConserveVirginia</i> Floodplain and Flooding Resilience layer or a similar datadriven analytic tool <input type="checkbox"/> Dam removal <input type="checkbox"/> Stream bank restoration or stabilization. <input type="checkbox"/> Restoration of floodplains to natural and beneficial function. <input type="checkbox"/> Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	<b>45</b>	45	
1.b. Any other nature-based approach	<b>40</b>		
All hybrid approaches whose end result is a nature-based solution	<b>35</b>		
All other projects	<b>25</b>		
<b>7. Is the project area socially vulnerable? (Based on <a href="#">ADAPT VA's Social Vulnerability Index Score.</a>)</b>			
Very High Social Vulnerability (More than 1.5)	<b>15</b>		
High Social Vulnerability (1.0 to 1.5)	<b>12</b>		
Moderate Social Vulnerability (0.0 to 1.0)	<b>8</b>	8	
Low Social Vulnerability (-1.0 to 0.0)	<b>0</b>		
Very Low Social Vulnerability (Less than -1.0)	<b>0</b>		
<b>8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?</b>			
Yes	<b>10</b>		
No	<b>0</b>	0	

<b>9. Is the proposed project in a low-income geographic area as defined in this manual?</b>		
Yes	<b>10</b>	10
No	<b>0</b>	
<b>10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?</b>		
Yes	<b>5</b>	5
No	<b>0</b>	
<b>11. Does this project provide “community scale” benefits?</b>		
Yes	<b>20</b>	20
No	<b>0</b>	
<b>Total Points</b>		<b>88</b>

**SCOPE OF WORK CHECKLIST.**

<b>Scope of Work Narrative</b>	
<b>Supporting Documentation</b>	<b>Included</b>
Detailed map of the project area(s) (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
FIRMette of the project area(s) (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Historic flood damage data and/or images (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current floodplain ordinance	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current hazard mitigation plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current comprehensive plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Social vulnerability index score(s) for the project area from <a href="#">ADAPT VA's Virginia Vulnerability Viewer</a>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
If applicant is not a town, city, or county, letters of support from affected communities	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
<b>Budget Narrative</b>	
<b>Supporting Documentation</b>	<b>Included</b>
Authorization to request funding from the Fund from governing body or chief executive of the local government	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Signed pledge agreement from each contributing organization	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

### **III. BUDGET NARRATIVE**

For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply: For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

- ***Estimated total project cost: \$ 24,963***
- ***Amount of funds requested from the Fund: \$17,475***

Stone						Budget (Cat. D)
<b>Personnel Salaries/Wages</b>			PDC %	Match %	Annual Salary	
<i>Staff</i>			6.38%	1.65%	\$70,000	
<i>Personnel</i>			<i>Proj Admin Split</i>	<b>DCR</b>	<b>Owner</b>	
<i>Fringe, 26.21% salaries;</i>			Total	70%	30%	
<i>Total Personnel</i>			\$16,500	11,550.00	4,950.00	
			15%	2,475.00	1,732.50	742.50
			<b>18,975.00</b>	<b>13,282.50</b>	<b>5,692.50</b>	
						<b>\$1,733</b>
						<b>\$742</b>
						<b>\$2,475</b>
<b>Direct Costs: SubAward/SubContract Agreements</b>						<b>70%</b>
<i>Nature Based Design. Geo Technical evalution etc</i>						\$15,000
<i>Legal bid docs and procurement prep</i>						\$1,500
						\$0
						\$0
						\$0
						\$0
						\$0
						\$0
						\$0
						\$0
						\$0
						\$16,500
<b>SUBTOTAL: Direct Costs</b>						\$13,283
<b>Indirect/IDC/Facilities &amp; Administrative Costs</b>			<b>27.92%</b>	<b>\$5,988</b>	<b>\$4,192</b>	<b>\$1,796</b>
<b>Total</b>						<b>\$17,475</b>
<b>Other Match:</b>						<b>\$7,488</b>
<i>Source of Match</i>						<b>\$0</b>
<b>GRAND TOTAL</b>						<b>\$17,475</b>
						<b>\$7,488</b>
						<b>\$24,963</b>

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Authorization to request for funding:



COMMISSIONERS

Essex County

*Hon. Edwin E. Smith, Jr.  
Hon. John C. McGruder  
Ms. Sarah Pope  
Mr. Michael A. Lombardo*

Town of Tappahannock

*Hon. Fleet Dillard*

Gloucester County

*Hon. Ashley C. Chriscoe  
(Vice-Chairman)  
Hon. Michael R.  
Winebarger  
Dr. William G. Reay  
Mr. J. Brent Fedors*

King and Queen County

*Hon. Sherrin C. Alsop  
Hon. R. F. Bailey  
Mr. Thomas J.  
Swartzwelder  
(Chairman)*

King William County

*Hon. Ed Moren, Jr.  
Hon. Travis J. Moskalski  
(Treasurer)  
Mr. Otto O. Williams*

Town of West Point

*Hon. James Pruitt  
Mr. John Edwards*

Mathews County

*Hon. Michael C. Rowe  
Hon. Melissa Mason  
Mr. Thornton Hill*

Middlesex County

*Hon. Wayne H. Jessie, Sr.  
Hon. Reggie Williams, Sr.  
Mr. Gordon E. White*

Town of Urbanna

*Hon. Marjorie Austin*

Secretary/Director

*Mr. Lewis L. Lawrence*

10/19/21

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

REF: Authorization to request for funding

Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Signed pledge agreement from each contributing organization:

October 12, 2021

Virginia Department of Conservation and Recreation  
Attention: Virginia Community Flood Preparedness Fund  
Division of Dam Safety and Floodplain Management  
600 East Main Street, 24<sup>th</sup> Floor  
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 156 Wooldridge Cove Drive, Delatville, Va. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 804-306-4376 or by email at Lstone@asharperpalate.com.

Sincerely,



Leslie Stone

## I. SUPPORTING DOCUMENTATION

- Letters of support from all affected local government
- Detailed map of the project area(s)
- FIRMette of the project area(s)
- Historic flood damage data and/or images

## APPENDIX 1

### Community Support Letter

Matthew L. Walker  
*County Administrator*  
877 General Puller Hwy  
Saluda, VA 23149  
804-758-4330  
[m.walker@co.middlesex.va.us](mailto:m.walker@co.middlesex.va.us)



Betty S. Muncy  
*Assistant County Administrator*  
Ann Marie S. Ricardi  
*Assistant County Administrator*

**County of Middlesex**  
Office of the County Administrator

July 20, 2021

Lewis L Lawrence, Executive Director  
Middle Peninsula Planning District Commission  
P.O. Box 286  
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Mr. Lawrence:

Middlesex County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents are part of our necessary governmental functions and are consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood (FTF) Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC FTF Program provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs assist to secure the tax base of coastal localities and reduce the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types.

The FTF and the Living Shoreline programs exist to help the owners of flood-prone properties access programs and services to better manage challenges posed by flood water and to direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents, to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-758-4330.

Respectfully,

Matt Walker  
County Administrator

## APPENDIX 2

### DCR Site Visit Letter



Mrs. Barbara Vest  
P.O. Box 1035  
Deltaville, VA 23043

RE: SEAS# T21026

Dear Mrs. Vest:

On July 23, 2020, I met with Will & Barbara Vest and Tuffy Stone, at your property, on Moore Creek in Middlesex County. The site visit was in response to your request for advisory assistance concerning a shoreline erosion problem.

The Shoreline Studies Program, at the Virginia Institute of Marine Science, has created a Shoreline Evolution Map for tidal localities in Virginia. The map was created using aerial photography from 1937 to 2009. The map shows shoreline change over time. Based upon that map, the historical erosion rate for your area is less than 1 foot per year. The erosion on your property appears to be caused by elevated water levels and waves associated with storms. The following recommendations are made as a result of the site visit and subsequent analysis of the problem:

1. The trees and shrubs growing on the bank and within 15 feet of the bank edge should be selectively cut or trimmed. Trees undermined by erosion displace large amounts of soil when they fall. Tree removal should decrease the weight on the bank and reduce the chance of sloughing. The additional sunlight exposure should stimulate growth of the upland ground cover and marsh fringe. Before cutting any trees, please contact Middlesex County at (804) 758-3382 for information concerning tree removal restrictions under the Chesapeake Bay Preservation Act.
2. After tree removal, a vegetative cover should be established. We recommend a mixture of native grasses or other low-growing vegetation. For further details about the establishment of vegetation and soil tests, contact the Virginia Cooperative Extension Agent for Middlesex County at (804) 758-4120.
3. The marsh grasses growing on your shore dissipate wave energy and bind the soil with their roots. We recommend you begin a periodic maintenance program for the grasses. Tidal debris should be periodically removed to prevent smothering of the grasses. The encroachment of trees and shrubs into the grasses should be prohibited. The program should increase plant vigor and promote growth.
4. In all segments where the marsh grasses are sparse or absent, we recommend establishment of a

600 East Main Street, 24<sup>th</sup> Floor | Richmond, Virginia 23219 | 804-786-6124

*State Parks • Soil and Water Conservation • Outdoor Recreation Planning  
Natural Heritage • Dam Safety and Floodplain Management • Land Conservation*

Mrs. Barbara Vest  
Page 2  
September 24, 2020

marsh fringe. The establishment of a marsh fringe would involve planting smooth cordgrass between the mean low and mean high tide elevations. Plants for transplanting can be purchased or obtained from neighboring marsh areas with permission. When transplanting, care should be taken to plant the smooth cordgrass within the proper tidal zone.

To transplant smooth cordgrass, dig individual plants. You should obtain healthy plants with an adequate root mass. The plants should be planted on an 18-inch by 18-inch grid during late April through June. We recommend fertilization at the time of planting. A slow release fertilizer such as Osmocote can be placed in the hole with the plant. You should use approximately one ounce per plant. An alternative to Osmocote is any available fertilizer such as 10-10-10. Approximately two ounces of the alternate fertilizer should be side-dressed about six inches from the plant. To prevent damage to the source area, do not remove large numbers of plants from one section. The source area should be fertilized after plugging. If you wish to purchase plants or have someone do the planting for you, see the enclosed list of suppliers and contractors. See the enclosed information concerning a description of smooth cordgrass.

5. Along with enhancing the existing marsh fringe, you may consider the construction of a riprap marsh sill. The structure should have a trapezoidal cross section with 2:1 side slopes. It should have a top elevation 1-foot above the mean high water elevation. A minimum of two layers of armor rock should be used. Each armor rock should weigh a minimum of 50 pounds. Install the rock so that a "V" notch is placed about every 100 feet along the improved section to allow tidal flushing to occur. A layer of filter cloth should be used under the riprap. See the enclosed cross-sectional view of a typical riprap breakwater (modified).

Immediately following construction, we recommend filling the area landward of the sill with good-quality, medium to coarse grain sand. The height of the sand fill against the bank should be such that mean high water no longer reaches the base of the bank. The slope of the sand nourishment should be 10:1 (horizontal:vertical). This slope will help promote positive drainage and mimics natural fringe marsh elevations. Moving mean high water off the base of the bank will greatly reduce the under cutting of the bank. This sand will also provide an excellent planting media for marsh grasses.

6. Oyster shell bags, are plastic mesh bags filled with oyster shells. The bags can be used as an alternative to riprap for the marsh sill. The bags are stacked to create a trapezoidal shape. The design components for this alternative are similar to the riprap marsh sill.
7. Enhancing the existing fringe marsh by installing a sill, adding sand nourishment and planting marsh grasses is considered a "Living Shoreline" erosion control strategy. During the site visit we discussed possible funding assistance for living shoreline projects through the Tidewater Soil and Water Conservation District. The program is called the Virginia Conservation Assistance Program (VCAP). If you would like to learn more about this program, please contact the District office. Their Phone number is (804) 699-3482.
8. The Middle Peninsula Planning District Commission offers a low interest loan program for living shoreline projects. To learn more about the loan program please contact them at (804) 758-3221.
9. Stormwater should be directed away from the bank. If that is not possible, the stormwater should be collected via a pipe system and conveyed to the base of the bank. The pipe outlet should have

Mrs. Barbara Vest  
Page 3  
September 24, 2020

sufficient outlet protection to prevent erosion.

The above recommendations are made in my capacity as an advisory agent in shoreline erosion control matters. The suggestions should not be considered as binding you to any particular course of action, as they are intended to indicate what we think would be the best solution in terms of cost and effectiveness. Our examination of the site or this report does not constitute permission by the Commonwealth, or its agencies, to proceed with implementation of control measures. Permits from State and Federal agencies are generally required for shoreline modification.

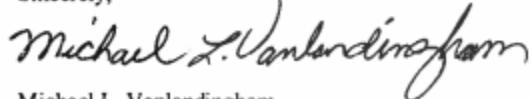
You should also be aware that success in shoreline erosion control cannot be guaranteed, as there are many variables involved. In this regard, we suggest care in selecting a contractor. Our comments concerning construction are intended as guidelines developed from our experience in viewing structures that have been successful or have failed.

If you decide to construct a control measure, an assessment of the impacts of the project on the environment will be given by the regulatory agencies. Our advice is given with the idea of reducing environmental impacts associated with our recommendations. Although this has been considered in our recommendations, the permit reviewing agencies may desire additional information or measures.

Services available through this office include: review of the permit application; review of design and construction plans; and inspection of structures under construction when plans have been reviewed by this office. We recommend that a copy of this report be attached to the permit application.

If we may be of further assistance or if you have any questions, please let me know.

Sincerely,

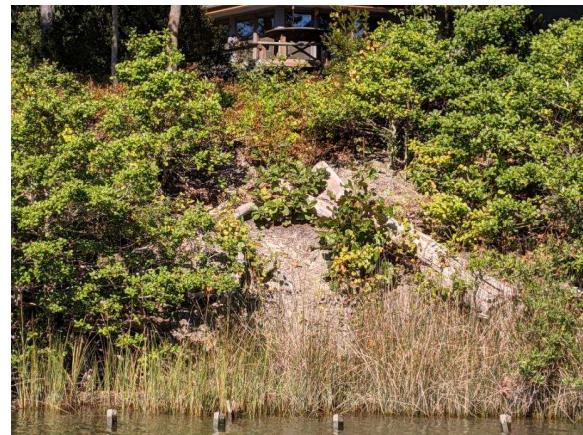
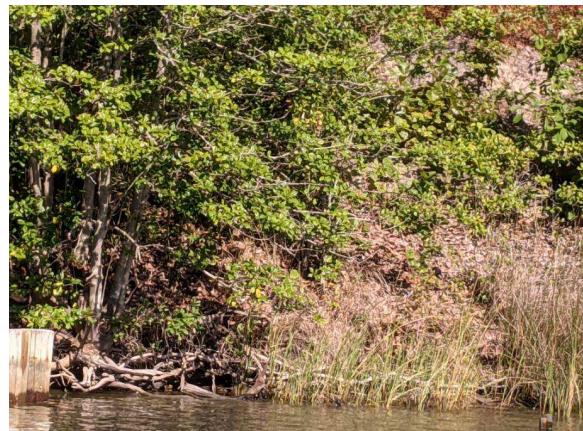
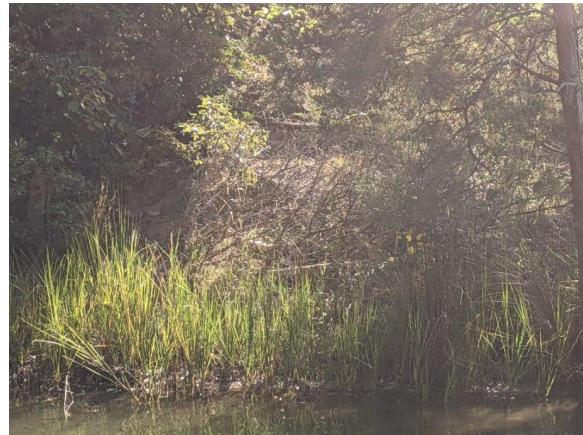


Michael L. Vanlandingham  
Shoreline Engineer

Enclosures (10)

## APPENDIX 3

### Additional Property Photos

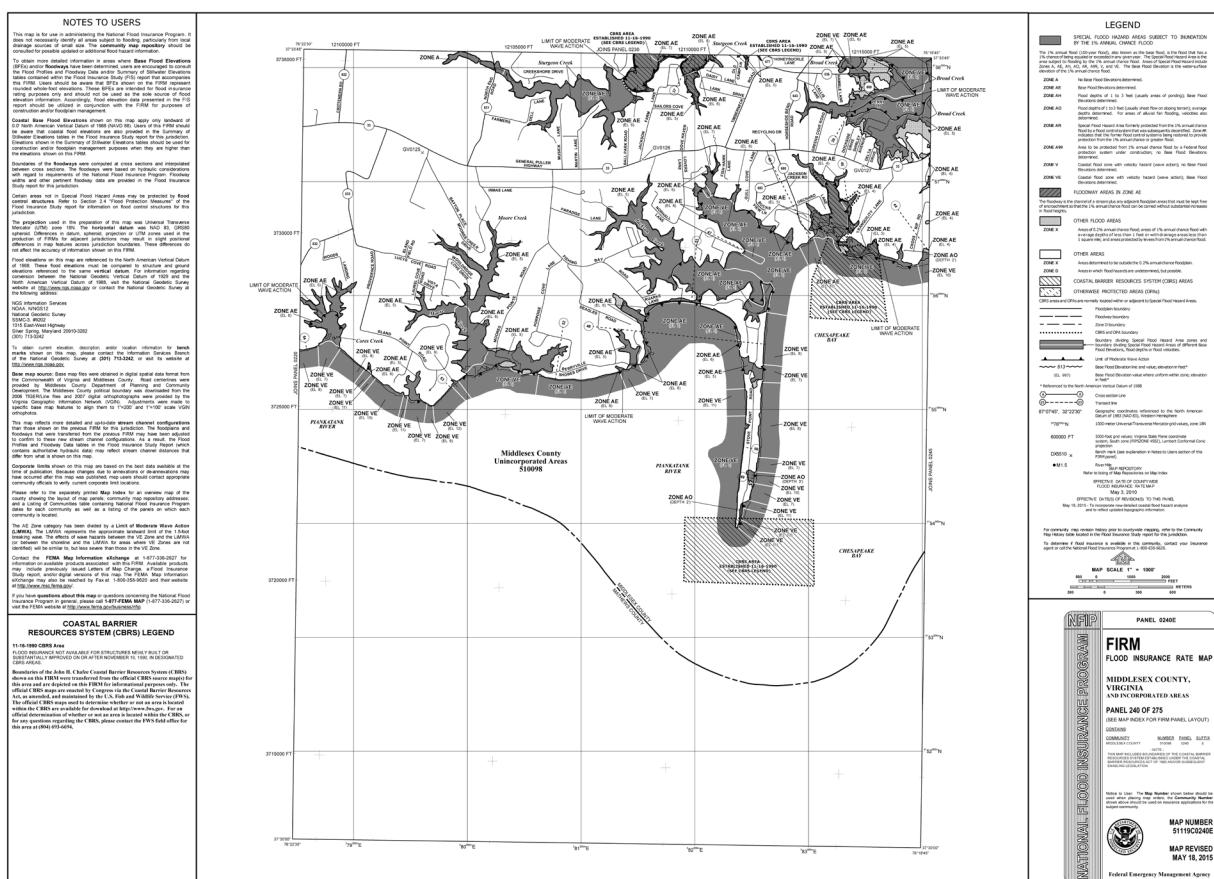




## **APPENDIX 4**

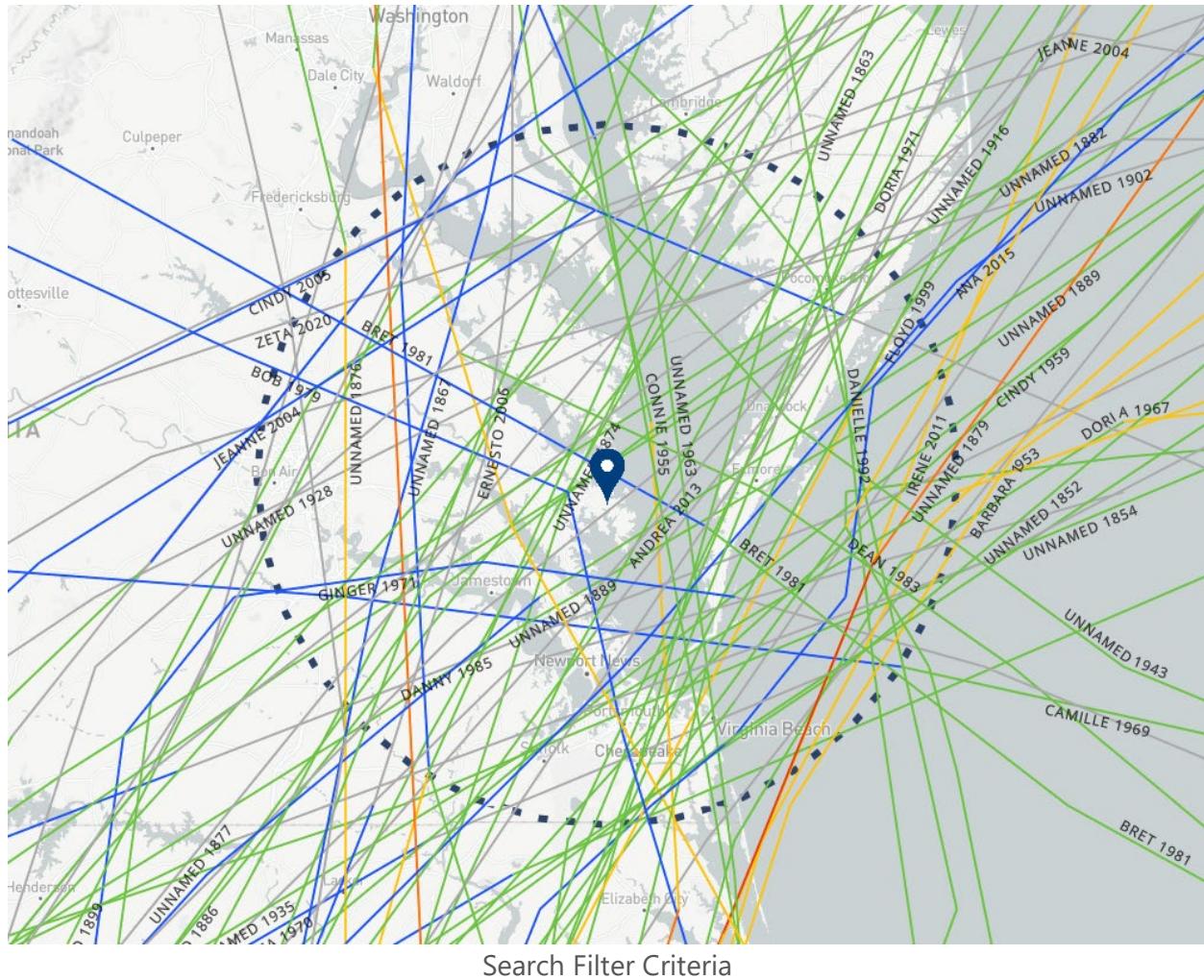
## Project Location FIRMette

(FIRMette #: 51119C0240E)



## APPENDIX 5

### List of Historic Hurricanes Impacting the Property Location



Location: 37.543 -76.358

Categories: H5, H4, H3, H2, H1, TS, TD, ET

Months: ALL

Years: ALL

El Niño-Southern Oscillation (ENSO): ALL

Minimum Pressure (mb) below: 1150

Include Unknown Pressure Rating: TRUE

Buffer Distance: 60

Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

## **APPENDIX 6**

### **Flood Prevention Project and its Relevance to Other Projects**

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

#### **Climate Change and Sea Level Rise (2009 to 2012)**

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

#### **Emergency Management – Hazard Mitigation Planning (2009 to Present)**

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

#### **Land and Water Quality Protection (2014)**

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

#### **Department of Conservation and Recreation Stormwater Management (2014)**

The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

#### **Stormwater Management-Phase II (2014)**

Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

#### **Mathews County Rural Ditch Enhancement Study (2015)**

In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

#### **Drainage and Roadside Ditching Authority (2015)**

This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

#### **Living Shoreline Incentive Program (2016 to present)**

In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to \$10,000 can be financed for up to 5 years (60 months). Loans over \$10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is \$1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~\$500,000 in Virginia Resources Authority loan funding and ~\$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job \$14,000- \$180,000. Middle Peninsula PDC oversees all aspects (planning, financing, construction, and loan servicing) of these projects from cradle to grave.

#### **Mathews County Ditch Project – VCPC White Papers (2017)**

This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

#### **Mathews County Ditch Mapping and Database Final Report (2017)**

This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

#### **Virginia Stormwater Nuisance Law Guidance (2018)**

This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

#### **Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)**

Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

### **Fight the Flood Program (2020)**

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

## APPENDIX 7

### Match Commitment Letter

October 12, 2021

Virginia Department of Conservation and Recreation  
Attention: Virginia Community Flood Preparedness Fund  
Division of Dam Safety and Floodplain Management  
600 East Main Street, 24<sup>th</sup> Floor  
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 156 Wooldridge Cove Drive, Delatville, Va. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at 804-306-4376 or by email at Lstone@asharperpalate.com.

Sincerely,



Leslie Stone

**Virginia Department of Conservation and Recreation**  
**Virginia Community Flood Preparedness Fund – Round 2 Application**  
**Flood Prevention and Protection Project**

**PROJECT TITLE:** Moore Creek Nature Based Shoreline Management Construction Project

**Name of Local Government:** Middle Peninsula Planning District Commission

**Category of Grant Being Applied for (check one):**

Capacity Building/Planning     Project     Study

**NFIP/DCR Community Identification Number (CID):** Middlesex County (510098)

**If a state or federally recognized Indian tribe, Name of tribe:** NA

**Name of Authorized Official:** Lewis Lawrence, Executive Director

**Signature of Authorized Official:** 

**Mailing Address (1):** PO Box 286

**Mailing Address (2):** 125 Bowden Street

**City:** Saluda    **State:** VA    **Zip:** 23149

**Telephone Number:** (804) 758-2311    **Cell Phone Number:** (\_\_\_\_) \_\_\_\_\_

**Email Address:** llawrence@mppdc.com

**Contact Person (If different from authorized official):** Jackie Rickards

**Mailing Address (1):** PO Box 286

**Mailing Address (2):** 125 Bowden Street

**City:** Saluda    **State:** VA    **Zip:** 23149

**Telephone Number:** (804) 758-2311    **Cell Phone Number:** (215) 264-6451

**Email Address:** jrickards@mppdc.com

**Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes  No**

**Project Grants (Check All that Apply)**

- Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.**
- Wetland restoration.**

- Floodplain restoration.**
- Construction of swales and settling ponds.**
- Living shorelines and vegetated buffers.**
- Structural floodwalls, levees, berms, flood gates, structural conveyances.**
- Storm water system upgrades.**
- Medium and large-scale Low Impact Development (LID) in urban areas.**
- Permanent conservation of undeveloped lands identified as having flood resilience value by ConserveVirginia Floodplain and Flooding Resilience layer or a similar data driven analytic tool.**
- Dam restoration or removal.**
- Stream bank restoration or stabilization.**
- Restoration of floodplains to natural and beneficial function.**
- Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.**

**Location of Project (Include Maps):** Middlesex County

**NFIP Community Identification Number (CID#) (See appendix F):** 510098

**Is Project Located in an NFIP Participating Community?  Yes  No**

**Is Project Located in a Special Flood Hazard Area?  Yes  No** Flood Zone(s) (If Applicable): AE  
Zone

**Flood Insurance Rate Map Number(s) (If Applicable):** 51119C0240

**Total Cost of Project:** \$86,652

**Total Amount Requested:** \$69,322

## ***INTRODUCTION –***

This project proposes to construct a nature-based solution on a private property located on Moore Creek in Middlesex County. The nature-based solution will involve the installation of 50 linear feet (LF) by 4 feet high of Envirolok Bags planted with marsh grass; a 179 LF perimeter of ReadyReefs to mean low water, backfilled sand and planted with marsh grass to make a living shoreline; and 143 LF by average of 3' high more Envirolok bags will be stacked to prevent erosion higher up the bank.

FEMA, Virginia General Assembly, DCR's Floodplain Management Program, and the Middle Peninsula PDC all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes and territories and the citizens which reside and work there. These hazards include flooding, drought, hurricanes, landslides, wildfires and more. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program ([www.FightTheFloodVA.com](http://www.FightTheFloodVA.com)). This proposal is a Nature-based solution which utilizes and incorporates sustainable planning, design, environmental management, and engineering practices that weave natural features or processes into the built environment to promote adaptation and resilience. Further, this proposal incorporates natural features and processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. These benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life (*FEMA Building Community Resilience with Nature Based Solutions*, June 2021).

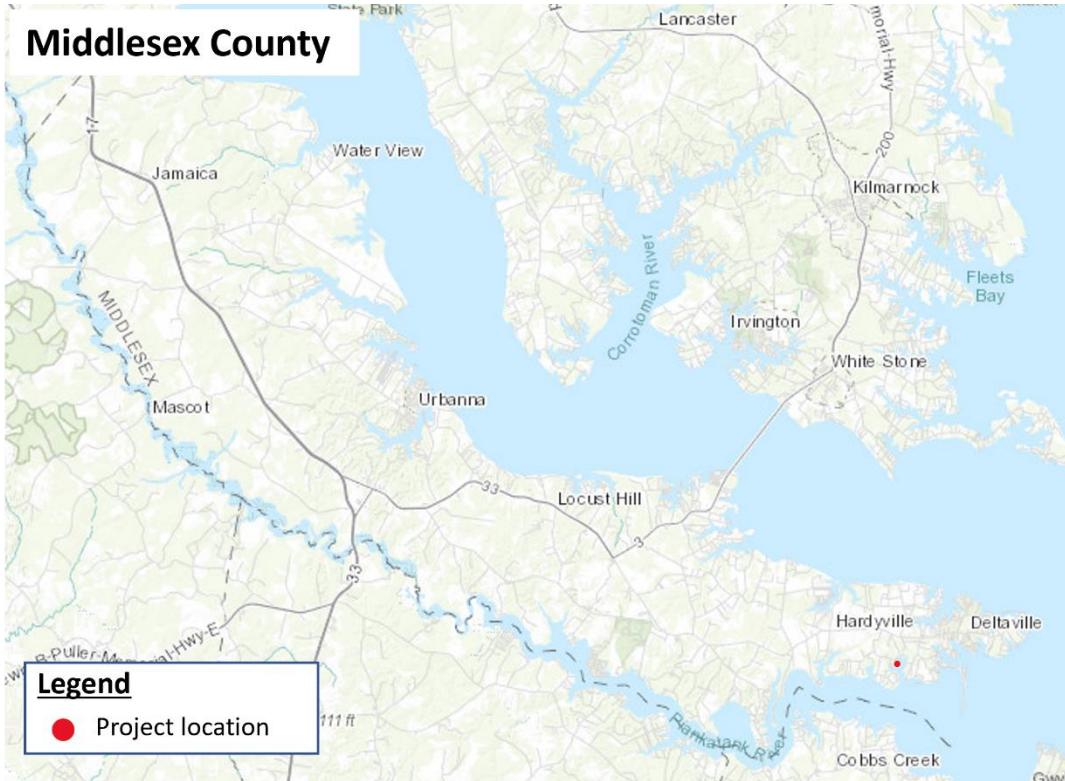
This project will be a partnership between the MPPDC and one private property owner and is supported by Middlesex County (See the community support letter in Attachment 1).

- A link or copy to the approved resilience plan: [https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8\\_19\\_DCR-packet\\_letterandplan.pdf](https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf)
- Middle Peninsula All Hazards Mitigation Plan (2016):  
[https://www.mppdc.com/articles/reports/AHMP\\_2016\\_FEMA\\_Approved\\_RED.pdf](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf)  
within the plan please see Section 4 (page 25). This Section includes historical hazard data within the region.
- Here's a link to the Middlesex County Comprehensive Plan:  
<https://www.co.middlesex.va.us/DocumentCenter/View/1275/Middlesex-County-Comprehensive-Plan-Revised-3-3-20-PDF?bidId=>

### **PROJECT LOCATION INFORMATION –**

This project proposes to install living shorelines on one private property on Moore Creek in Middlesex County (**Figure 1 and 2**).

**FIGURE 1: COUNTY MAP OF PROJECT LOCATION.**



**FIGURE 2: PARCEL MAP OF PROJECT LOCATION.**

**Parcel Map of Project Location**



**Middlesex County** is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 130 square miles of land 80 miles of shorelines. Based on 2020 Census Data, Middlesex County's population totals 10,625 which. According to DCR guidelines, a portion of the County is considered a low-income geographic area. In **Figure 3** the green areas qualified as low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

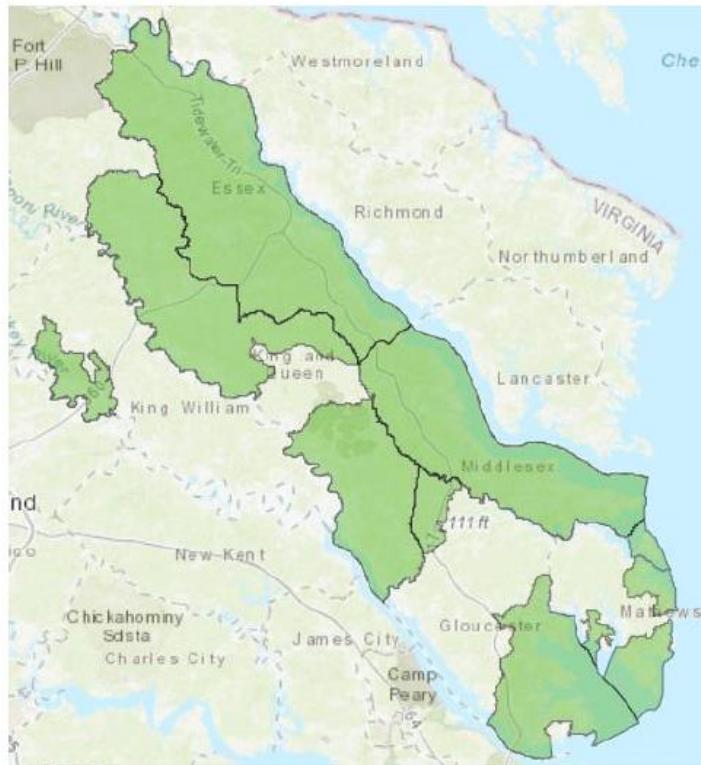
**FIGURE 3: MAP OF MIDDLE PENINSULAS LOW INCOME GEOGRAPHIC AREAS QUALIFYING UNDER DCR GUIDELINES.**

Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	\$51,954	\$57,438	\$64,237	\$66,987	\$63,982	\$70,537
Eligible Household income	\$41,563	\$45,950	\$51,389	\$53,590	\$51,186	\$56,430

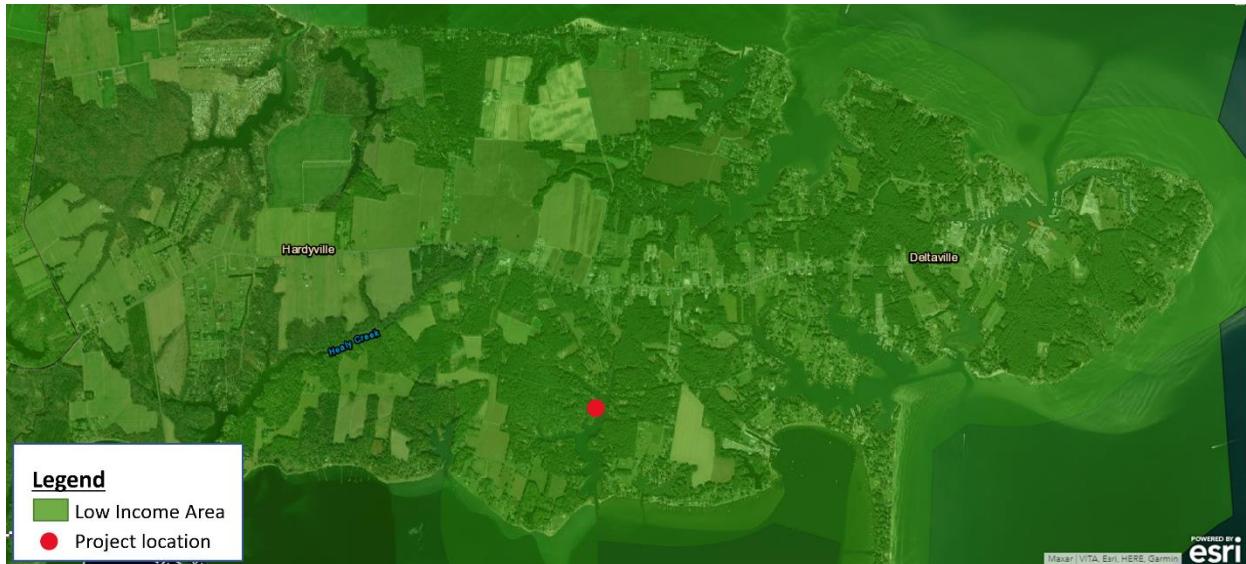
**Note:** Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.



Please see **Figure 4** for a zoomed in map of the project location and the green low-income area overlay. This shows that the project location is within the low-income area.

**FIGURE 4: MAP OF THE PROJECT LOCATION WITHIN THE GREEN LOW-INCOME AREA.**

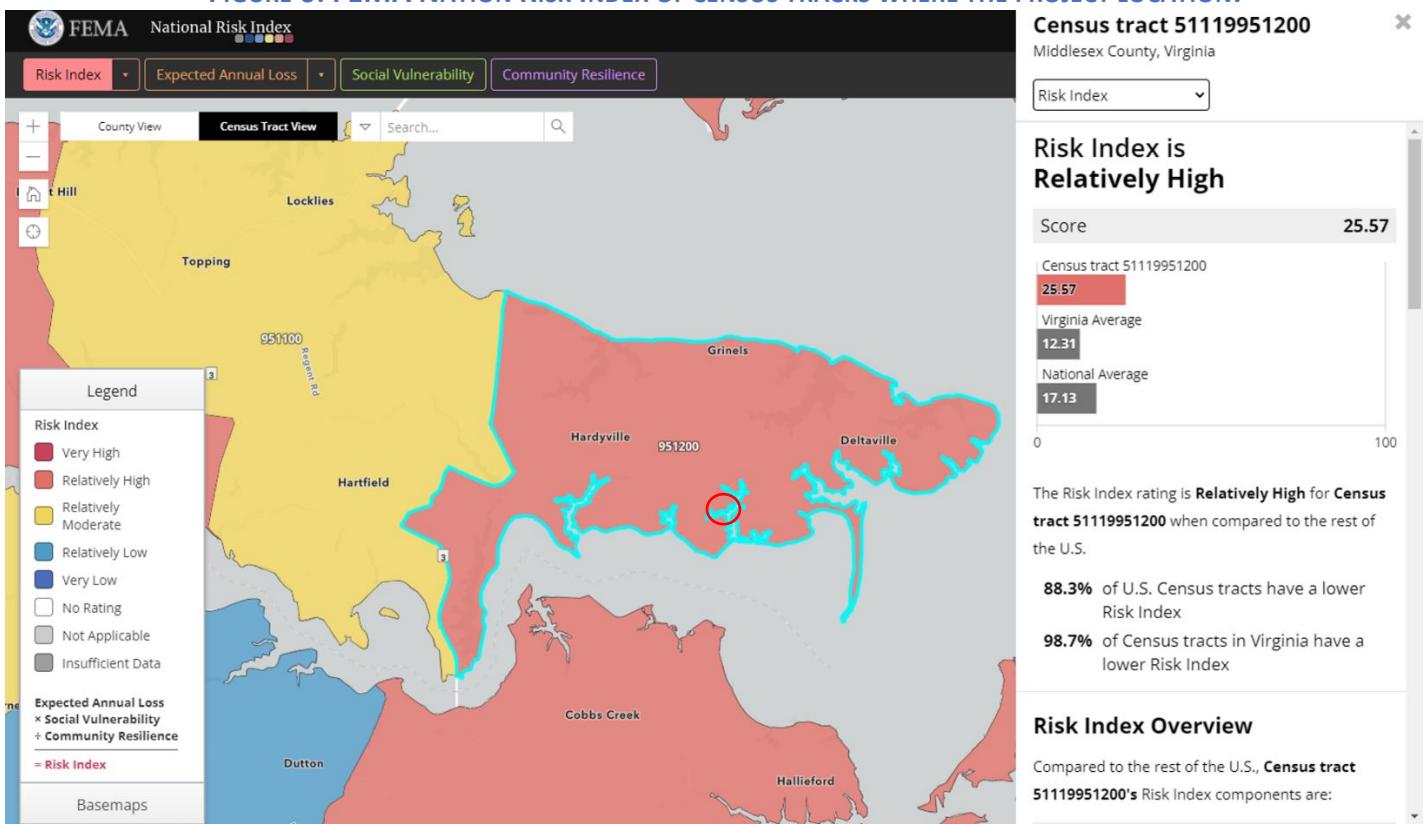


According to the VDAPT Virginia's Social Vulnerability Index Score, this project location has a moderate social vulnerability score (**Figure 5**). This is also supported by FEMA's National Risk Index which identifies the project area as having a relatively high-risk index **Figure 6**.

**FIGURE 5: VIRGINIA'S SOCIAL VULNERABILITY INDEX SCORE MAP FOR THE PROJECT LOCATION.**

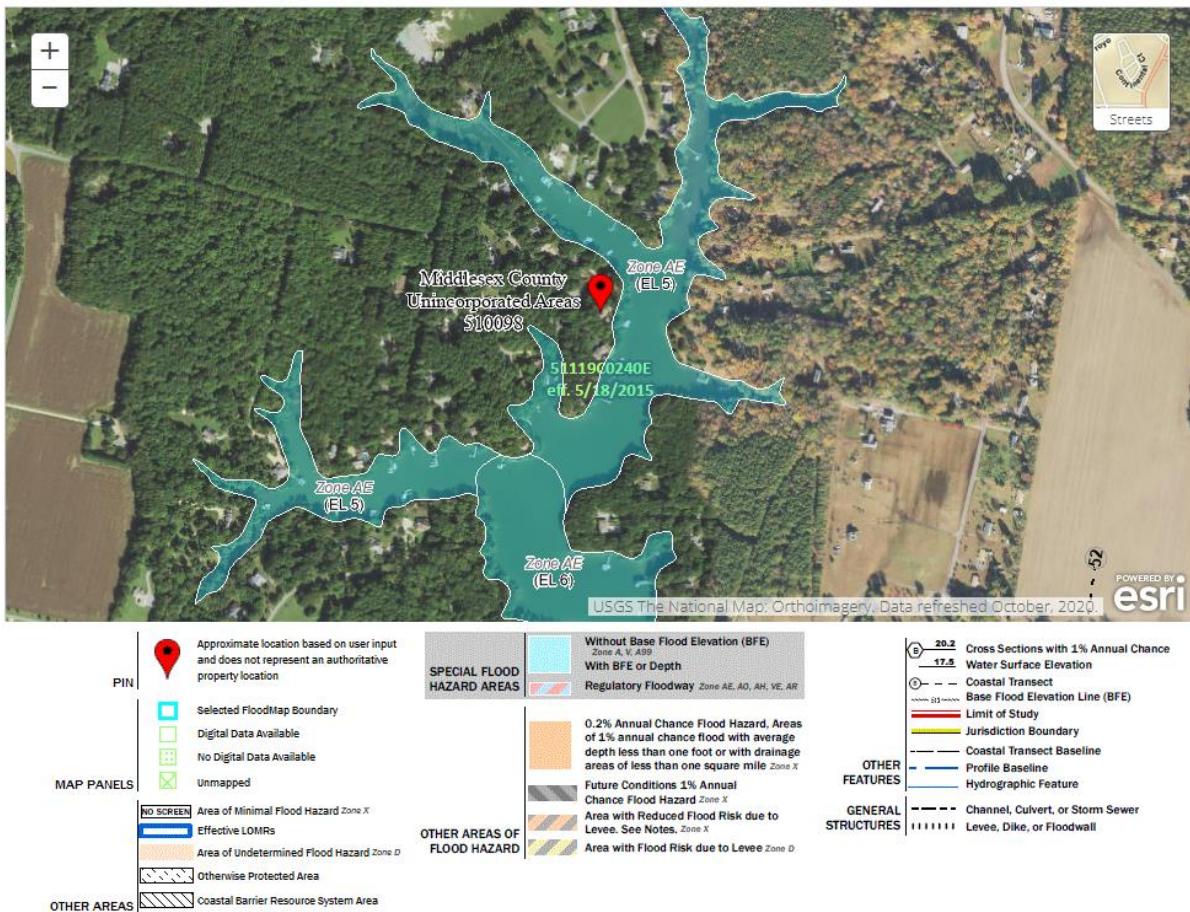


**FIGURE 6: FEMA NATION RISK INDEX OF CENSUS TRACKS WHERE THE PROJECT LOCATION.**



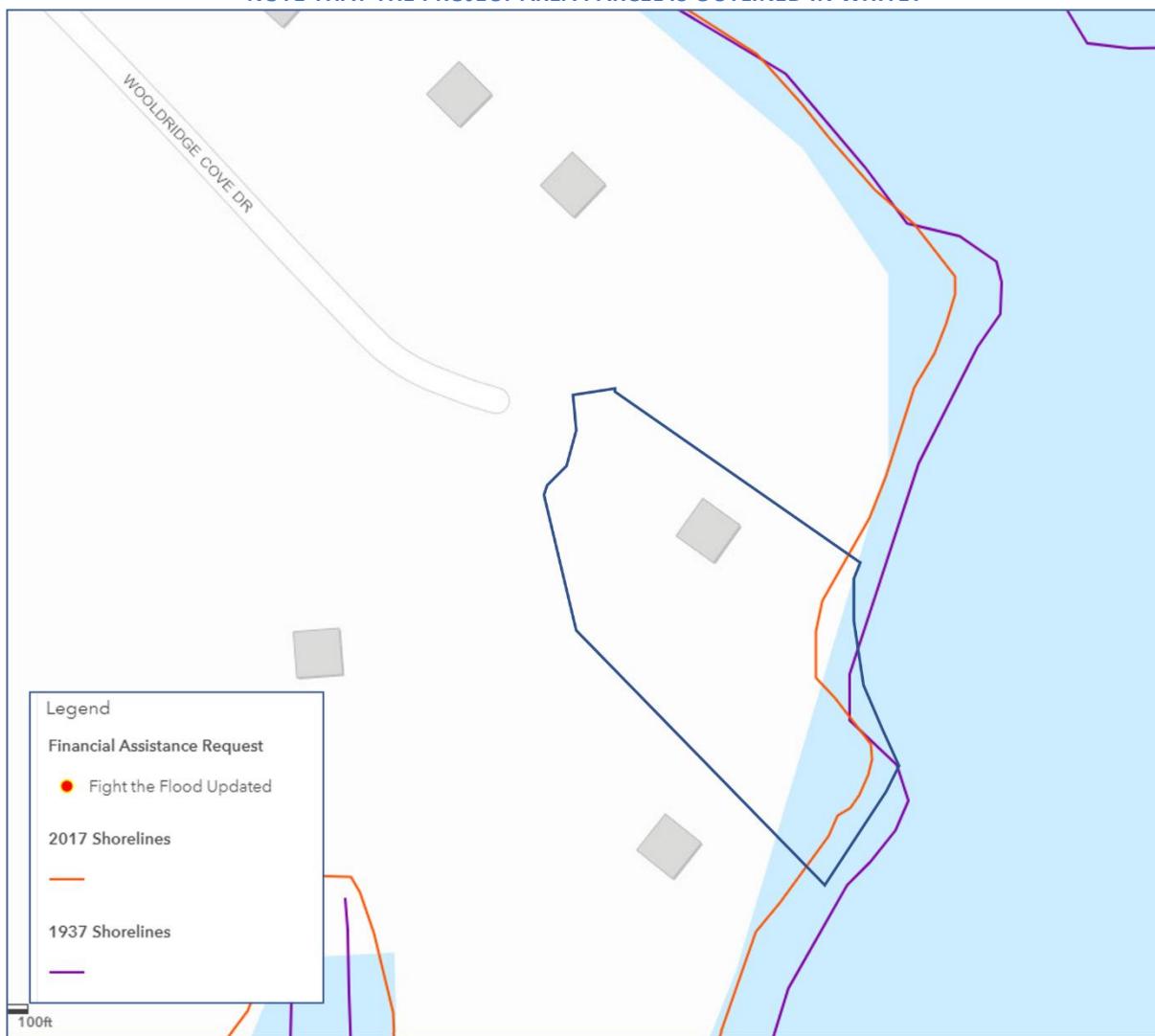
The project is located at 160 Wooldridge Cove Drive Deltaville, VA 23043 (37.54430, -76.35740). A 179-linear foot bioengineered structure, 176 linear feet of living shoreline, and 40 cubic yards of sill fill will be constructed at this project location. Within the project area there is one structure on the property including 1 residential home. The structure is not identified as severe repetitive loss structure or repetitive loss structures. This property is located within the X flood zone; however, since the project location will be on the property's shoreline this falls into the AE Zone (**Figure 7**). Please see **Attachment 2** for the FIRMettes (last mapped 5/18/2015).

**FIGURE 7: MAP OF FEMA FLOOD ZONES.**



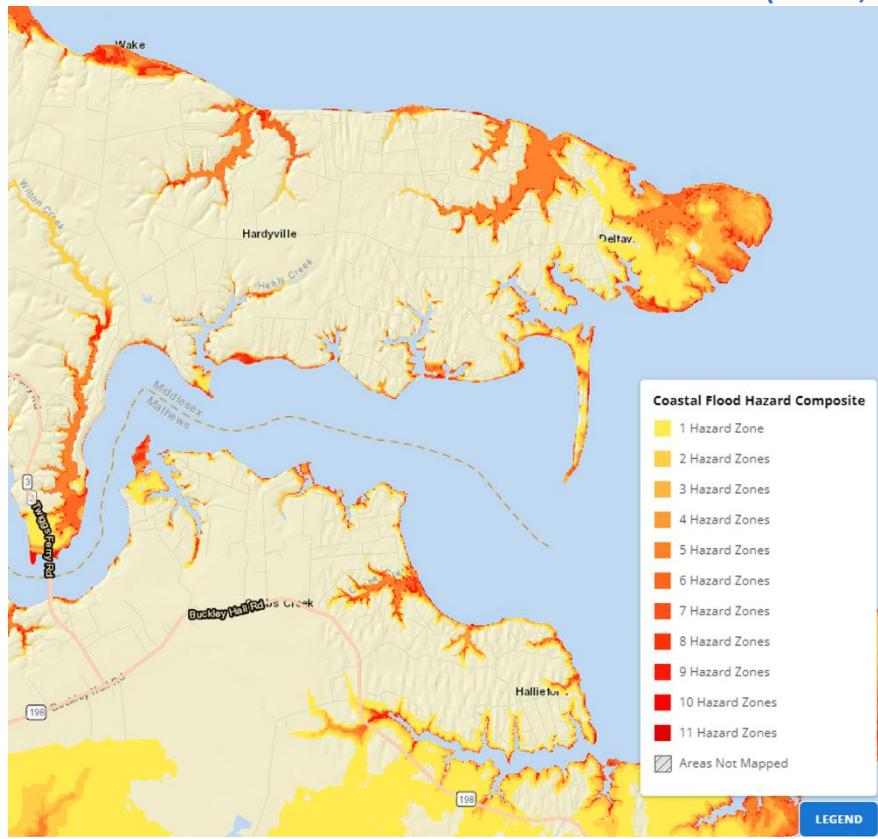
Due to the project site's proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 8** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of 4,363.8 square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events. **Attachment 3** lists 79 storm events and provides a map with the project location. Without the flood protection measures proposed, the land, habitat and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

**FIGURE 8: PROJECT LOCATION AND MAP OF THE SHORELINE CHANGE BETWEEN 1937 AND 2017. PLEASE NOTE THAT THE PROJECT AREA PARCEL IS OUTLINED IN WHITE.**



Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding (**Figure 9**).

**FIGURE 9: MAP OF PROJECT LOCATION AND RISK OF COASTAL FLOODING (NOAA, 2021).**



For more information about this project area please see:

- The Middle Peninsula All Hazards Mitigation Plan identifies all hazards that impact the region -

[https://www.mppdc.com/articles/reports/AHMP\\_2016\\_FEMA\\_Approved\\_RED.pdf](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf) .

- Middlesex County Building and Engineering Department administers the NFIP.  
Here is the link to the current floodplain ordinance:  
<https://www.co.middlesex.va.us/DocumentCenter/View/422/Floodplain-Management-PDF>

***NEED FOR ASSISTANCE –***

The Middle Peninsula Planning District Commission (MPPDC) is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 to provide solutions to problems of greater than local significance and cost-savings through economies of scale. The MPPDC serves nine localities of the Middle Peninsula including Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex Counties as well as the Towns of Tappahannock, West Point, and Urbanna.

MPPDC is staffed using multiple methods including co-operative procurement, hourly, and burdened staff. MPPDC staff consists of Executive Director, Deputy Director, Chief Financial Officer, Senior Project Planner, clerical support staff; co-operative procured Director of Planning, General Planner, Certified Flood Plain Manager, Transportation Planner, Emergency Planner; Hourly staff for Housing, Community Development Planner and Public relations.

The PDC staffing team assists localities with long-term and/or regional planning efforts. The MPPDC Executive Director, Deputy Director, and Chief Financial Officer have decades of experience in managing and administering project grants at multiple scale from grants in excess of \$1,000,000 to very small grants. MPPDC is an entrepreneurial based government agency with an annual operating budget ranging from \$750,000 to over \$1,000,000. The MPPDC manages annually 25-30 concurrent federal and state grants utilizing industry standard Grants Management Software. Staff utilize GIS and all Microsoft software as well as other software as required by different grants. The MPPDC operates service centers in the topical areas of coastal zone management, emergency planning, housing, transportation planning and transportation demand management, economic development, social assistance, small business development, general planning and technical assistance and other areas as determined by the Commission. MPPDC has over 25 years of experience managing multiple revolving loan programs. In the 25 years that the Executive Director has been employed by the Commission no audit findings have occurred.

The need for assistance is two-fold.

First, as Middlesex County borders the Rappahannock and Piankatank Rivers, the County is influenced by the water and is at high risk of coastal flooding, sea-level rise, and storm surge. Sea levels in Middlesex County have risen over 1 foot since 1950, leading to more frequent and severe coastal flooding, agricultural losses, and property damage. Sea levels are projected to rise between 2-6 feet by 2070, submerging private property and reshaping Middlesex County's coastline. Based on tidal gauge data from VIMS, relative sea-level rise rates ranging from 0.11-0.23 in./yr. (2.9-5.8 mm/yr.; period: 1976-2007; 10 stations) within the Chesapeake Bay region,

which are the highest rates reported along the U.S. Atlantic coast (Boon et. al., 2010). In addition to sea-level rise, Middlesex County has a history of being impacted by hurricanes and tropical storms. As storms pass over or near the coast, the atmospheric pressure drops, causing a large volume of sea water to build up, eventually being pushed ashore by the storm's winds causing a storm surge. In Middlesex County, strong East and Northeast winds can push water from the Chesapeake Bay into the mouth of the York and Rappahannock Rivers and Mobjack Bay, flooding much of the county's low-lying areas (Middle Peninsula Planning District Commission, 2005). Additionally, when a storm makes landfall at high tide, the storm surge and the added water from the tidal fluctuation combine to create a "storm tide". In Middlesex County, tidal waters fluctuate twice daily from 1.2 feet above mean sea level to 1.2 feet below (FEMA 1987, 6). The County has implemented several preventative measures, property protection policies, public information activities, and emergency service measures to decrease impacts on communities. Therefore, this project will build on other local efforts move toward becoming a more resilient community.

Second, at this project location, the shoreline is experiencing flood-induced erosion and undercutting of the bank. The north end of the property currently has Envirolok bags to prevent erosion and now the homeowner is looking to duplicate this effort on the south side of the property to the property line. Based on the photos in **Figure 10** the bank is eroding, and it is threatening the vegetation and trees along the bank. Without offering this section of shoreline some protection with the installation of a nature-based shoreline protection solution, this bank will continue to erode and the vegetation and trees on the shoreline will most certainly be lost. This will ultimately bring water closer to the structures on the property and increase the overall flood vulnerability of the property. Please see **Figure 10** for project location photos and **Attachment 4** for more photos.

**FIGURE 10: PHOTOS OF THE MARRON PROPERTY.**



Shoreline. Envirolok Bags are shown of the right and on the left is the eroding shoreline where the Envirolok Bags are planned to be installed to the property line.



Close-up of the bank erosion on the shoreline. This is where the Envirolok Bags are planned to be installed.

#### **ALTERNATIVES –**

Alternatives are not applicable to this project. A living shoreline is feasible at this location and therefore required per VMRC regulations. This project employs a nature-based solution, and this project cost is not greater than \$3 Million.

## **GOALS AND OBJECTIVES –**

This project proposes to remove the failing bulkhead which has hardened the shoreline for years and will be replaced with a nature-based solution. The nature-based solution is based on the DCR Flood Preparedness Fund definition: “*Nature-based solution* means an approach that reduces the impacts of flood and storm events through the use of environmental processes and natural systems. A nature-based solution may provide additional benefits beyond flood control, including recreational opportunities and improved water quality. This includes a project that reduces these impacts by protecting, restoring, or emulating natural features. The project site will use Envirolok bags. The Envirolok bag is a nonwoven geotextile produced by needle-punching together 100% synthetic staple fibers, in a random network, forming a high strength, dimensionally stable fabric. The synthetic fibers are specially formulated to resist ultraviolet light deterioration and are inert to commonly encountered soil chemicals. The fabric will not rot or mildew, is non-biodegradable, and is resistant to damage from insects and rodents. For more information about the Envirolok bags and for the permit package for the project area please see **Attachment 5**.

The goals and objectives of this project are as follows -

Goal 1: Improve coastal resiliency within the community and the Commonwealth.

Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based approach.

Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode.

Goal 2: Improve water quality

Objective A: Construct a living shoreline to capture nitrogen, phosphorus, and sediment.

Goal 3: Transferability to other communities.

Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

The MPPDC anticipates that the living shoreline installed at this project location will:

**1. Stabilize the shoreline and reduce the overall erosion rate at the project location.**

According to FEMA and NOAA living shorelines are more resilient again storms than bulkheads. With the installation of sills these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. This will protect the land and reduce the erosion on the property. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

**2. Provide ecosystem services to the community.** Since this project is proposing the installation of living shorelines, this project will have nutrient and sediment reduction

benefit to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb./lf./yr.) and a phosphorus removal rate of 0.00861 lbs./lf./yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb./lf./yr. Therefore, with a proposed project of 176 linear feet of living shoreline this has the ability of removing 2.14368 pounds of nitrogen per year, 1.51536 pounds of phosphorus per year and 7,392 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, the planting will offer more cover and protection from prey.

3. **Prevent loss of property and life.** As the installation of a living shoreline will reduce erosion of the property this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location which directly protects the largest employer in Middlesex County, which is local government.

#### ***APPROACH, MILESTONES, AND DELIVERABLES –***

This project will follow the designs outlined and approved in the Joint Permit Application. Upon issuance of the permits for this project, VMRC has analyzed the upstream and downstream impacts of this project using the best available science, as per state law. Please see **Attachment 5** for the JPA application, Design, and Permit Package. The below table outlines the components of the nature-based solution and what will be installed at the project location, as permitted by Virginia Marine Resource Commission (VMRC).

	<b>Total Project Location</b>
Sill Fill	40 Cubic Yards
Bioengineered Structure	179 Linear Feet
Living Shoreline	176 Linear Feet

The anticipated timeline for this project could be as quick as 1 year, but no more than two years. The timeline range is due to the potential delays in the construction industry or delays caused by COVID, including supply shortages. Having a two-year timeline will offer potential windows for planting the living shoreline - one in 2022 and one in 2023. To explain, the Chesapeake Bay Foundation recommends that perennials and grasses for living shorelines should be planted during peak growing season (in mid-to-late summer) to allow enough time for their root systems to become established before they go dormant in the late Fall. Trees and shrubs should be planted in Spring and Fall when there is adequate rainfall to help them

develop strong roots and leafy growth.

Below is the project timeline and project milestones for this project.

Receive funding notice - December 2021

Coordinate with property owners and the project contractor ReadyReef Inc to review project timeline and project expectations – January 2022

Initiate site preparation at the project location - January 2022 to July 2022

Construction of the living shoreline – June 2022 to September 2022

Project Close out – December 2022

#### ***RELATIONSHIP TO OTHER PROJECTS –***

For over 40 years the Middle Peninsula Planning District Commission (MPPDC) and its participating localities have worked diligently on topics associated with the land water interface, including coastal use conflicts and policies, sea level rise, stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

The proposed project is a priority project generated from the Middle Peninsula Regional Flood Resilience Plan, which was approved by DCR during August 2021. The Flood Resiliency Plan serves as the MPPDC's guiding document for its flood resiliency programs and is comprised of two primary MPPDC-approved policy documents which form the implementation and foundation of the Middle Peninsula flood protection approach and are indirectly and directly supported by multiple specific regional planning documents, both approved by various required federal, regional, or local partners as required by statute.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

#### ***Long Term Planning***

- Middle Peninsula All Hazard Mitigation Plan, FEMA and Middle Peninsula locality approved 2016 (MPPDC Website)
- The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy, MPPDC Approved March 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan - MPPDC Approved ~annually

#### ***Short Term Implementation***

- Middle Peninsula Planning District Commission Fight the Flood Program Design MPPDC Commission (approved June 2020 Chairman approved 8/6/21 update)
- Middle Peninsula Planning District Commission Living Shoreline Resiliency Incentive Funding Program-Virginia Revolving Loan Fund Program Design and Guidelines (approved 2015)

As the MPPDC has continuously worked on flooding and coastal resiliency topics, **Attachment 6** lists the projects and short description of relevant projects. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the MPPDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 was in response to emerging flood challenges. The MPPDC Commission authorized staff to develop the **Middle Peninsula Fight the Flood (FTF) Program**. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The Middle Peninsula **FTF** program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, MPPDC staff have partnered with private property owners that have registered for the FTF program to assist them in finding funding for their shoreline.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

#### ***MAINTENANCE PLAN –***

The approved VMRC permits does not require a maintenance plan; therefore, the maintenance of this construction project will be in accordance with the permit requirements.

#### ***CRITERIA –***

Describe how the project meets each of the applicable scoring criteria contained in Appendix B and provide the required documentation where necessary. Documentation can be incorporated into the Scope of Work Narrative or included as attachments to the application. Appendix B must be completed and submitted with the application.

For local governments that are not towns, cities, or counties, the documentation provided for the criteria below should be based on the local government or local governments in which the project is located and/or directly impacts.

1. **Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe)?**

YES.

2. **Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?**  
YES. Here's the link: [https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8\\_19\\_DCR-packet\\_letterandplan.pdf](https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf)
3. **For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?**  
YES. Please see **Attachment 1**
4. **Has the applicant provided evidence of an ability to provide the required match funds?**  
YES. Please see the match commitment letter in **Attachment 8**
5. **Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?**  
YES.

**BUDGET NARRATIVE -**

For applications submitted under MPPDC Round 2 proposals that resides in a low-income area or opportunity zone the following applies to the submitted budget. If the applicant does not, then the following does not apply: For projects within low-income areas and opportunity zones, the budgets are being submitted with budgets that reflect a 70:30 grant to match ratio even though the program manual states that these projects are eligible for 80:20 match for being in low-income areas and opportunity zones. In response to the DCR letter addressed to the MPPDC dated October 20, 2021, which eliminated the ability of MPPDC applicants who reside in a low-income area or opportunity zone to request 80% state funding. We respectfully request that DCR reconsider applying the determination required for Round 1 proposals on the MPPDC Round 2 proposals since the grant manual states that all applicants who reside in a low-income area or opportunity zone should be funded at the level that they qualify for. Should DCR agree to award projects located in low-income areas or opportunity zones at the levels indicated within the grant manual, the budgets can be adjusted when contracts are awarded to ensure consistency with the grant manual.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is 26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Also please note that the cost estimates for the construction of this project were supplied by the contractor, Ready Reef, LLC. Please see **Attachment 7**.

In summary:

**Estimated total project cost:** \$ 86,652

**Amount of funds requested from the Fund (70% project total):** \$ 69,322

Marron				Budget (Cat. D)	
Budget Narrative (Category D)					
Personnel Salaries/Wages		DCR %	Match %	Annual Salary	Applicant 1
Staff		22.25%	5.57%	\$70,000	DCR Owner Total
					\$6,356 \$1,589 \$7,944
Personnel		Lewie's Cheat Sheet		DCR Owner	\$6,356 \$1,589 \$7,945
		Total	80%	20%	
Fringe, 26.21% salaries;		\$66,845	53,476.00	13,369.00	\$1,666 \$416 \$2,082
		15%	10,026.75	8,021.40 2,005.35	
Total Personnel		76,871.75	61,497.40	15,374.35	\$8,022 \$2,005 \$10,027
Direct Cost: SubAward/SubContract Agreements					80% 20%
Enviro Lock				\$29,887	\$23,910 \$5,977 \$29,887
1 ft Reef				\$17,472	\$13,978 \$3,494 \$17,472
Sand/pack and Plants 1800+2880+2880				\$7,560	\$6,048 \$1,512 \$7,560
conveyor sand and equipment rental 2400+ 3626				\$6,026	\$4,821 \$1,205 \$6,026
tree removal and yard repair				\$900	\$720 \$180 \$900
Legal Procurement and Financing/deeds of Trust				\$5,000	\$4,000 \$1,000 \$5,000
0				\$0	\$0 \$0 \$0
0				\$0	\$0 \$0 \$0
Project financial services (50000/50500/55900/56100)				\$5,974	\$4,779 \$1,195 \$5,974
Facility services (52100/52200/52400/54200/54500)				\$1,703	\$1,363 \$341 \$1,703
Communication services (52250/52255/55150/57100/57300)				\$537	\$429 \$107 \$537
Data services (53100/53101/53200/57900)				\$162	\$129 \$32 \$162
Material services (53400/53500/57200/57500)				\$633	\$507 \$127 \$633
Consulting services (55100/56300/56400/56700)				\$771	\$617 \$154 \$771
					\$76,625
SUBTOTAL: Direct Costs					\$69,322 \$17,330 \$86,652
Total					\$69,322 \$17,330 \$86,652
Other Match:					\$0 \$0 \$0
Source of Match					
GRAND TOTAL					\$69,322 \$17,330 \$86,652

Finally, please see the authorization to request for funding in **Attachment 9**.

## Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation  
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Middle Peninsula Planning District Commission	
Eligibility Information		
Criterion	Description	Check One
<b>1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?</b>		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
<b>2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?</b>		
Yes	Eligible for consideration under all categories	X
No	Eligible for consideration for studies, capacity building, and planning only	
<b>3. If the applicant is <u>not</u> a town, city, or county, are letters of support from all affected local governments included in this application?</b>		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
<b>4. Has this or any portion of this project been included in any application or program previously funded by the Department?</b>		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
<b>5. Has the applicant provided evidence of an ability to provide the required matching funds?</b>		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Applicant Name:	Middle Peninsula Planning District Commission		
Scoring Information			
Criterion	Point Value	Points Awarded	
<b>6. Eligible Projects (Select all that apply)</b>			
<p>Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.</p>			
<p><b>1.a.</b> Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.</p>		50	
<input type="checkbox"/> Wetland restoration, floodplain restoration <input type="checkbox"/> Living shorelines and vegetated buffers. <input type="checkbox"/> Permanent conservation of undeveloped lands identified as having flood resilience value by <i>ConserveVirginia</i> Floodplain and Flooding Resilience layer or a similar data driven analytic tool <input type="checkbox"/> Dam removal <input type="checkbox"/> Stream bank restoration or stabilization. <input type="checkbox"/> Restoration of floodplains to natural and beneficial function. <input type="checkbox"/> Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.		45	45
<p><b>1.b.</b> any other nature-based approach</p>		40	
All hybrid approaches whose end result is a nature-based solution		35	
All other projects		25	
<b>7. Is the project area socially vulnerable? (Based on <a href="#">ADAPT VA's Social Vulnerability Index Score.</a>)</b>			
Very High Social Vulnerability (More than 1.5)		15	
High Social Vulnerability (1.0 to 1.5)		12	
Moderate Social Vulnerability (0.0 to 1.0)		8	8
Low Social Vulnerability (-1.0 to 0.0)		0	
Very Low Social Vulnerability (Less than -1.0)		0	
<b>8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?</b>			

Yes	<b>10</b>	
No	<b>0</b>	0
<b>9. Is the proposed project in a low-income geographic area as defined in this manual?</b>		
Yes	<b>10</b>	10
No	<b>0</b>	
<b>10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?</b>		
Yes	<b>5</b>	5
No	<b>0</b>	
<b>11. Does this project provide “community scale” benefits?</b>		
Yes	<b>20</b>	20
No	<b>0</b>	
Total Points		88

## Appendix D: Checklist All Categories

Virginia Department of Conservation and RecreationCommunity Flood Preparedness Fund Grant  
Program

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Scope of Work Narrative		
Supporting Documentation	Included	
Detailed map of the project area(s) (Projects/Studies)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
FIRMette of the project area(s) (Projects/Studies)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Historic flood damage data and/or images (Projects/Studies)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
A link to or a copy of the current floodplain ordinance	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	<input type="checkbox"/> Yes	<input type="checkbox"/> No
A link to or a copy of the current hazard mitigation plan	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
A link to or a copy of the current comprehensive plan	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Social vulnerability index score(s) for the project area from <a href="#">ADAPT VA's Virginia Vulnerability Viewer</a>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
If applicant is not a town, city, or county, letters of support from affected communities	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Completed Scoring Criteria Sheet in Appendix B, C, or D	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Budget Narrative		
Supporting Documentation	Included	
Authorization to request funding from the Fund from governing body or chief executive of the local government	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Signed pledge agreement from each contributing organization	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

## Attachment 1: Community Support Letter

Matthew L. Walker  
County Administrator  
877 General Puller Hwy  
Saluda, VA 23149  
804-758-4330  
[m.walker@co.middlesex.va.us](mailto:m.walker@co.middlesex.va.us)



Betty S. Muney  
Assistant County Administrator  
Ann Marie S. Ricardi  
Assistant County Administrator

### County of Middlesex Office of the County Administrator

July 20, 2021

Lewis L Lawrence, Executive Director  
Middle Peninsula Planning District Commission  
P.O. Box 286  
Saluda, Va 23149

RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund

Dear Mr. Lawrence:

Middlesex County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents are part of our necessary governmental functions and are consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood (FTF) Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC FTF Program provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs assist to secure the tax base of coastal localities and reduce the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types.

The FTF and the Living Shoreline programs exist to help the owners of flood-prone properties access programs and services to better manage challenges posed by flood water and to direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents, to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

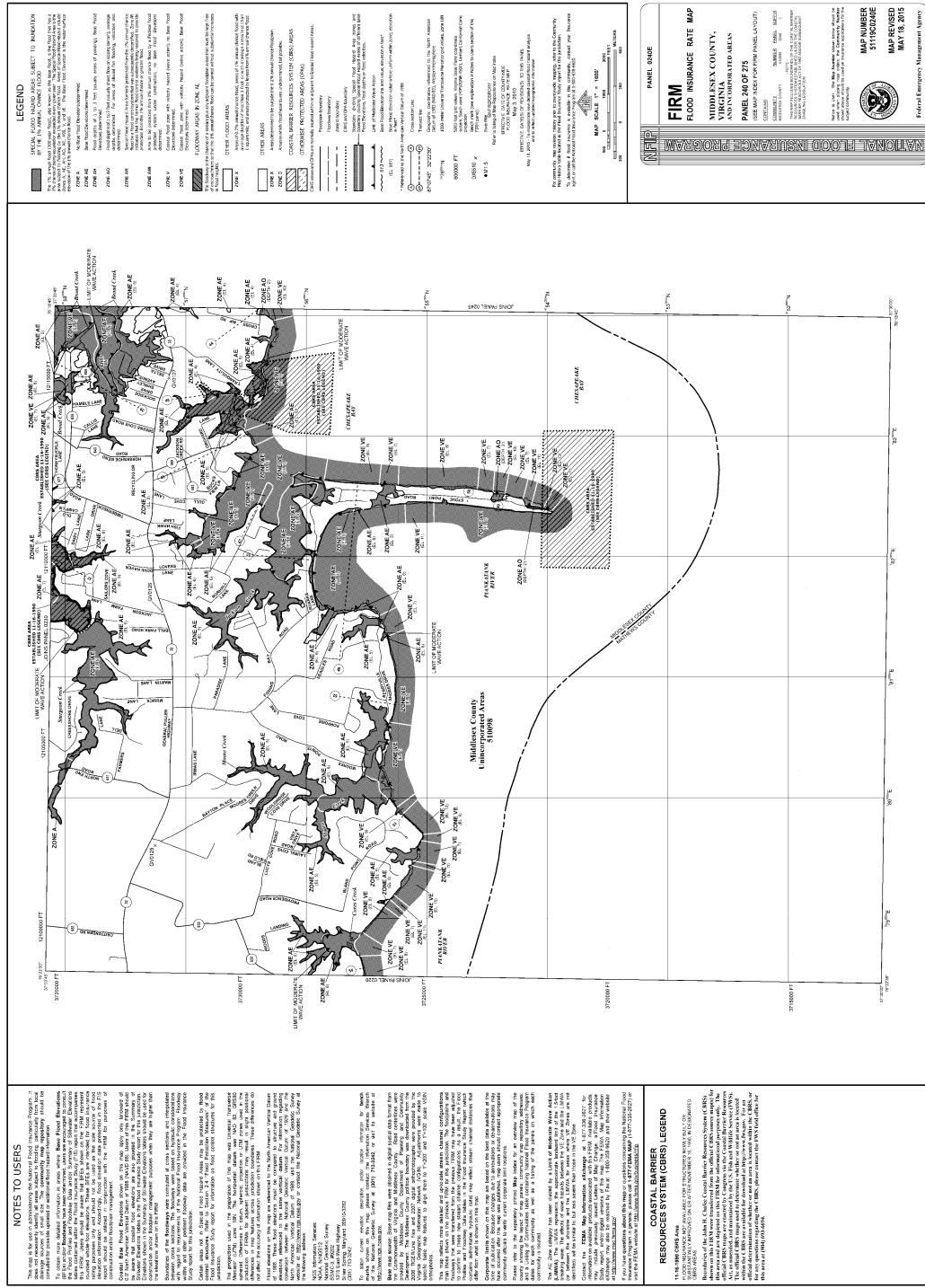
Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-758-4330.

Respectfully,

Matt Walker  
County Administrator

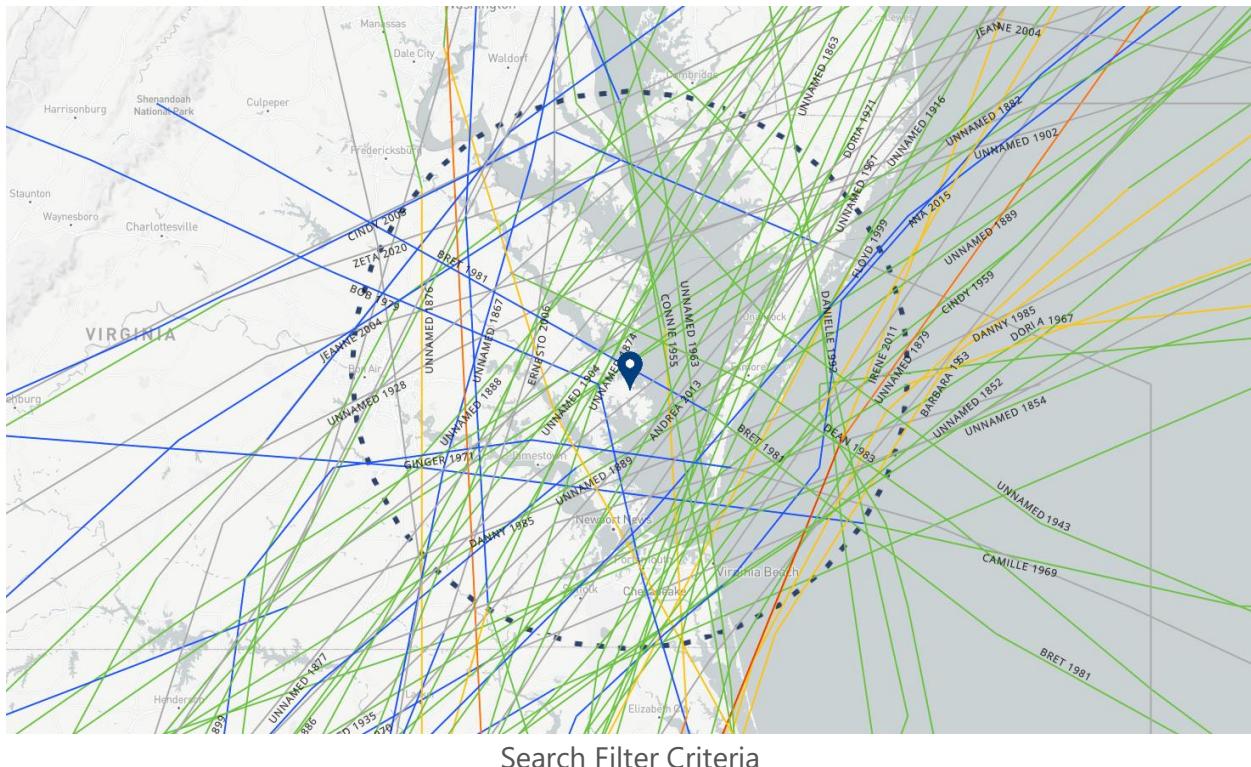
## **Attachment 2: Project Location FIRMette**

Marron Property (FIRMette #: **51119C0240**)



## Attachment 3: List of historic hurricanes impacting the project area.

### Hurricane List



Location: 37.54430, -76.35740

Categories: H5, H4, H3, H2, H1, TS, TD, ET

Months: ALL

Years: ALL

El Niño-Southern Oscillation (ENSO): ALL

Minimum Pressure (mb) below: 1150

Include Unknown Pressure Rating: TRUE

Buffer Distance: 60

Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

**Attachment 4: Photos of the Parker property shoreline.**





**Attachment 5: JPA, Design, and Permit Package**

**From:** [Chris Davis](#)  
**To:** [jpa.permits@mrc.virginia.gov](mailto:jpa.permits@mrc.virginia.gov)  
**Cc:** [Brian Marron](#); [Patti Marron](#)  
**Subject:** JPA Application attached  
**Date:** Tuesday, December 8, 2020 9:52:11 AM  
**Attachments:** [Marron JPA 12-6 2020.pdf](#)  
[Marron Local Map Area.pdf](#)  
[Marron Plan View 11-6-20 \(4\).png](#)  
[Marron Profile 11-12-20 \(4\).png](#)  
[Envirolok-Baq-Tan-Data-Sheet.pdf](#)  
[Envirolok Standard Unit Detail.pdf](#)  
[Ricci Envirolok Section Layout1 5-20-19.pdf](#)  
[1" high individual bridge reef for JPA 1-6-20.pdf](#)  
[Marron Area Map.pdf](#)

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- ❖ DEQ: Permit application fees required for Virginia Water Protection permits – while detailed in 9VAC25-20 – are conveyed to the applicant by the applicable DEQ office (<http://www.deq.virginia.gov/Locations.aspx>). Complete the Permit Application Fee Form and submit it per the instructions to the address listed on the form. Instructions for submitting any other fees will be provided to the applicant by DEQ staff.
- ❖ VMRC: An application fee of \$300 may be required for projects impacting tidal wetlands, beaches and/or dunes when VMRC acts as the LWB. VMRC will notify the applicant in writing if the fee is required. Permit fees involving subaqueous lands are \$25.00 for projects costing \$10,000 or less and \$100 for projects costing more than \$10,000. Royalties may also be required for some projects. The proper permit fee and any required royalty is paid at the time of permit issuance by VMRC. VMRC staff will send the permittee a letter notifying him/her of the proper permit fees and submittal requirements.
- ❖ LWB: Permit fees vary by locality. Contact the LWB for your project area or their website for fee information and submittal requirements. Contact information for LWBs may be found at [http://ccrm.vims.edu/permits\\_web/guidance/local\\_wetlands\\_boards.html](http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html).

<b>FOR AGENCY USE ONLY</b>	
	Notes:
JPA #	<b>20-2221</b>

## **APPLICANTS**

### **Part 1 – General Information**

**PLEASE PRINT OR TYPE ALL ANSWERS:** If a question does not apply to your project, please print N/A (not applicable) in the space provided. If additional space is needed, attach 8-1/2 x 11 inch sheets of paper.

<u><b>Check all that apply</b></u>				
Pre-Construction Notification (PCN) <input type="checkbox"/> NWP # _____ <i>(For Nationwide Permits ONLY - No DEQ-VWP permit writer will be assigned)</i>	Regional Permit 17 (RP-17) <input type="checkbox"/>			
<b>County or City in which the project is located:</b> Middlesex County <b>Waterway at project site:</b> Moore Creek off Piankatank River.				
<b>PREVIOUS ACTIONS RELATED TO THE PROPOSED WORK (Include all federal, state, and local pre application coordination, site visits, previous permits, or applications whether issued, withdrawn, or denied)</b>				
Historical information for past permit submittals can be found online with VMRC - <a href="https://webapps.mrc.virginia.gov/public/habitat/">https://webapps.mrc.virginia.gov/public/habitat/</a> - or VIMS - <a href="http://ccrm.vims.edu/permits/newpermits.html">http://ccrm.vims.edu/permits/newpermits.html</a>				
Agency	Action / Activity	Permit/Project number, including any non-reporting Nationwide permits previously used (e.g., NWP 13)	Date of Action	If denied, give reason for denial

## Part 1 - General Information (continued)

1. Applicant's legal name\* and complete mailing address: Contact Information:

Brian Marron  
6525 Monument Avenue  
Richmond, VA  
23226

Home (804 ) 370-3561  
Work ( )  
Fax ( )  
Cell (800 ) 370-3561  
e-mail brian.marron79@gmail.com

State Corporation Commission Name and ID Number (if applicable) \_\_\_\_\_

2. Property owner(s) legal name\* and complete address, if different from applicant: Contact Information:

Home ( )  
Work ( )  
Fax ( )  
Cell ( )  
e-mail \_\_\_\_\_

State Corporation Commission Name and ID Number (if applicable) \_\_\_\_\_

3. Authorized agent name\* and complete mailing address (if applicable):

Chris Davis  
504 Smoketree Ct  
North Chesterfield, VA  
23236

Contact Information:

Home ( )  
Work ( )  
Fax ( )  
Cell (804 ) 338-3103  
e-mail chris.readyreef@gmail.com

State Corporation Commission Name and ID Number (if applicable) \_\_\_\_\_

\* **If multiple applicants, property owners, and/or agents, each must be listed and each must sign the applicant signature page.**

4. Provide a detailed description of the project in the space below, including the type of project, its dimensions, materials, and method of construction. Be sure to include how the construction site will be accessed and whether tree clearing and/or grading will be required, including the total acreage. If the project requires pilings, please be sure to include the total number, type (e.g. wood, steel, etc), diameter, and method of installation (e.g. hammer, vibratory, jetted, etc). If additional space is needed, provide a separate sheet of paper with the project description.

The project is to install Envirolok Bags planted with marsh grass for 50 LF x 4' high at the shoreline against the steep bank adjacent to the Client's dock on Moore Creek. To the north and south of these bags, a 179 LF perimeter of ReadyReefs out to MLW will be installed, with backfilled sand and planted with marsh grass to make a living shoreline. Against the bank, 143 LF x average of 3' high more Envirolok bags will be stacked to prevent erosion higher up the bank. All work is above MLW, except where reefs diverge out to create 5' gap. No SAVs are present. Any grasses covered by backfill or bags will be replaced. There will be a net gain of 520 ft<sup>2</sup> of marsh grass. No grading or tree clearing in the RPA is required. Site will be accessed through the yard.

## Part 1 - General Information (continued)

5. Have you obtained a contractor for the project?  Yes\*  No. \*If your answer is "Yes" complete the remainder of this question and submit the Applicant's and Contractor's Acknowledgment Form (enclosed)

Contractor's name\* and complete mailing address:

ReadyReef Inc  
504 Smoketree Ct.  
North Chesterfield, VA  
23236

Contact Information:

Home  \_\_\_\_\_  
Work  \_\_\_\_\_  
Fax  \_\_\_\_\_  
Cell  (804) 338-3103  
email  chris.readyreef@gmail.com

State Corporation Commission Name and ID Number (if applicable) \_\_\_\_\_

\* If multiple contractors, each must be listed and each must sign the applicant signature page.

6. List the name, address and telephone number of the newspaper having general circulation in the area of the project. Failure to complete this question may delay local and State processing.

Name and complete mailing address:

Southside Sentinel  
276 Virginia Street  
PO Box 549  
Urbanna, VA  
23175

Telephone number

(804) 758-2328 \_\_\_\_\_

7. Give the following project location information:

Street Address (911 address if available)  160 Wooldridge Cove Rd \_\_\_\_\_

Lot/Block/Parcel#  40 82 41 \_\_\_\_\_

Subdivision Lucy's Cove

City / County  Deltaville \_\_\_\_\_ ZIP Code  23043 \_\_\_\_\_

Latitude and Longitude at Center Point of Project Site (Decimal Degrees):

37.544195°N /  -76.357231°W \_\_\_\_\_ (Example: 36.41600/-76.30733)

If the project is located in a rural area, please provide driving directions giving distances from the best and nearest visible landmarks or major intersections. Note: if the project is in an undeveloped subdivision or property, clearly stake and identify property lines and location of the proposed project. A supplemental map showing how the property is to be subdivided should also be provided.

From Saluda, take Rt. 33 East towards Deltaville. Turn Right onto Providence Rd, State Rt 633. Follow Rt. 633, but when it takes a 90°right turn, keep going straight as it turns into Lucy Cove Rd. Turn left at Stop Sign onto Sandy Bottom Drive. Turn right onto Wooldridge Cove Drive. House Number 160 is at the end in the cul-de-sac.

8. What are the primary and secondary purposes of and the need for the project? For example, the primary purpose may be "to protect property from erosion due to boat wakes" and the secondary purpose may be "to provide safer access to a pier."

The primary purpose is stop erosion at the toe of the bank which is being undercut with soil loss and threat to dock access.

The secondary purpose is to achieve erosion control with the environmental benefit of adding marsh grasses and oysters to the waterfront.

## Part 1 - General Information (continued)

9. Proposed use (check one):  
 Single user (private, non-commercial, residential)  
 Multi-user (community, commercial, industrial, government)
10. Describe alternatives considered and the measures that will be taken to avoid and minimize impacts, to the maximum extent practicable, to wetlands, surface waters, submerged lands, and buffer areas associated with any disturbance (clearing, grading, excavating) during and after project construction. *Please be advised that unavoidable losses of tidal wetlands and/or aquatic resources may require compensatory mitigation.*
- Only 20ft<sup>2</sup> of thin marsh grass will be covered with backfill delivered from the yard.  
These will be replaced with 540 ft<sup>2</sup> of new marsh grass plants in the Envirolok bags and on the Living Shoreline.  
No buffer areas will be impacted by traffic over the mulch covered yard.
11. Is this application being submitted for after-the-fact authorization for work which has already begun or been completed?  Yes  No. If yes, be sure to clearly depict the portions of the project which are already complete in the project drawings.
12. Approximate cost of the entire project (materials, labor, etc.): \$\_\_\_\_\_  
Approximate cost of that portion of the project that is channelward of mean low water:  
\$ 130 \_\_\_\_\_
13. Completion date of the proposed work: June 30 \_\_\_\_\_ - 2022 \_\_\_\_\_
14. Adjacent Property Owner Information: List the name and complete **mailing address**, including zip code, of each adjacent property owner to the project. (NOTE: If you own the adjacent lot, provide the requested information for the first adjacent parcel beyond your property line.) Failure to provide this information may result in a delay in the processing of your application by VMRC.

40 82 40  
Arthur and Evelyn Wilton Jr  
PO Box 212  
Deltaville, VA  
23043

40 82 42  
Gordon White  
PO Box 129  
Hardyville, VA  
23070

## Part 2 - Signatures

### 1. Applicants and property owners (if different from applicant).

**NOTE: REQUIRED FOR ALL PROJECTS**

**PRIVACY ACT STATEMENT:** The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.

**CERTIFICATION:** I am hereby applying for all permits typically issued by the DEQ, VMRC, USACE, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit.

In addition, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

---

Applicant's Legal Name (printed/typed)

---

(Use if more than one applicant)

---

Applicant's Signature

---

(Use if more than one applicant)

---

Date

---

Property Owner's Legal Name (printed/typed)  
(If different from Applicant)

---

(Use if more than one owner)

---

Property Owner's Signature

---

(Use if more than one owner)

---

Date

## Part 3 – Appendices (continued)

**Appendix B: Projects for Shoreline Stabilization** in tidal wetlands, tidal waters and dunes/beaches including riprap revetments and associated backfill, marsh toe stabilization, bulkheads and associated backfill, breakwaters, beach nourishment, groins, jetties, and living shoreline projects. Answer all questions that apply. Please provide any reports provided from the Shoreline Erosion Advisory Service or VIMS.

**NOTE:** It is the policy of the Commonwealth that living shorelines are the preferred alternative for stabilizing tidal shorelines (Va. Code § 28.2-104.1). **Information on non-structural, vegetative alternatives (i.e., Living Shoreline) for shoreline stabilization is available at** [http://ccrm.vims.edu/coastal\\_zone/living\\_shorelines/index.html](http://ccrm.vims.edu/coastal_zone/living_shorelines/index.html).

1. Describe each **revetment, bulkhead, marsh toe, breakwater, groin, jetty, other structure, or living shoreline project** separately in the space below. Include the overall length in linear feet, the amount of impacts in acres, and volume of associated backfill below mean high water and/or ordinary high water in cubic yards, as applicable:

179 LF of ReadyReefs are arranged in linear double rows that mate together. Oyster veneers face seaward. The bottom is firm, so no filter cloth is required. The 6 ft<sup>2</sup> encroachment below MLW is only necessary due to the requirement for a 5' gap every 100'.

The Envirolok bags spec sheets and installation diagrams are attached.

The foundation layer bags are filled with round river rock to allow for hydraulic relief behind the bags. They can be stacked at any angle to match slope.

Also the installation diagram shows anchoring specs, using geoweb, rebar and earth anchors for structurally fixing the bags to the embankment.

Sand will be placed behind the bags and packed with them using soil compactor machine.

Marsh grass sprigs will be planted 1' on center in the backfilled sand to create a Living Shoreline.

2. What is the maximum encroachment channelward of mean high water? 15 feet.

Channelward of mean low water? 3 feet.

Channelward of the back edge of the dune or beach? 15 feet.

3. Please calculate the square footage of encroachment over:

• Vegetated wetlands	<u>20</u> square feet
• Non-vegetated wetlands	<u>2102</u> square feet
• Subaqueous bottom	<u>6</u> square feet
• Dune and/or beach	<u>0</u> square feet

4. For bulkheads, is any part of the project maintenance or replacement of a previously authorized, currently serviceable, existing structure?        Yes        No.

If yes, will the construction of the new bulkhead be no further than two (2) feet channelward of the existing bulkhead?        Yes        No.

If no, please provide an explanation for the purpose and need for the additional encroachment.

## Part 3 – Appendices (continued)

5. Describe the type of construction and **all** materials to be used, including source of backfill material, if applicable (e.g., vinyl sheet-pile bulkhead, timber stringers and butt piles, 100% sand backfill from upland source; broken concrete core material with Class II quarry stone armor over filter cloth).

**NOTE: Drawings must include construction details, including dimensions, design and all materials, including fittings if used.**

The ReadyReefs are locally sourced crack resistant concrete substrate with an oyster shell veneer cast in. There is 5" of embedded PVC pipe for attachment/lifting purposes.

The Envirolok bags spec sheets are attached. They are filled with a 25% topsoil and 75% clean sand mix. Marsh grass sprigs are laid between bags with Osmocote fertilizer.

Also attached is an installation diagram showing anchoring specs, using geoweb, rebar and earth anchors for structurally fixing the bags to the embankment.

Sand is locally sourced from Middlesex upland pit, meeting grain size and composition requirements of the USACE.

6. If using stone, broken concrete, etc. for your structure(s), what is the average weight of the:

Core (inner layer) material \_\_\_\_\_ pounds per stone      Class size \_\_\_\_\_  
Armor (outer layer) material \_\_\_\_\_ pounds per stone      Class size \_\_\_\_\_

7. For **beach nourishment**, including that associated with breakwaters, groins or other structures, provide the following:

- Volume of material      0 \_\_\_\_\_ cubic yards channelward of mean low water  
40 \_\_\_\_\_ cubic yards landward of mean low water  
35 \_\_\_\_\_ cubic yards channelward of mean high water  
5 \_\_\_\_\_ cubic yards landward of mean high water
- Area to be covered      0 \_\_\_\_\_ square feet channelward of mean low water  
1300 \_\_\_\_\_ square feet landward of mean low water  
35 \_\_\_\_\_ cubic yards channelward of mean high water  
5 \_\_\_\_\_ cubic yards landward of mean high water
- Source of material, composition (e.g. 90% sand, 10% clay): 93% sand, 7% clay
- Method of transportation and placement:  
Truck from Pit to front yard. Skid steer from front yard to shoreline. Chutes from shoreline to installation points.
- Describe any proposed vegetative stabilization measures to be used, including planting schedule, spacing, monitoring, etc. Additional guidance is available at  
<http://www.vims.edu/about/search/index.php?q=planting+guidelines>:

Marsh grass spigs of Spartina will be placed one foot on center on Living shoreline slope and in Envirolok bag face. The Spartina types are Alterniflora and Patens, each according to its elevation appropriate level. Installation is concurrent with project install and completion. All ReadyReef sites are monitored for marsh grass growth for 2 years according to contract warranty and the time it takes for living shorelines to fully establish themselves.

## Part 3 – Appendices (continued)

**Appendix D: Aquaculture Related Structures** such as cages and floats. Before completing this appendix, please review the aquaculture requirements summary at:  
[http://mrc.virginia.gov/Shellfish\\_Aquaculture.shtm](http://mrc.virginia.gov/Shellfish_Aquaculture.shtm).

1. Will the activity be for commercial purposes? \_\_\_\_\_ Yes \_\_\_\_\_ No.

If Yes and structures will be placed upon an oyster ground lease, you may qualify for the VMRC General Permit #4 for Temporary Protective Enclosures for Shellfish. For more info see:

[http://www.mrc.virginia.gov/regulations/MRC\\_Scanned\\_Regs/Shellfish\\_Mix/fr1130\\_12-0107.pdf](http://www.mrc.virginia.gov/regulations/MRC_Scanned_Regs/Shellfish_Mix/fr1130_12-0107.pdf). If you qualify for the General Permit #4, or if such structures are proposed that are not on an oyster planting ground lease, or for floating structures of any kind, complete this Joint Permit Application and include the necessary information requested below in question 2 through 11.

If No, you may qualify for the VMRC General Permit #3, for Noncommercial Riparian Shellfish Growing (i.e. “Gardening”) For more information see:

[http://www.mrc.virginia.gov/forms/VGP3\\_Aquaculture.doc.pdf](http://www.mrc.virginia.gov/forms/VGP3_Aquaculture.doc.pdf). If you qualify for this general permit use the Abbreviated Joint Permit Application For Noncommercial Riparian Shellfish Aquaculture Structures available at [https://mrc.virginia.gov/forms/2019/VGP3\\_Aquaculture\\_form\\_2019.pdf](https://mrc.virginia.gov/forms/2019/VGP3_Aquaculture_form_2019.pdf) **do not use this Joint Permit Application.**

2. Will aquaculture structures be attached to an existing pier or other structure? \_\_\_\_\_ Yes \_\_\_\_\_ No.
3. The plat file # if proposed upon oyster planting ground lease(s).\_\_\_\_\_
4. The maximum area where enclosures are proposed. \_\_\_\_\_ square feet
5. The maximum number of enclosures being proposed to be deployed. \_\_\_\_\_
6. The species of shellfish to be cultured. \_\_\_\_\_
7. A detailed description of the enclosures to include width, length and height.
8. In addition to the requirements itemized in Part 4 Project Drawings, the following additional information must be included on your project drawings: A general description of the area within 500 feet of deployment area. Provide a drawing that depicts existing marine resources such as SAV, shellfish beds, fixed fishing devices, public grounds, piers, water depths at mean low water, tide range, and the minimum clearance at mean low tide over the enclosures.
9. Provide the date enclosures are proposed to be deployed \_\_\_\_\_. How will the structures be secured? \_\_\_\_\_.

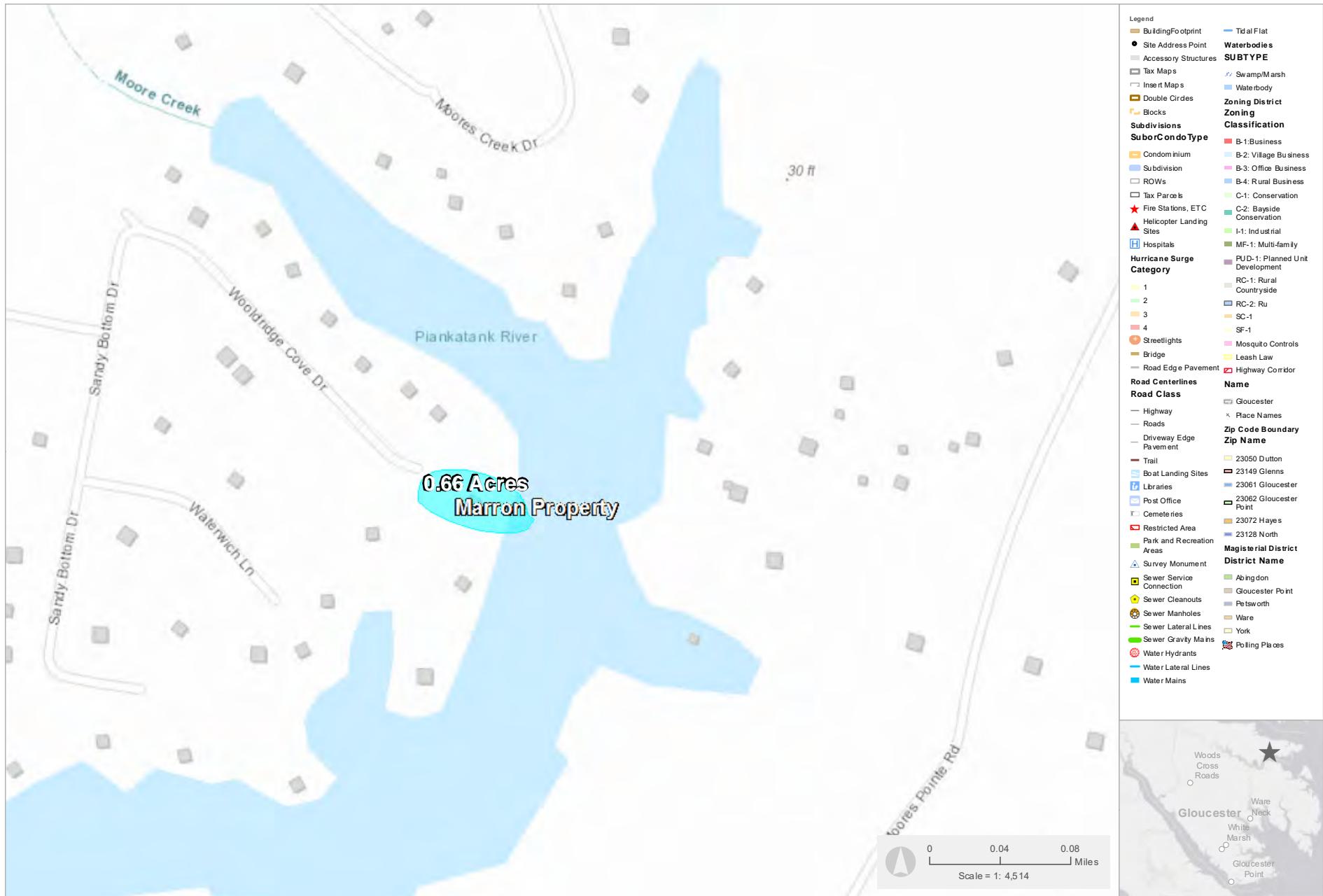
### **Part 3 – Appendices (continued)**

10. List of all riparian land owners within 500 feet of the area where enclosures are proposed along with a map (tax map or other suitable map) depicting the locations of such parcels or riparian property owner acknowledgement forms signed by the riparian land owner with any comments concerning the enclosures deployment request.
11. Proof that the applicant holds a current oyster or clam aquaculture product owners permit, and verification that the applicant is in compliance with Mandatory Harvest Reporting requirements, and verification that the current years oyster ground rent is paid, if structures are proposed on an oyster ground lease.



## Marron Local Map

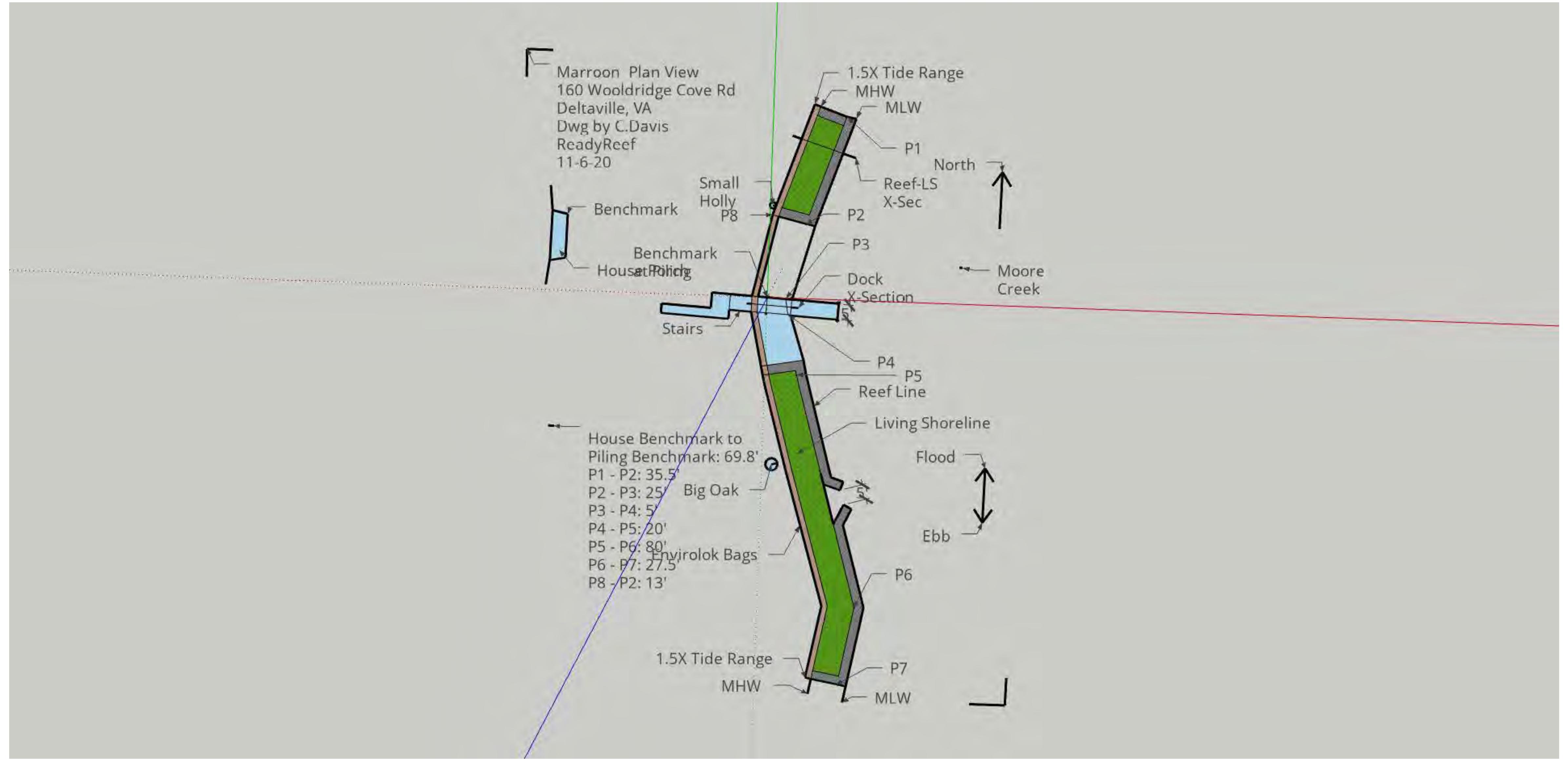
Gloucester County, VA  
[www.glocesterva.info](http://www.glocesterva.info)



Gloucester County assumes no responsibility or liability for, or in connection with, the accuracy, reliability or use of the information provided here.

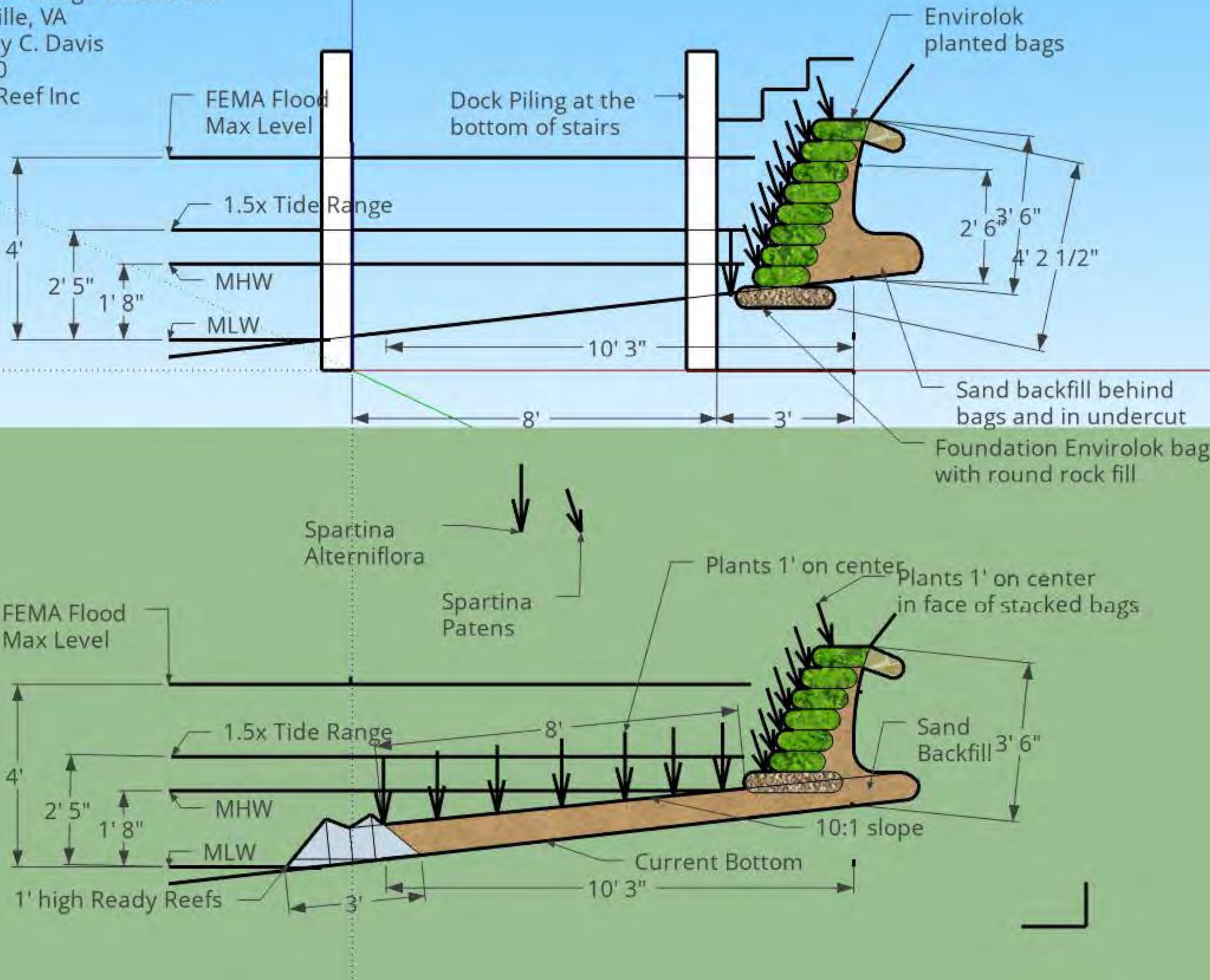
Received by VMRC December 8, 2020 /blh

Created on 12/7/2020, 5:22:39 PM





Marron Profiles  
160 Wooldridge Cove Drive  
Deltaville, VA  
Dwg. by C. Davis  
11-6-20  
ReadyReef Inc





## Envirolok Bag (Tan) Data Sheet

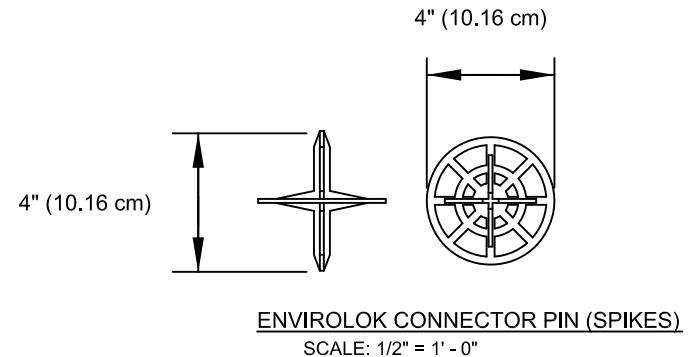
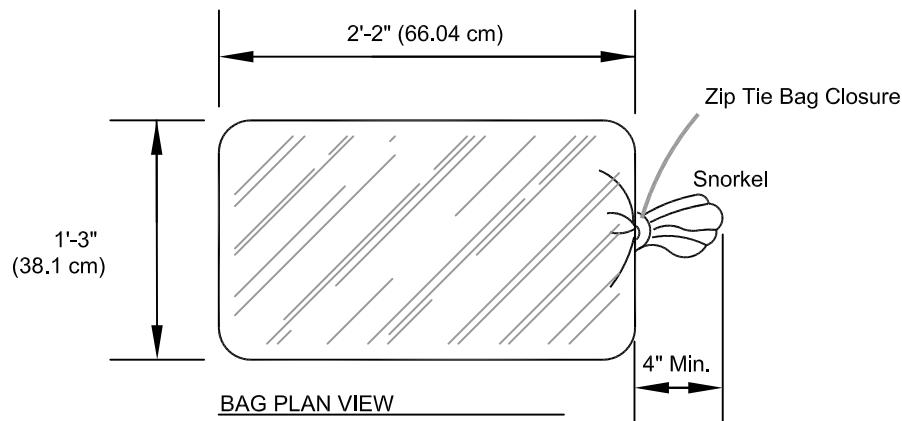
The Envirolok bag is a nonwoven geotextile produced by needle-punching together 100% synthetic staple fibers, in a random network, forming a high strength, dimensionally stable fabric. The synthetic fibers are specially formulated to resist ultraviolet light deterioration, and are inert to commonly encountered soil chemicals. The fabric will not rot or mildew, is non-biodegradable, and is resistant to damage from insects and rodents. The synthetic fiber is stable within a pH range of 2 to 13, making it one of the most stable polymers available for geotextiles today. The Envirolok bag meets the following Minimum Average Roll Values (MARV):

PROPERTIES	TEST METHOD	UNIT	MARV
<b>PHYSICAL</b>			
<b>Weight</b>	ASTM D 5261	oz/yd <sup>2</sup>	4.0 (Typ) (135.62 g/m <sup>2</sup> )
<b>Dimensions (unfilled)</b>		35 x 16.5 inches (889 x 419 mm)	
<b>Grab Tensile</b>	ASTM D 4632	lbs.	100 (.450 kN)
<b>Grab Elongation</b>	ASTM D 4632	%	50
<b>Puncture Strength</b>	ASTM D 4833	lbs.	65 (.289 kN)
<b>Mullen Burst</b>	ASTM D 3786	psi	210 (1448 kPa)
<b>Trapezoidal Tear</b>	ASTM D 4533	lbs.	45 (.202 kN)
<b>CBR Puncture Resistance</b>	ASTM D 6241	lbs.	310 (1.379 kN)
<b>UV Resistance After 1,000 Hours</b>	ASTM D 4355	% Strength Retained	70
<b>HYDRAULIC</b>			
<b>Permittivity <sup>1</sup></b>	ASTM D 4491	sec-1	2
<b>Water Flow Rate <sup>1</sup></b>	ASTM D 4491	gpm/ft <sup>2</sup>	140 (5700 l/min/m <sup>2</sup> )
<b>Apparent Opening Size <sup>2</sup></b>	ASTM D 4751	U.S. Sieve	70 (.212mm)

1. Handling at the time of manufacturing may change these properties.
2. Apparent Opening Size, (AOS), reported as Maximum Average Roll Value.

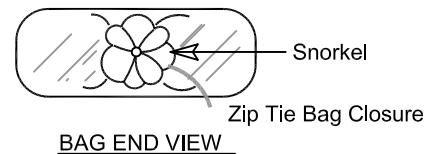
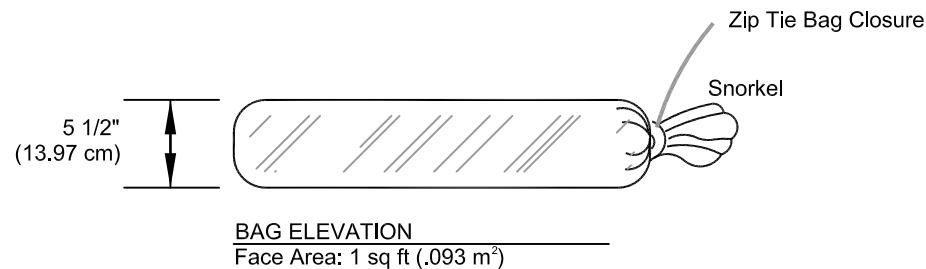
To the best of our knowledge, the information contained herein is accurate. However, it is not a warranty or a guarantee and is provided for reference only. We accept no responsibility for results obtained by the application of this information or the safety or suitability of our products either alone or in combination with other products. Final determination of the suitability of any information or material for the use contemplated, of its manner of use, and whether the suggested use infringes on any patents is the sole responsibility of the user.

Revised Date: 01/01/2017



**NOTE:**

- Two Connector Pins shall be installed per bag, interconnecting the bags vertically
- Connector Pins shall be used to connect the first row of bags to the base setting course.
- Connector Pins shall penetrate each bag and/ or base course minimum of 2".
- Pin locations will vary with the slope of the structure and should be placed in the center of the bag contact area between courses.



**ENVIROLOK BAG SPECIFICATION:**

Calculated Unit Fill: 1.25 cu ft (.0354 m<sup>3</sup>)/unit

Face Area: 1 sq ft (.093 m<sup>2</sup>)

Mattress Face Area: 2.7 sq ft (.25 m<sup>2</sup>)/unit

**NOTE:**

- Quantities required vary based on unit filling and design layout
- One Envirolok Unit consists of:  
One (1) Envirolok Bag  
Two (2) Connector Pins  
One (1) Zip Tie Bag Closure



10101 N. Casey Road  
Evansville, WI 53536  
(P) 608.226.2565

www.envirolok.com  
ecosolutions@envirolok.com  
(F) 608.884.4640

This is a typical, non-site specific design. Envirolok LLC makes these documents available on an "as is" basis. All CAD (.dwg) and PDF (.pdf) files were created as a service to our customers. Final determination of the suitability of any information or material for the use contemplated, and its manner of use, is the sole responsibility of the user. A final project specific design should be prepared by a qualified, licensed, professional engineer. THIS DRAWING IS NOT FOR CONSTRUCTION. Copyright 2017, Envirolok LLC

**TITLE**  
**STANDARD UNIT DETAIL**

DATE	SCALE
APRIL 2017	1" = 1' - 0"
SHEET	SHEET 1

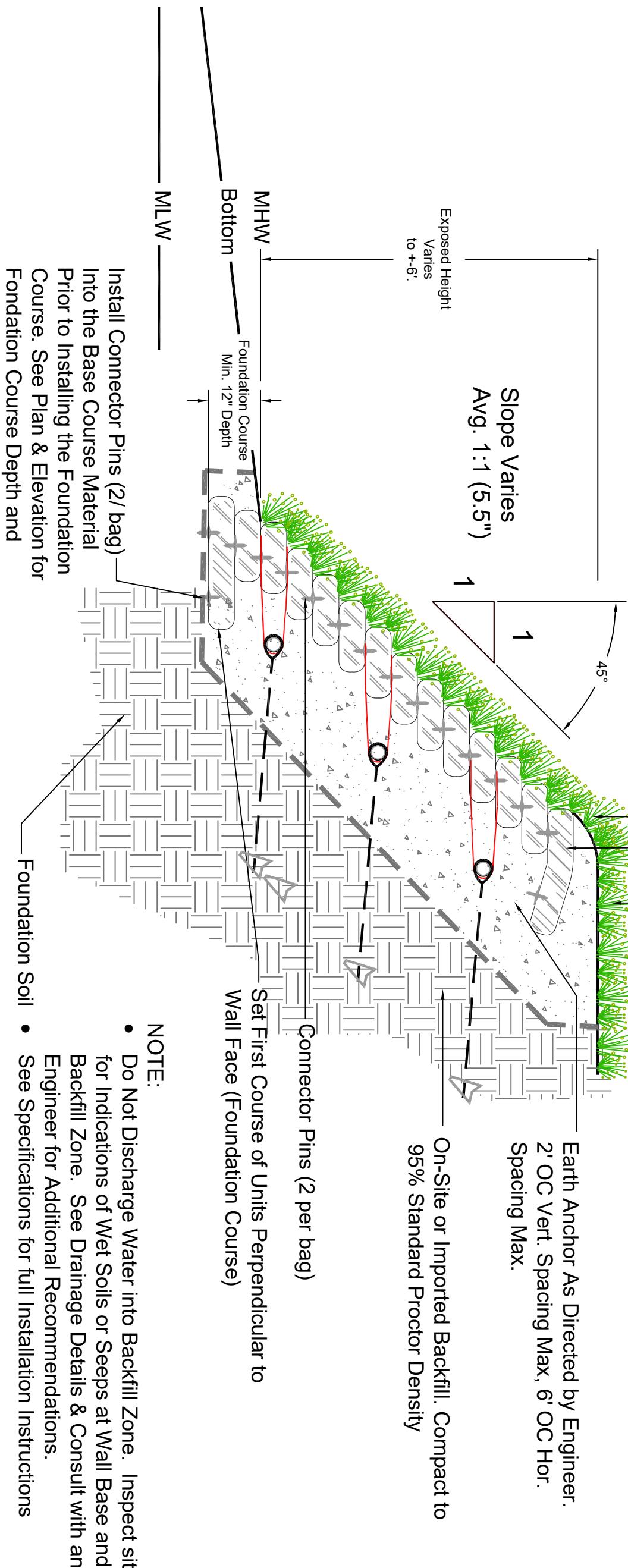
**REVISIONS**

See Planting Details and Specifications for Instructions and Recommended Densities.

Set Top Course Perpendicular to Wall Face. See Coping Details.

Cover Coping with Soil and Plant

Control Surface Water by Diverting Overland Flow from Wall. Consult with an Engineer for Recommendations.



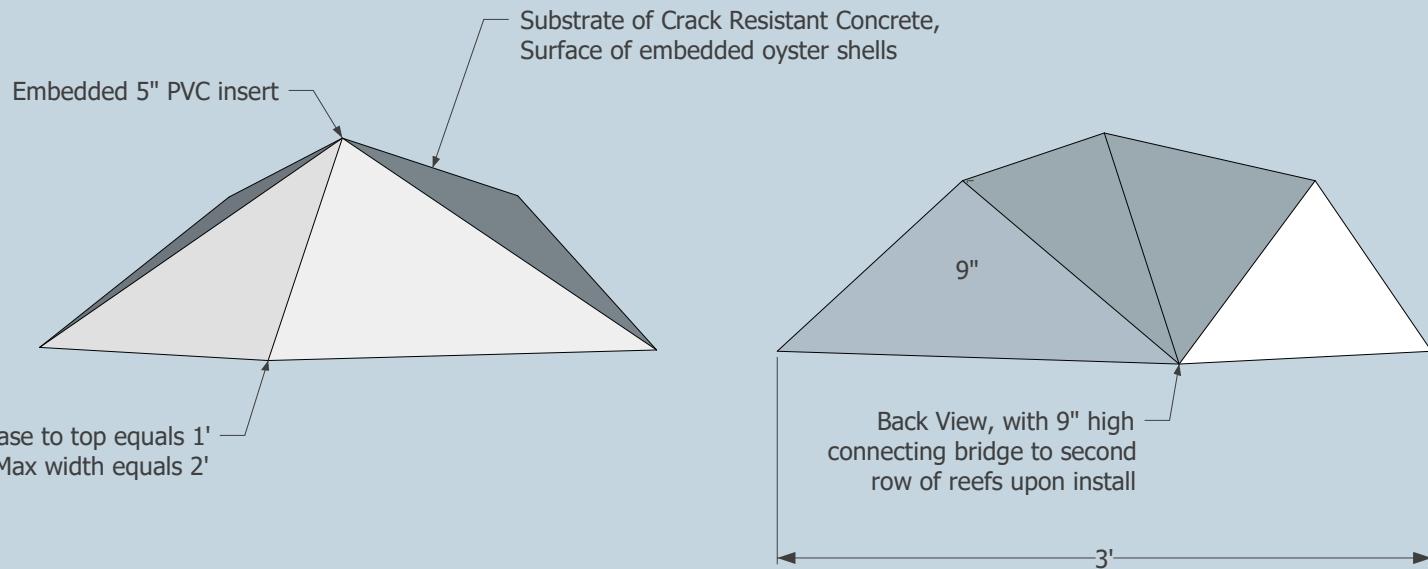
**NOTE:**

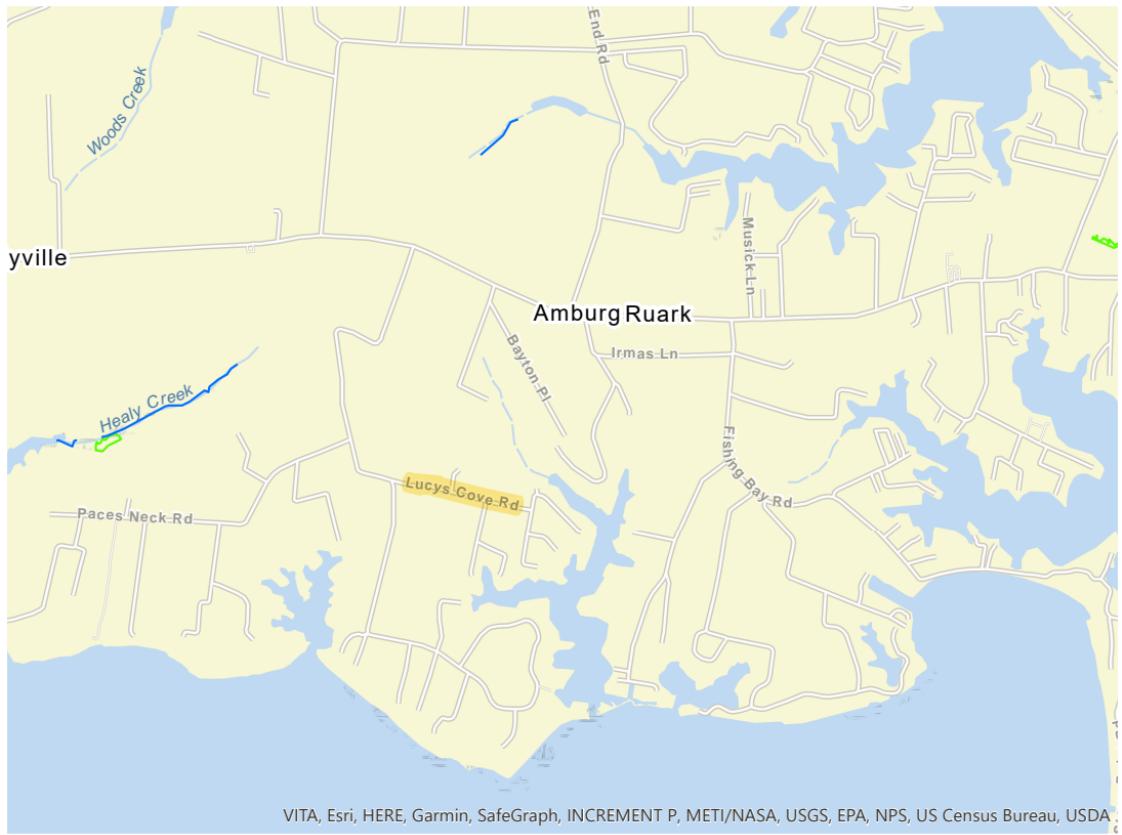
- Do Not Discharge Water into Backfill Zone. Inspect site for Indications of Wet Soils or Seeps at Wall Base and Backfill Zone. See Drainage Details & Consult with an Engineer for Additional Recommendations.
- See Specifications for full Installation Instructions

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TITLE		REVISIONS
RICCI RESIDENCE STABILIZATION DETAIL		Vegetated Environmental Solutions
DATE MAY 2019	SCALE 1/2"=1'-0"	www.envirolok.com ecosolutions@envirolok.com (P) 608.226.2655 (F) 608.884.4640
SHEET		

ReadyReef 1' high bridge reef  
Dwg by C.Davis  
ReadyReef Inc., 1-5-2020





VITA, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Received by VMRC December 8, 2020 /blh



## Envirolok Bag (Tan) Data Sheet

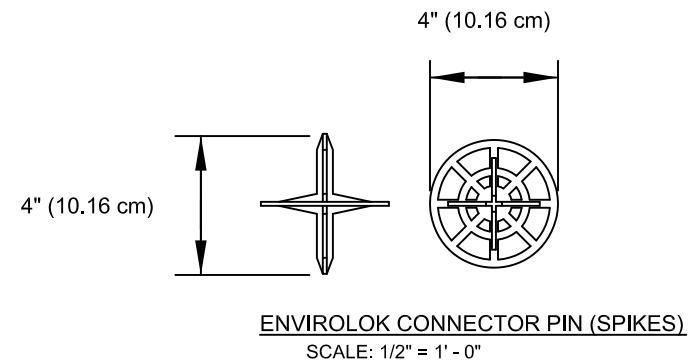
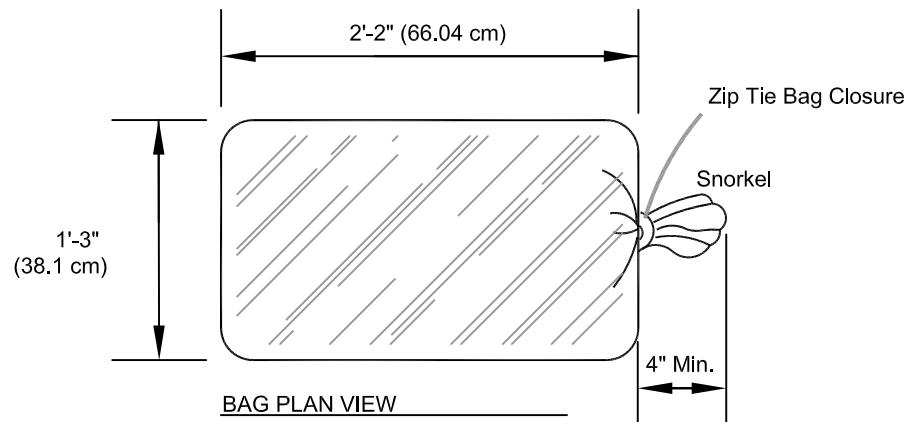
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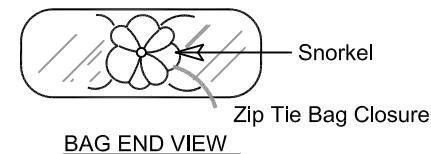
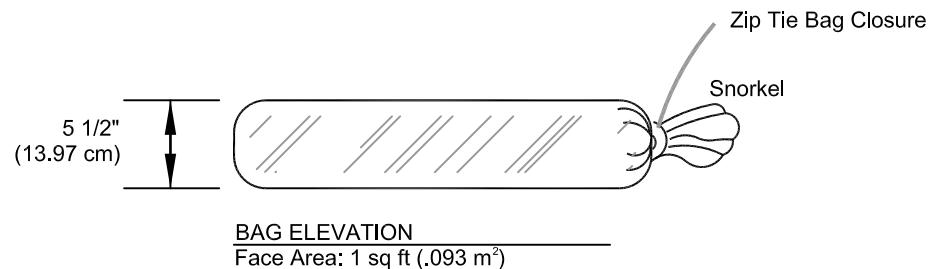
To the best of our knowledge, the information contained herein is accurate. However, it is not a warranty or a guarantee and is provided for reference only. We accept no responsibility for results obtained by the application of this information or the safety or suitability of our products either alone or in combination with other products. Final determination of the suitability of any information or material for the use contemplated, of its manner of use, and whether the suggested use infringes on any patents is the sole responsibility of the user.

Revised Date: 01/01/2017



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**TITLE**  
**STANDARD UNIT DETAIL**

DATE APRIL 2017	SCALE 1" = 1' - 0"
--------------------	-----------------------

SHEET  
SHEET 1

  
Vegetated Environmental Solutions

10101 N. Casey Road  
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ecosolutions@envirolok.com  
(F) 608.884.4640

**REVISIONS**

# Virginia Marine Resources Commission

## Permit Application 20202221

Printed: Thursday October 21, 2021 11:48 AM



---

**Applicant:** Brian Marron  
6525 Monument Avenue  
Richmond, VA 23226

---

**Application Number:** 20202221                   **Engineer:** Jay Woodward

**Application Date:** December 8, 2020

**Locality:** Middlesex

**Permit Type:** VMRC Subaqueous

**Waterway:** Moore Creek

**Permit Status:** Sent Application Fees

**Expiration Date:**

**Wetlands Board Action:** Approved as Proposed   **Public Hearing Date:** April 13, 2021

**Project Description:** Living Shoreline

**Project Dimensions:**

---

Sill Fill: 40 Cubic Yards

---

Bioengineered Structure: 179 Linear Feet

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Living Shoreline: 176 Linear Feet

**Virginia Marine Resources Commission**  
**Photos for Permit Application 20202221**

*Printed: Thursday October 21, 2021 11:48 AM*



*Date Photo Uploaded: 2021:04:22*



*Date Photo Uploaded: 2021:04:22*



**Virginia Marine Resources Commission**  
**Photos for Permit Application 20202221**

*Printed: Thursday October 21, 2021 11:48 AM*



*Date Photo Uploaded: 2021:04:22*



*Date Photo Uploaded: 2021:04:22*



3

## WETLANDS PERMIT

Date of Permit: *April 13, 2021*

Date of Permit's Expiration: *October 13, 2022*

Pursuant to provisions of the Middlesex County Wetlands Zoning Ordinance, the Wetlands Board of Middlesex County, Virginia, hereinafter referred to as the BOARD, hereby grants unto:

Brian Marron  
6525 Monument Avenue  
Richmond, VA 23226

Hereinafter referred to as the PERMITTEE, permission to undertake the following described project:

to install Envirolok Bags planted with marsh grass for 50 LF x 4' high at the shoreline against the steep bank adjacent to the Client's dock on Moore Creek. To the north and south of these bags, a 179 LF perimeter of ReadyReefs out to MLW will be installed, with backfilled sand and planted with marsh grass to make a living shoreline. Against the bank, 143 LF x average of 3' high more Envirolok bags will be stacked to prevent erosion higher up the bank. All work is above MLW, except where reefs diverge out to create 5' gap.

For a more complete description of said project, reference is hereby made to PERMITTEE'S Application for the Wetlands Permit (Joint Permit Application Number 2020-2221 which is made a part of this permit).

This Permit is granted subject to the following terms and conditions:

1. Except as hereinafter provided, all phases of the project shall conform in all respects to PERMITTEE'S application for Wetlands Permit. The duly authorized agents of the BOARD shall have the right to enter upon the premises at any time for the purpose of inspecting work authorized by this permit.
  
2. PERMITTEE shall comply with all applicable laws, ordinances, rules and regulations affecting the conduct of the project. The granting of this permit shall not relieve the PERMITTEE of the responsibility of obtaining any and all permits of authority required for the project. **Contact the Virginia Marine Resources Commission, the U.S. Army Corps of Engineers, and the Middlesex County Planning, Zoning and Building Departments for further permit requirements.**

3. PERMITTEE shall, to the greatest extent practicable, minimize the adverse effects of the project upon adjacent properties and wetlands and upon the natural resources of the County.
4. PERMITTEE is responsible for display of the yellow placard accompanying this permit. Placard must be conspicuously displayed at the work site prior to and throughout the construction phase of the authorized activity.
5. PERMITTEE agrees to notify the Wetlands Board a minimum of 48 hours to the start of the construction activities authorized by this permit.
6. PERMITTEE shall be responsible for all denuded areas disturbed during and after alteration. These areas shall be returned to its previous condition by re-vegetation or re-stabilization.
7. PERMITTEE is responsible that once work is begun on a project, the work shall be completed in a timely and efficient manner. Temporary and permanent erosion and sediment control measures, as approved by Minimum State Standards, must be applied throughout construction.
8. Other terms and conditions peculiar to this project:
9. This permit shall not be transferred without written approval of the BOARD.
10. The project shall be completed within eighteen months of the date of this permit, after which time this permit shall be null and void. Upon proper written application to the BOARD, however, the deadline for completion of the project may be extended by the BOARD, at its discretion. Any such request for extension of time shall be made prior to the expiration date of this permit and shall specify the reasons for such extension and the expected date of completion of the project. Extensions shall not be granted for more than three years from the date of this permit.
11. This permit may be revoked at any time by the BOARD upon failure of PERMITTEE to comply with any of the terms and conditions of this permit.

IN WITNESS WHEREOF, the Wetlands Board of Middlesex County, Virginia has caused this permit to be executed in its behalf by Fred W. Dolezal, Chairman of the BOARD. The signature of Brian Marron is affixed hereto as evidence of acceptance of the terms and conditions of the permit by PERMITTEE.

# COUNTY OF MIDDLESEX, VIRGINIA

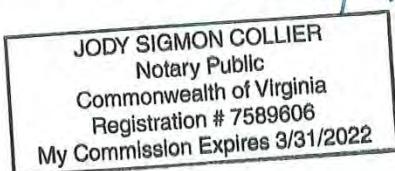
## WETLANDS BOARD

BY: 

(WETLANDS BOARD CHAIRMAN'S SIGNATURE)

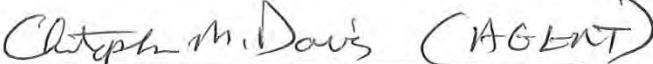
COMMONWEALTH OF VIRGINIA, COUNTY OF MIDDLESEX, to wit:

The foregoing instrument was acknowledged before me this 17 day of May, 2021  
by Fred W. Dolezal, Chairman of the Wetlands Board of Middlesex County, Virginia. My  
commission expires 3/31/22.



  
Notary Public

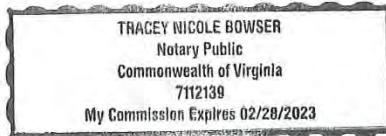
PERMITTEE: Brian Marron

BY: 

(PERMITTEE'S SIGNATURE)

The foregoing instrument was acknowledged before me this 24<sup>th</sup> day of April, 2021  
by Christopher M. Davis.  
My commission expires 2/28/2023

  
Notary Public



## **Attachment 6: Flood Prevention Project and its Relevance to Other Projects**

MPPDC staff have worked throughout the years to understand the policy, research and impacts of flooding (ie. stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

### **Climate Change & Sea Level Rise (2009 to 2012)**

The MPPDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, MPPDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally Phase 3 focused on developing adaptation public policies in response to the assessments.

Phase 1: Middle Peninsula Climate Change Adaptation: Facilitation of Presentations and Discussions of Climate Change Issues with Local Elected Officials and the General Public

Phase 2: Climate Change III: Initiating Adaptation Public Policy Development

Phase 3: Phase 3 Climate Change: Initiating Adaptation Public Policy Development

**Emergency Management - Hazard Mitigation Planning (2009 to Present):** Since 2009, the Middle Peninsula Planning District Commission has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. *The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (ie. Mean High Higher Water and the NOAA 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard.* The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

**Land and Water Quality Protection (2014):** In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, OSDS management, storm water management, TMDLs, etc, staff from the Middle Peninsula Planning District Commission (MPPDC) will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and Onsite Sewage Disposal System (OSDS) and

community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems, assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

#### **Department of Conservation and Recreation Stormwater Management (2014)**

The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The Virginia Department of Conservation and Recreation requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs.

Additionally, the communities within the MPPDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The MPPDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

**Stormwater Management-Phase II (2014):** MPPDC staff and Draper Aden Associates worked with localities (i.e. Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional VSMP.

**Mathews County Rural Ditch Enhancement Study (2015):** In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

**Drainage and Roadside Ditching Authority (2015):** This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

#### **Living Shoreline Incentive Program (2016 to present)**

In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical

assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however, no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this, need the MPPDC developed the MPPDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to \$10,000 can be financed for up to 5 years (60 months). Loans over \$10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is \$1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the MPPDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~\$500,000 in VRA loan funding and ~\$400,000 in NFWF grant funding. Living Shoreline construction cost to date range per job \$14,000- \$180,000. MPPDC oversees all aspects (planning, financing, construction, and loan servicing) of these projects from cradle to grave.

**Mathews County Ditch Project - VCPC White Papers (2017)**: This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

**Mathews County Ditch Mapping and Database Final Report (2017)**: This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

**Virginia Stormwater Nuisance Law Guidance (2018)**: This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

**Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)**: VIMS Shoreline Studies Program worked with the PAA to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

**Fight the Flood Program (2020)**: The Fight the Flood was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic

Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

## Attachment 7: Project cost estimates

Marron				Budget (Cat. D)	
Budget Narrative (Category D)					
Personnel Salaries/Wages		DCR %	Match %	Annual Salary	Applicant 1
Staff		22.25%	5.57%	\$70,000	DCR Owner Total
					\$6,356 \$1,589 \$7,944
Personnel		<i>Lewie's Cheat Sheet</i>	<u>DCR</u>	<u>Owner</u>	
		Total	80%	20%	
Fringe, 26.21% salaries;		\$66,845	\$3,476.00	13,369.00	\$1,666 \$416 \$2,082
		15%	10,026.75	8,021.40 2,005.35	
Total Personnel		76,871.75	61,497.40	15,374.35	\$8,022 \$2,005 \$10,027
Direct Cost: SubAward/SubContract Agreements					80% 20%
<i>Enviro Lock</i>				\$29,887	\$23,910 \$5,977 \$29,887
<i>1 ft Reef</i>				\$17,472	\$13,978 \$3,494 \$17,472
<i>Sand/pack and Plants 1800+2880+2880</i>				\$7,560	\$6,048 \$1,512 \$7,560
<i>conveyor sand and equipment rental 2400+ 3626</i>				\$6,026	\$4,821 \$1,205 \$6,026
<i>tree removal and yard repair</i>				\$900	\$720 \$180 \$900
<i>Legal Procurement and Financing/deeds of Trust</i>				\$5,000	\$4,000 \$1,000 \$5,000
0				\$0	\$0 \$0 \$0
0				\$0	\$0 \$0 \$0
<i>Project financial services (50000/50500/55900/56100)</i>				\$5,974	\$4,779 \$1,195 \$5,974
<i>Facility services (52100/52200/52400/54200/54500)</i>				\$1,703	\$1,363 \$341 \$1,703
<i>Communication services (52250/52255/55150/57100/57300)</i>				\$537	\$429 \$107 \$537
<i>Data services (53100/53101/53200/57900)</i>				\$162	\$129 \$32 \$162
<i>Material services (53400/53500/57200/57500)</i>				\$633	\$507 \$127 \$633
<i>Consulting services (55100/56300/56400/56700)</i>				\$771	\$617 \$154 \$771
				\$76,625	
<b>SUBTOTAL: Direct Costs</b>					\$69,322 \$17,330 \$86,652
<b>Total</b>					\$69,322 \$17,330 \$86,652
<b>Other Match:</b>					\$0 \$0 \$0
<i>Source of Match</i>					
<b>GRAND TOTAL</b>					\$69,322 \$17,330 \$86,652

**From:** Chris Davis <[chris.readyreef@gmail.com](mailto:chris.readyreef@gmail.com)>

**Date:** October 25, 2021 at 7:16:50 PM EDT

**To:** Brian Marron <[brian.marron79@gmail.com](mailto:brian.marron79@gmail.com)>

**Subject: Re: Fight the Flood**

Envirolok Bags (504 Ft<sup>2</sup> of surface face) \$29,887

(includes plants, foundation layer, one row of earth anchors mid-height)

1' high reefs (192 LF) \$17,472

50 cuyds of clean sand \$1800

Move/install/pack sand \$2880

Living shoreline plants (1152 Ft<sup>2</sup>) \$2880

Rental Conveyor for bags/sand \$2400

Equipment fees Total: \$3626

(includes)

Haul Trucks with trailers

Haul truck drivers

Barge with zip line

Goose Fencing

Clean bank/remove trees \$500

Repair yard post work \$400

Total: \$60,405

Prices reflect recent price increases in fuel, business insurance, Envirolok bags, labor

## Attachment 8: Match Commitment Letters

BRIAN R. MARRON  
P.O. Box 1145  
Deltaville, VA 23043

October 10, 2021

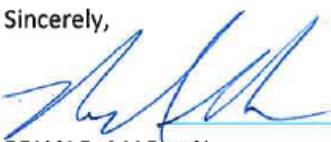
Virginia Department of Conservation and Recreation  
Attention: Virginia Community Flood Preparedness Fund  
Division of Dam Safety and Floodplain Management  
600 East Main Street, 24<sup>th</sup> Floor  
Richmond, Virginia 23219

Dear Mr. Clyde Cristman,

Thank you for considering the application to the Virginia Community Flood Preparedness Fund, involving necessary flood mitigation activities on my property at 160 Wooldridge Cove Drive, Deltaville, VA 23043. I am committed to provide the matching funds necessary in cash or Middle Peninsula Planning District Commission (MPPDC) revolving loan funds for this project and understand that the final amount of matching funds required will be subject to the contract amount awarded by VDCR.

Please reach out to the MPPDC, who is submitting this proposal on my behalf, at 804-758-2311 should you have any questions, and they will be able to contact me to coordinate a response. I can be reached by phone at (804) 370-3561 or by email at brian.marron79@gmail.com.

Sincerely,



BRIAN R. MARRON

## Attachment 9: Authorization to request for funding



### COMMISSIONERS

8/30/21

**Essex County**  
Hon. Edwin E. Smith, Jr.  
Hon. John C. Magruder  
Ms. Sarah Pope  
Mr. Michael A. Lombardi

**Town of Tappahannock**  
Hon. Fleet Dillard

**Gloucester County**  
Hon. Ashley C. Christie  
(Vice-Chairman)  
Hon. Michael E.  
Wiseharter  
Dr. William G. Rose  
Mr. J. Brent Feders

**King and Queen County**  
Hon. Sherrin C. Alsup  
Hon. R. P. Bailey  
Mr. Thomas J.  
Swartewelder  
(Chairman)

**King William County**  
Hon. Ed Moren, Jr.  
Hon. Trevor J. Moshakshi  
(Treasurer)  
Mr. Otto G. Williams

**Town of West Point**  
Hon. James Pruitt  
Mr. John Edwards

**Mathews County**  
Hon. Michael C. Rowe  
Hon. Miller Maxon  
Mr. Thornton Hill

**Middlesex County**  
Hon. Wayne H. Jessie, Sr.  
Hon. Reggie Williams, Sr.  
Mr. Gordon E. White

**Town of Urbanna**  
Hon. Marjorie Austin

**Secretary/Director**  
Mrs. Lewis L. Lawrence

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director 

Reff: Authorization to request for funding:

Matching funds for all construction and design projects provided under Round 2 of the Virginia Community Flood Preparedness Fund are provided by the property owner for which the project is proposed. The match commitment letter acknowledges that the owner of the project (land owner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter).
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter).
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

**Virginia Department of Conservation and Recreation  
Virginia Community Flood Preparedness Fund Grant Program**

**Application Form for Grant Requests for All  
Categories – Round 2**

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**I. ORGANIZATIONAL INFORMATION**

**Project Title:** Middlesex County Beneficial Reuse of Dredged Material for Flood Prevention and Protection at Jackson and Broad Creeks

**Name of Local Government:** Middle Peninsula Planning District Commission

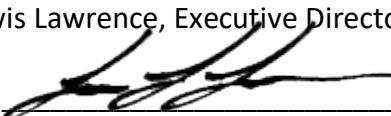
**Category of Grant Being Applied for (check one):**

- Capacity Building/Planning  
 Project  
 Study

**NFIP/DCR Community Identification Number (CID):** 510098

**If a state or federally recognized Indian tribe, Name of tribe:** NA

**Name of Authorized Official:** Lewis Lawrence, Executive Director

**Signature of Authorized Official:** 

**Mailing Address (1):** PO Box 286

**Mailing Address (2):** 125 Bowden Street

**City:** Saluda    **State:** VA    **Zip:** 23149

**Telephone Number:** (804) 758-2311      **Cell Phone Number:** (\_\_\_\_) \_\_\_\_\_

**Email Address:** llawrence@mppdc.com

**Contact Person (If different from authorized official):** Jackie Rickards, Senior Planning Project Manager

**Mailing Address (1):** PO Box 286

**Mailing Address (2):** 125 Bowden Street

**City:** Saluda    **State:** VA    **Zip:** 23149

**Telephone Number:** (804) 758-2311      **Cell Phone Number:** (215) 264-6451

**Email Address:** jrickards@mppdc.com

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes  No

**Categories (select applicable project): Project Grants**

**Project Grants (Check All that Apply)**

- Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- Wetland restoration.
- Floodplain restoration.
- Construction of swales and settling ponds.
- Living shorelines and vegetated buffers.
- Structural floodwalls, levees, berms, flood gates, structural conveyances.
- Storm water system upgrades.
- Medium and large-scale Low Impact Development (LID) in urban areas.
- Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- Dam restoration or removal.
- Stream bank restoration or stabilization.
- Restoration of floodplains to natural and beneficial function.
- Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

**Location of Project (Include Maps):** Middlesex County - Please see the attached corresponding maps for this application.

**NFIP Community Identification Number (CID#):** 510098

**Is Project Located in an NFIP Participating Community?**  Yes  No

**Is Project Located in a Special Flood Hazard Area?**  Yes  No

**Flood Zone(s) (If Applicable):** AE Zone (same for Jackson and Broad Creeks)

**Flood Insurance Rate Map Number(s) (If Applicable):** 51119C0240E (same for Jackson and Broad Creeks)

**Total Cost of Project:** \$586,064

**Total Amount Requested:** \$468,851

## II. SCOPE OF WORK NARRATIVE

### **INTRODUCTION.**

*This proposal requests funding to address recurring coastal storm driven sand deposits impacting maritime commercial, recreational, and public safety ingress and egress from Jackson Creek and Broad Creek by utilizing sand for the creation of a public living shoreline. Specifically, this project will design two dredging and beneficial reuse projects for Jackson Creek and Broad Creek in the community of Deltaville in Middlesex County which will involve beneficial reuse of the dredged material for flood protection and prevention purposes. The dredging and beneficial reuse projects will provide immediate and much needed co-benefits for coastal resilience, flood protection, navigability, and economic resilience. Additionally, flood protection structures will be designed to provide additional resilience at the mouths of Jackson and Broad Creeks for protecting adjacent shorelines and continued shoaling of navigable channels. Draft Joint Permit Applications will be developed for all activities to position the projects for future implementation.*

Risks to natural hazards are increasing. Population growth along coastlines worldwide, in addition to technological and infrastructural development, inherently results in a concomitant increase in places prone to disasters. Modern society relies upon government for effective prevention and protection strategies for continued resilience and sustainability.

Natural hazards are hazards that exist within the natural environment and are considered “acts of God,” and consist of atmospheric, geologic, hydrologic, seismic, and biologic agents. Such hazards include flooding, drought, hurricanes, landslides, wildfires, and more. They are thought to be unpreventable and are associated with a perceived lack of control. As a result, the ability to manage risk to natural hazards greatly varies due to differences in background. Therefore, the identification of hazards is the foundation of effectively dealing with and avoiding risks. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties, and the economy is a top priority for the Middle Peninsula PDC and the Middle Peninsula Fight the Flood (FTF) program.

The 2018 United States National Climate Assessment noted that global climate model predictions, though imprecise, suggest an increased frequency of strong hurricanes (Categories 4 and 5) in the Atlantic Basin, including the Caribbean. It also includes a range of sea-level rise predictions with significant impacts, especially together with high tide flooding. Other estimates include more frequent and intense droughts with microburst and deluge events. This is especially the case for the Coastal Plain area of Virginia.

The Federal Emergency Management Agency (FEMA), Virginia General Assembly, Virginia Department of Conservation and Recreation (DCR) Floodplain Management Program, and the Middle Peninsula Planning District Commission (PDC) all recognize that natural hazards pose a serious risk to all levels of government including states, localities, tribes, and territories and the citizens which reside there.

Until recently, most flood risk management involved conventional engineering measures. These measures are sometimes referred to as “hard” engineering or “gray” infrastructure. Examples include building embankments, dams, levees, and channels to control flooding. Recently the concept of “nature-based

solutions”, “ecosystem based adaptation,” “eco-DRR,” or “green infrastructure” has emerged as a good alternative or complement to traditional gray approaches.

Nature-based solutions make use of natural processes and ecosystem services for functional purposes, such as decreasing flood risk or improving water quality. These interventions can be completely “green” (i.e., consisting of only ecosystem elements) or “hybrid” (i.e., a combination of ecosystem elements and hard engineering approaches). Nature-based solutions can help mitigate flood (the focus of this document), drought, erosion, and landslide. In addition, they may help decrease vulnerability to climate change while also creating multiple benefits to the environment and local communities. These include sustaining livelihoods, improving food security, and sequestering carbon. Such solutions can be applied to river basins (e.g., reforestation and green embankments), coastal zones (e.g., mangroves and wetlands), and cities (e.g., urban parks).

There is increasing momentum for the use of nature-based solutions as part of resilience-building strategies, sustainable adaptation, and disaster risk management portfolios. Awareness of nature-based solutions from communities, donors, and policy- and decision-makers is growing. Further, investors and the insurance industry are increasingly interested in nature-based solutions. From a climate change perspective, ecosystem-based adaptation has been highlighted as a priority investment area as noted in this DCR opportunity.

#### ***PROJECT INFORMATION.***

This design proposal is for nature-based solutions which utilize and incorporate sustainable planning, design, environmental management, and engineering practices that weave natural features and/or processes into the built environment to promote adaptation and resilience. Further this proposal incorporates natural features and/or processes in efforts to combat climate change, reduce flood risks, improve water quality, protect coastal property, restore, and protect wetlands, stabilize shorelines, reduce heat, adds recreational space, and more. Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. According to FEMA Building Community Resilience with Nature Based Solutions, these benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life.

Specifically, this project proposes to design two dredging projects for Jackson Creek and Broad Creek in the community of Deltaville in Middlesex County which will involve beneficial reuse of the dredged material for flood protection and prevention purposes. The dredging and beneficial reuse projects will provide immediate co-benefits for coastal resilience, flood protection, and navigability. Additionally, flood protection structures will be designed to provide additional resilience at the mouths of Jackson and Broad Creeks with regards to shorelines and navigable channels. Draft Joint Permit Applications will be developed for all activities to position the projects for future implementation. This project will be a partnership between the Middle Peninsula PDC and Middlesex County. See the community support letter in **Appendix 1.**

- A link or to the Middle Peninsula PCD’s Approved Regional Flood Resiliency Plan (2021) can be found at: [https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8\\_19\\_DCR-](https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-)

[packet letterandplan.pdf.](#)

- Please see Page 3-5, which notes the need to respond to emerging flood challenges.
- A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at:  
[https://www.mppdc.com/articles/reports/AHMP\\_2016\\_FEMA\\_Approved\\_RED.pdf](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf).
  - Please see Section 4 (page 25), which includes historical hazard data within the region.
- A link to the County of Middlesex's Comprehensive Plan can be found at:  
<https://www.co.middlesex.va.us/252/Comprehensive-Plan>.

The Middle Peninsula is the second of three large peninsulas on the western shore of the Chesapeake Bay in Virginia as seen in **Figure 1**. It lies between the Northern Neck and the Virginia Peninsula. The region is predominantly rural, with large, scattered farms and forested tracts; close-knit waterfront communities; an active regional arts association; broad-based civic involvement; and an excellent transportation infrastructure that provides easy access to urban markets. The area contains 3.2% of Virginia's land mass but only 1.1% of the Commonwealth's total population of approximately 93,000 as seen in **Figure 2**.

Figure 1. Middle Peninsula Geographic Area

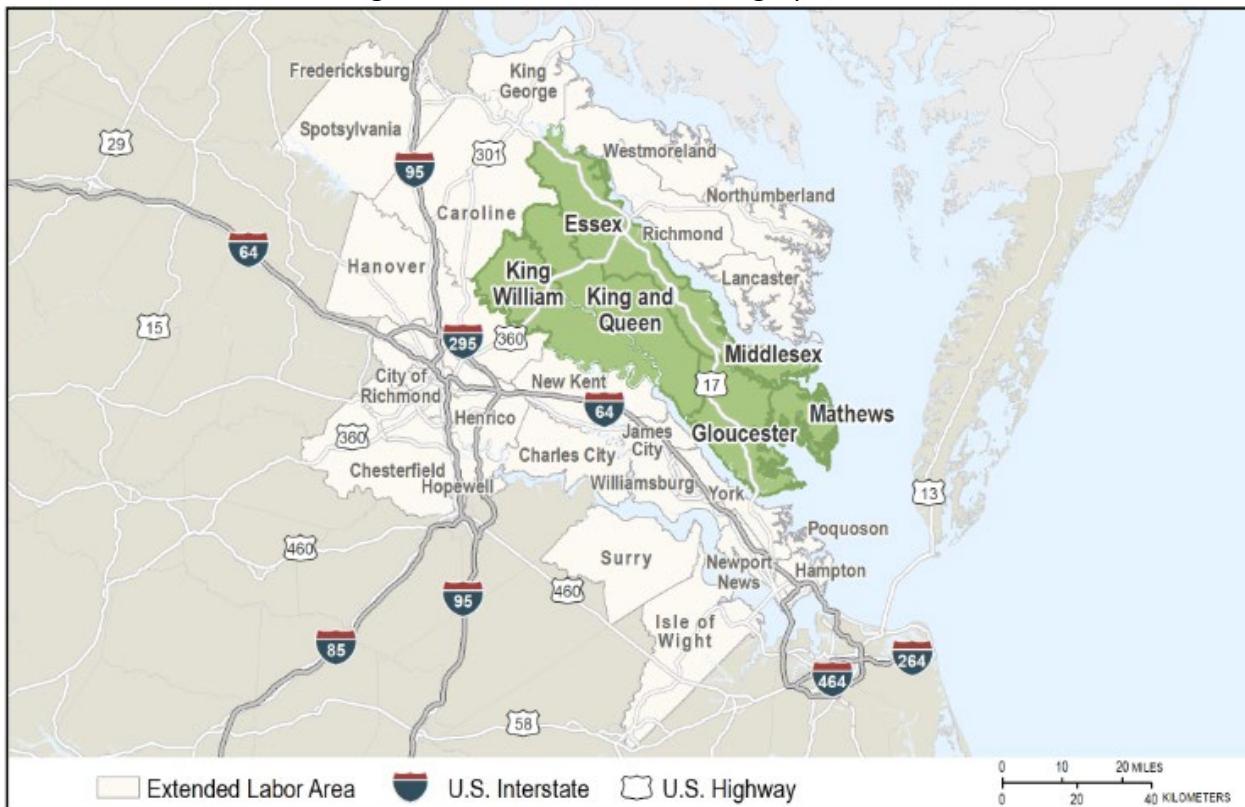
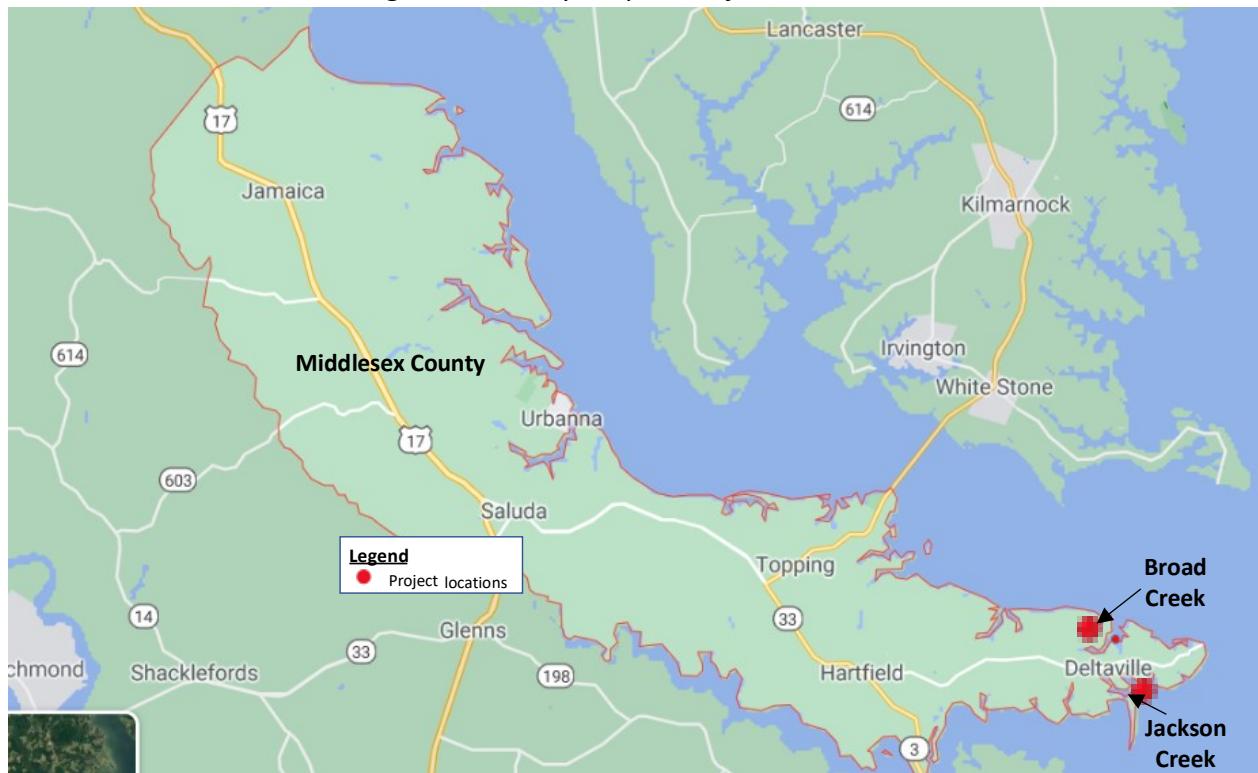


Figure 2. Middle Peninsula Population

CID #	US Census 2020 Population	2020 Total
510048 (Tapp 510049)	Essex (Includes Town of Tappahannock)	10,599
510071	Gloucester	38,711
510082	King and Queen	6,608
510304 (West Point 510083)	King William (Includes Town of West Point)	17,810
510096	Mathews	8,533
510098 (Urbanna 510292)	Middlesex (Includes Town of Urbanna)	10,625
<b>MPPDC Total</b>		<b>92,886</b>

This project proposes to design dredging and beneficial reuse projects and flood protection structures for Jackson and Broad Creeks in Middlesex County as found in **Figures 3 and 4**.

Figure 3. County Map of Project Locations



**Figure 4. Area Map of Project Locations**



Middlesex County is located at Virginia's Middle Peninsula and is an agriculture, forestry, and water-based economy. The County is comprised of 130 square miles of land 80 miles of shorelines. Based on 2020 Census Data, Middlesex County's population totals 10,625 which. According to DCR guidelines, a portion of the County is considered a low-income geographic area.

In **Figure 5**, the green areas qualified as low-income “community” areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.

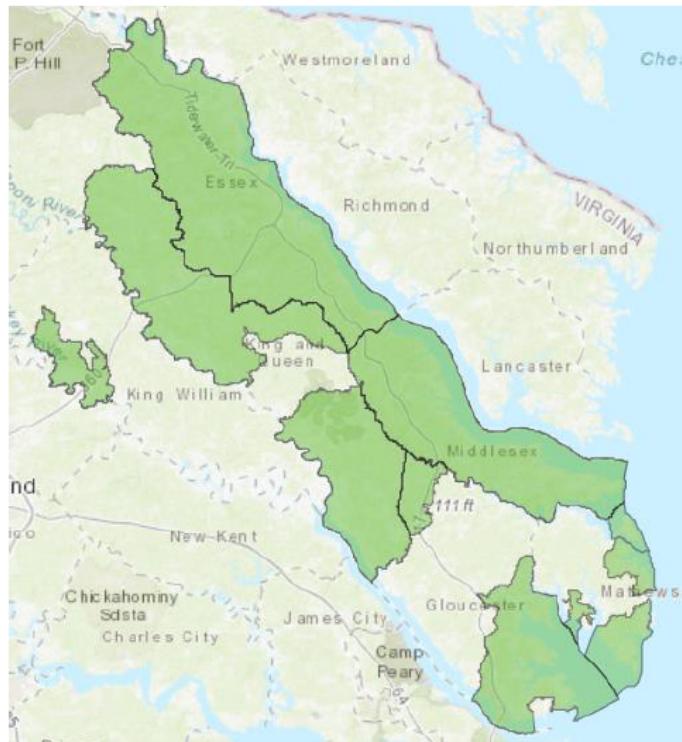
**Figure 5. Map of Middle Peninsula Qualifying Low Income Geographic Areas**

Each county had its 'Eligible Household income' calculated by multiplying the County's median Household income by .8. This resulted in the following numbers:

	Essex	Middlesex	Mathews	King William	King & Queen	Gloucester
Median household income (in 2019 dollars), 2015-2019	\$51,954	\$57,438	\$64,237	\$66,987	\$63,982	\$70,537
Eligible Household income	\$41,563	\$45,950	\$51,389	\$53,590	\$51,186	\$56,430

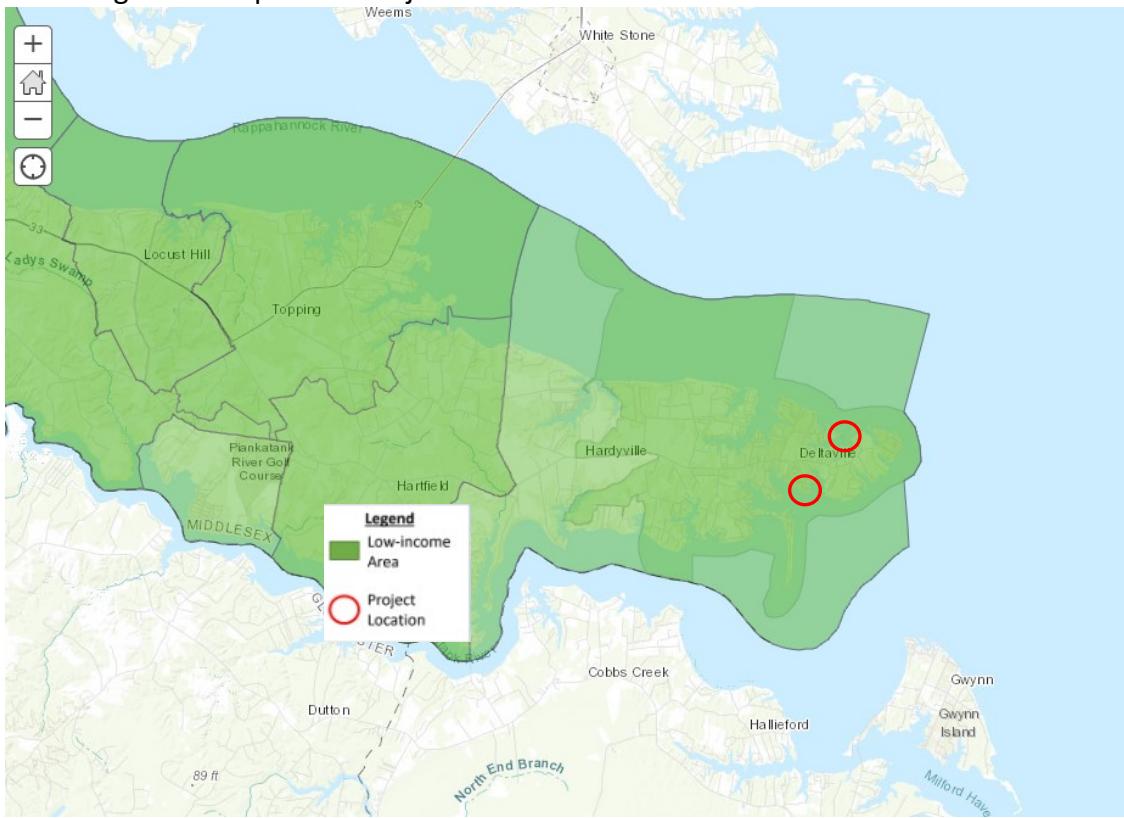
**Note:** Per 7/15/2021 DCR Webinar, comparing state Household income to locality is permissible to determine if the entire locality is LMI.

The following is an overview of the Regional Eligibility map. Green areas are qualified low-income "community" areas meeting the 80% Household limits based on US census household income data or are qualified Opportunity Zones.



Please see **Figure 6** for a zoomed in map of the project locations and the green low-income area overlay. This shows that the project locations are within the low-income area.

Figure 6. Map of the Project Locations within the Green Low-Income Area



According to the VDAPT Virginia's Social Vulnerability Index Score, the project locations have a moderate social vulnerability score as seen in **Figure 7**; however, it also is important to recognize that there are other social vulnerability models which reflect higher social vulnerability within this project area. For instance, according to FEMA's National Risk Index (<https://hazards.fema.gov/nri/map>), which assesses vulnerability at a census tract level, the social vulnerability of the County is considered to be a relatively moderate level of vulnerability as seen in **Figure 8**.

Figure 7. Virginia's Social Vulnerability Index Score Map of the Project Location

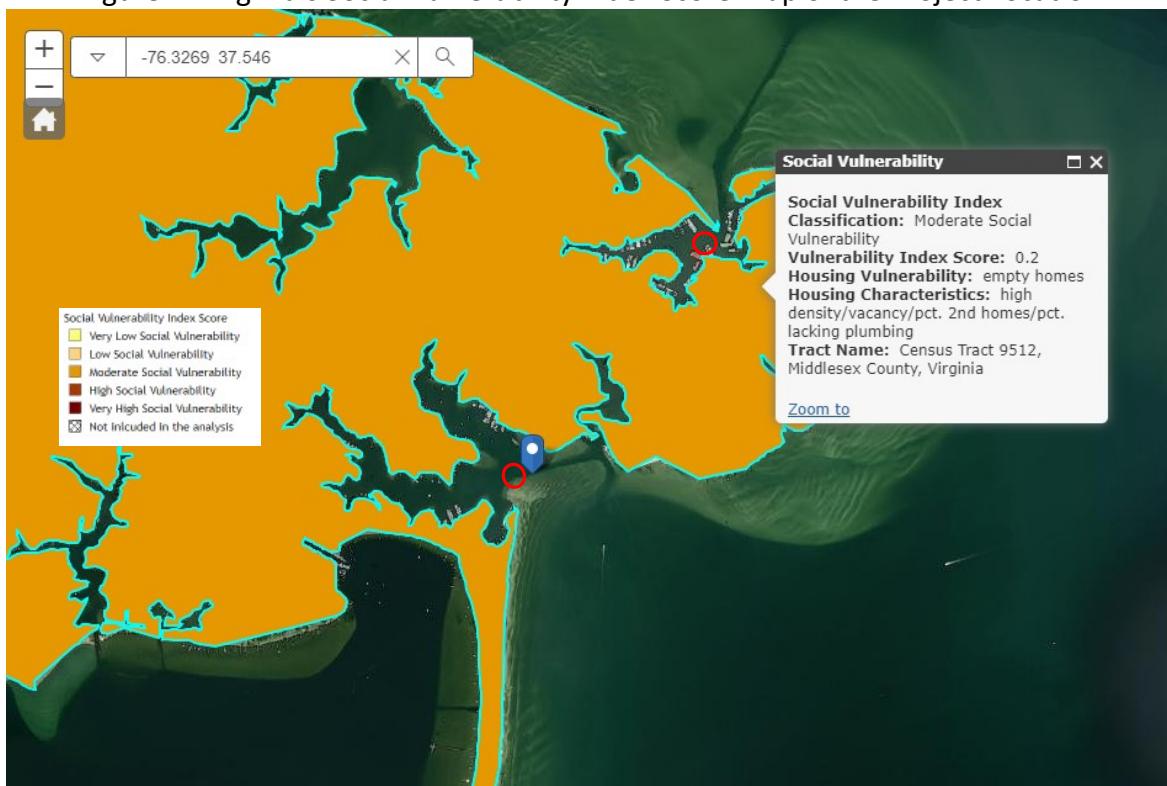
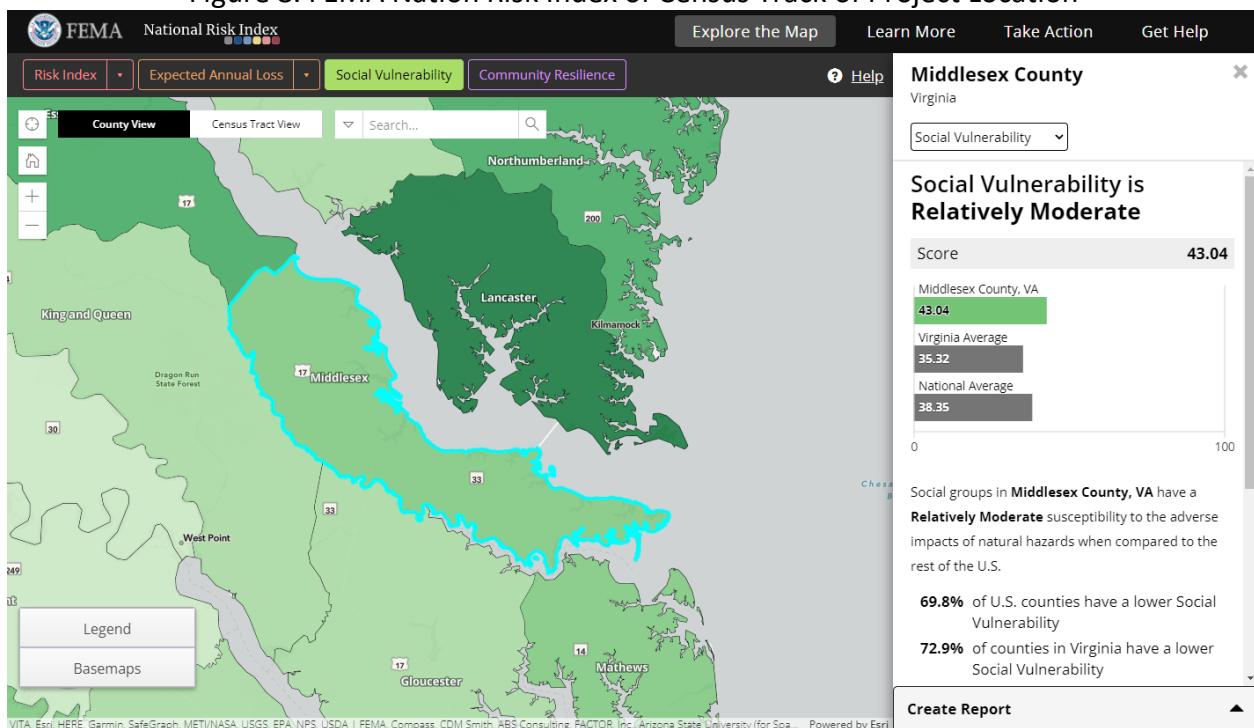


Figure 8. FEMA Nation Risk Index of Census Track of Project Location



Historically, the rural localities of the Middle Peninsula relied on Federal support from Congress and the US Army Corps of Engineers for maintenance of local creeks, which are critical infrastructure for the region's vital marine-based economy. However, past and recent funding levels have not provided ample funding at levels to sustain maintenance dredging for the 17 Federal navigation channels on the Middle Peninsula. Further, funding for maintenance of non-Federal channels has been historically neglected by the Commonwealth of Virginia until the Virginia General Assembly established the Virginia Waterway Maintenance Fund in 2018. For the past decade the Middle Peninsula Chesapeake Bay Public Access Authority, the MPPDC and its member jurisdictions, and the Virginia Institute of Marine Science (VIMS) Shoreline Studies Program have worked to advance local solutions and alternatives to address dredging needs in the Commonwealth. Despite these efforts, funding levels and financing strategies make it difficult to address the pressing navigation channel maintenance needs on the Middle Peninsula in a cost- and time-effective manner. Additionally, managing dredged material as a resource with valuable reuse potential for habitat protection coastal resilience, and flood protection is a top priority for the MPPDC and its member jurisdictions; whereas that has not always been the case for dredging activities conducted by other agencies.

The two creeks central to this proposal have been identified by the Middlesex County leadership as priority creeks for dredging activities due to the fact that they have experienced severe shoaling and they are each critical to the maritime economy of the county and the region. The creeks have been the subject of several studies in recent years by the VIMS Shoreline Studies Program, which have recognized the coarse sandy material that continue to shoal in each creek as having excellent beneficial reuse potential for habitat restoration and flood protection if placed along shorelines.

The effective maintenance of these areas is critical to the recreational boating economy in Middlesex County, to include Jackson and Broad Creeks. The following points summarize the findings of an economic impact study conducted in 2011 by VIMS regarding the transient boating economy in Middlesex County. It should be noted that it is anticipated that the impacts are likely greater currently since the COVID pandemic resulted in a recreational boating boom for all of Coastal Virginia.

- Resident boat owners spent over \$35 million on boating in Middlesex County during 2007.
- Residents owning boats 25 to 39 feet in length accounted for over \$10 million of the total spending.
- Fuel accounted for the largest “trip related” expenditure at almost \$2.7 million. Resident spending on fishing supplies, restaurant meals, and groceries each exceeded \$1 million.
- Over \$10.3 million were for annual storage and maintenance of watercraft.
- A survey of 209 non-resident boat owners keeping their boats at local marinas indicated that as a group they spent over \$3.0 million in Middlesex County during 2007.
- The average non-resident watercraft was 32 feet in length and typically spending \$14,149 annually in Middlesex County.
- There are over 5,000 watercraft registered in Middlesex County. Additionally, 30 marinas provide over 2,000 “wet slips” and 1,200 “dry slips” to primarily non-resident boat owners.
- Expenditures by out-of-region boating-visitors represent an inflow of “new” capital into the community. This spending initiates multiple rounds of economic impact among Middlesex County’s businesses and households.

- The total economic impact of resident and non-resident boaters on Middlesex County was \$53.9 million in 2007.
- The boating related business was responsible for generating 588 full time jobs in Middlesex County generating \$14.8 million in labor income.

Jackson Creek is located at -76.3269, 37.546 and the project for Broad Creek is located at -76.3144, 37.5621. The creeks are similar in that they experience some of the most intense boating traffic in all of coastal Virginia and they are currently shoaled a point which has presented a public safety risk and economic threat to the county and the Middle Peninsula region. Local officials are reporting regular occurrences of boats running aground in each channel. This presents a major public safety risk which requires immediate attention. Also, residents and business located along these creeks are highly vulnerable to flooding related impacts. Broad Creek is exposed to the Rappahannock River and Chesapeake Bay. Jackson Creek is exposed to the Piankatank River and Chesapeake Bay. Flood damages to private and public infrastructure and property are common along each of these creeks and a comprehensive and holistic approach to flood protection is drastically needed.

The following table summarizes key information for each creek related to the number of properties and infrastructure at risk in Jackson Creek.

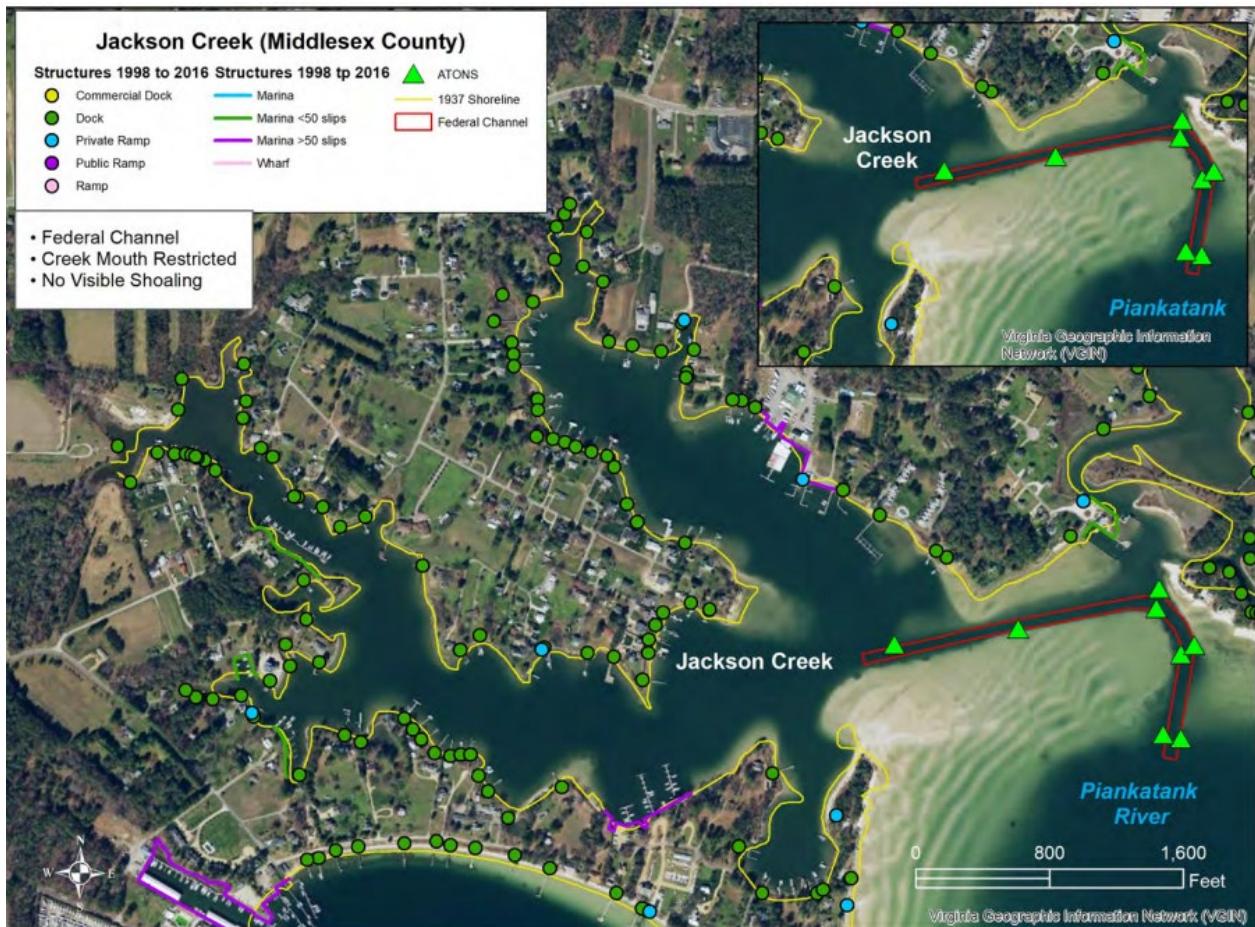
#### **Data Sheet for JACKSON Creek**

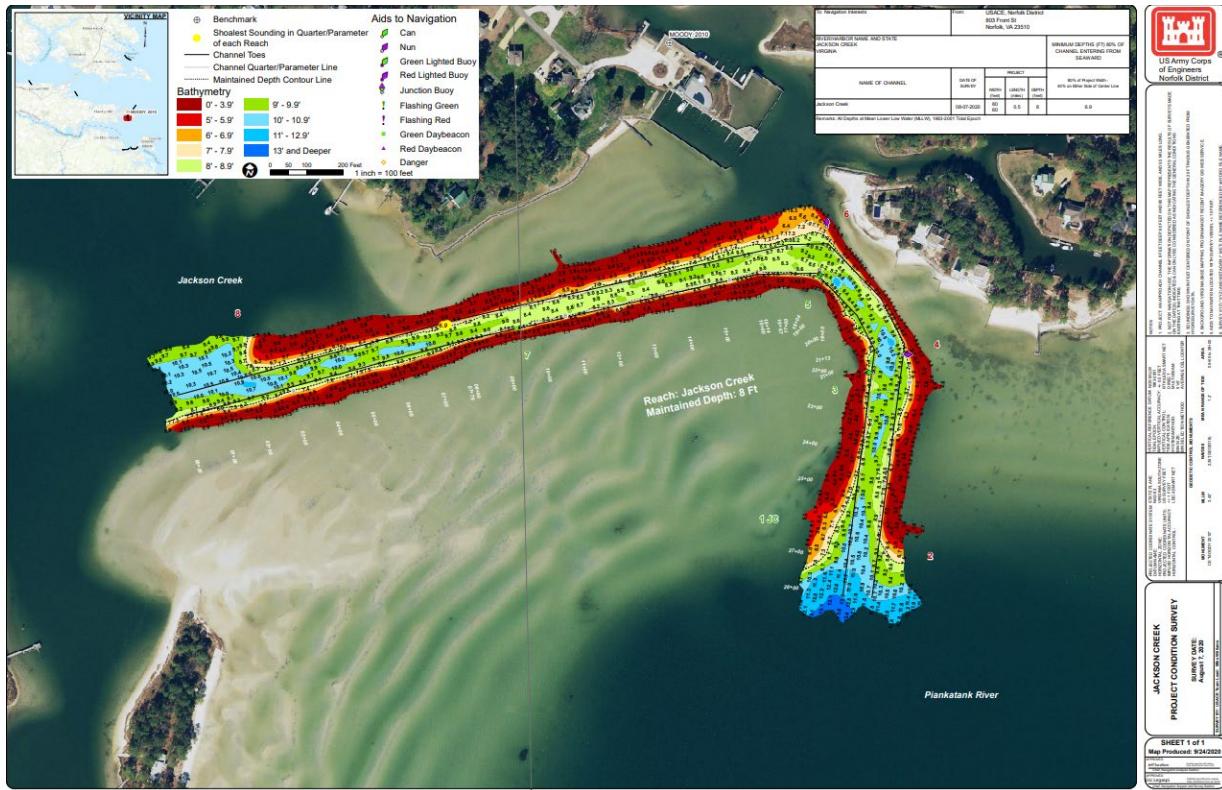
<b>Creek ID Number:</b> 22	<b>Locality:</b> Middlesex
<b>Water Body:</b> Piankatank River	<b>Channel Type:</b> Federal
<b>Latitude:</b> 37.5464	<b>Longitude:</b> -76.3265
<b>Number of Marinas:</b> 5	
<b>Number of Boat Ramps:</b> 6	
<b>Number of Piers:</b> 103	
<b>Creek Mouth Morphology:</b> Restricted	<b>%Shoaling of Creek:</b> No Visible Shoaling
<b>Tide Range (ft):</b> 1.3	<b>Creek Area (acres):</b> 156
<b>Average Depth of Creek Mouth (ft):</b> -2.9	<b>Maximum Depth of Creek Mouth (ft):</b> -10.2

The following photographs illustrate the high level of boating activity and densely populated network of marinas on Jackson Creek. This infrastructure is highly vulnerable to impacts from flooding and sea-level rise and in need of flood protection as it represents a vital economic lifeline for Middlesex County and the Middle Peninsula.



The following figures are maps and the most recent bathymetric surveys from the US Army Corps of Engineers which illustrate the shoaling conditions for Jackson Creek.



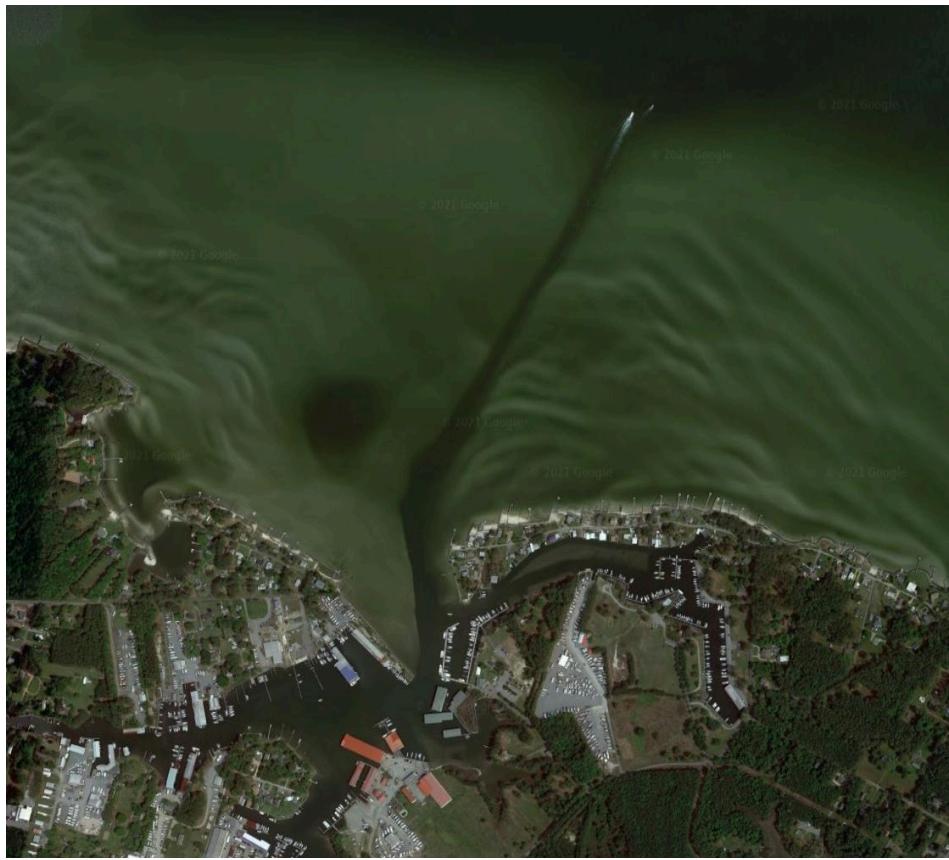


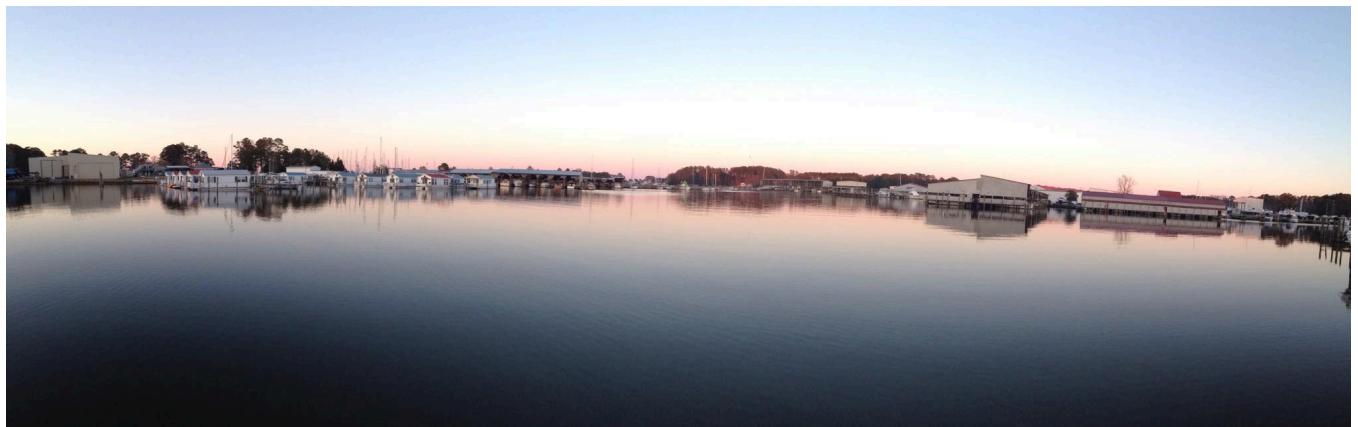
The following table summarizes key information for each creek related to the number of properties and infrastructure at risk in Broad Creek.

#### Data Sheet for **Broad Creek**

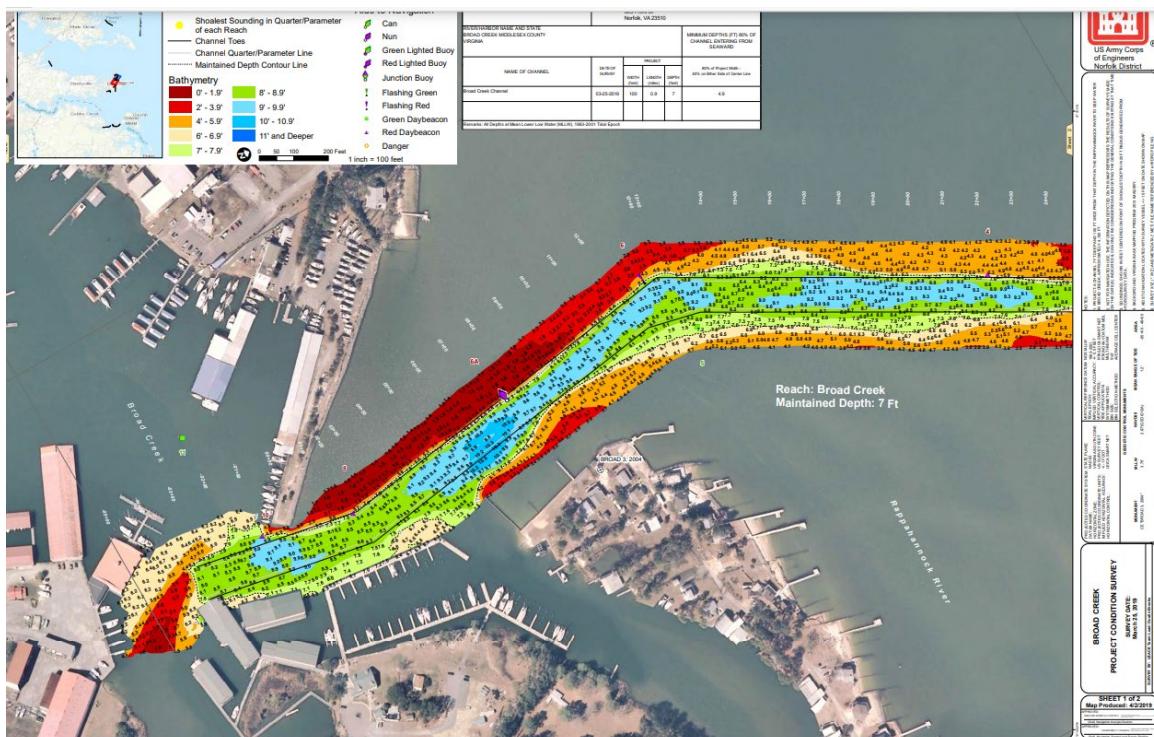
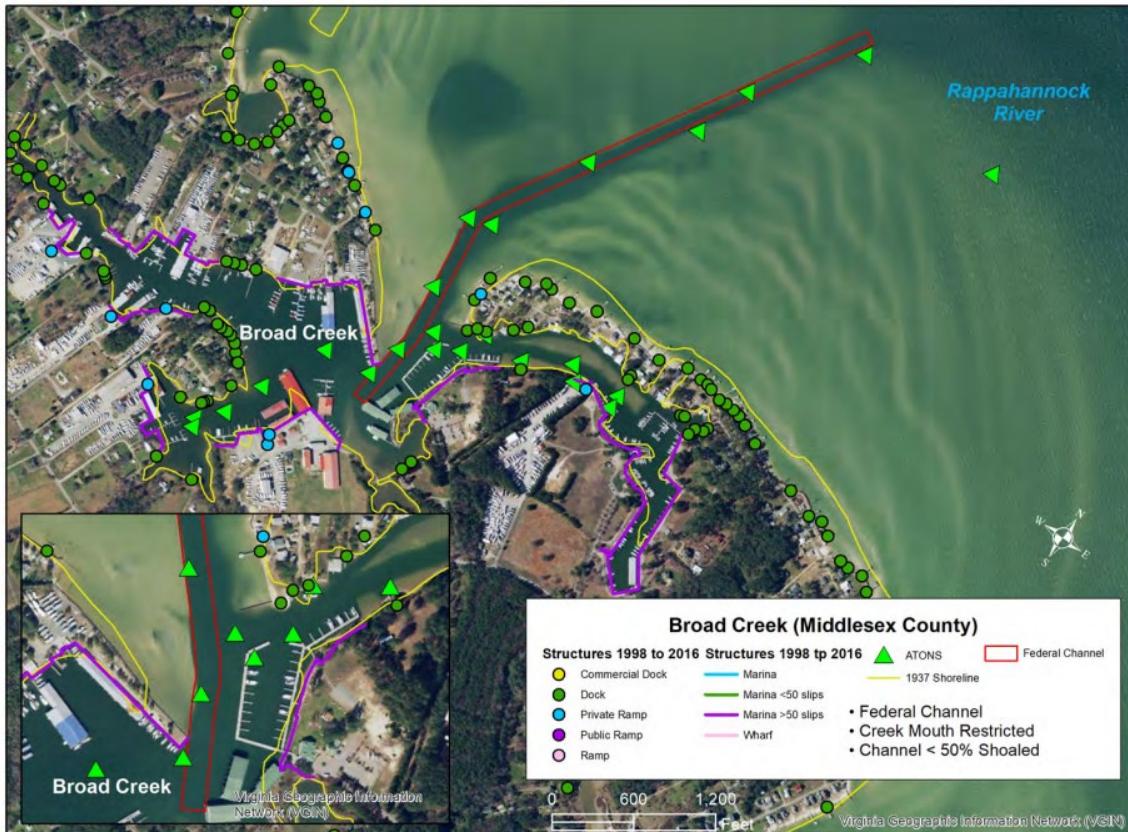
<b>Creek ID Number:</b> 21	<b>Locality:</b> Middlesex
<b>Water Body:</b> Rappahannock River	<b>Channel Type:</b> Federal
<b>Latitude:</b> 37.5604	<b>Longitude:</b> -76.3134
<b>Number of Marinas:</b> 8	
<b>Number of Boat Ramps:</b> 7	
<b>Number of Piers:</b> 50	
<b>Creek Mouth Morphology:</b> Restricted	<b>%Shoaling of Creek:</b> <50% of channel
<b>Tide Range (ft):</b> 1.3	<b>Creek Area (acres):</b> 79
<b>Average Depth of Creek Mouth (ft):</b> -6.2	<b>Maximum Depth of Creek Mouth (ft):</b> -7.9

The following photographs illustrate the high level of boating activity and densely populated network of marinas on Broad Creek. This infrastructure is highly vulnerable to impacts from flooding and sea-level rise and in need of flood protection as it represents a vital economic lifeline for Middlesex County and the Middle Peninsula.





The following figures are maps and the most recent bathymetric surveys from the US Army Corps of Engineers which illustrate the shoaling conditions for Broad Creek.



This site is located within the AE flood zone as seen in **Figures 9a and 9b**. Please see **Appendix 2** for the FIRMettes (last mapped 5/18/2015).

Figure 9a: Map of FEMA Flood Zones – Jackson Creek

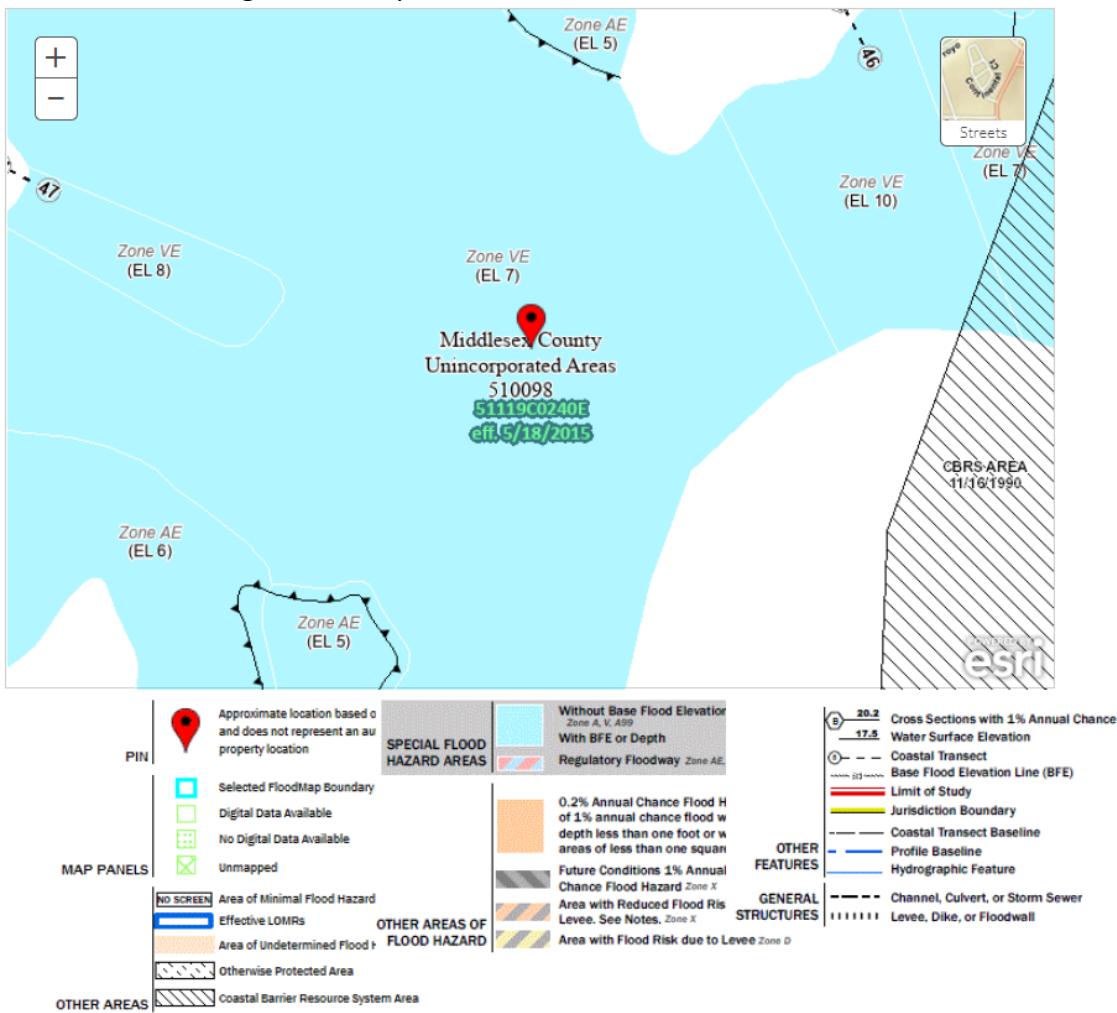
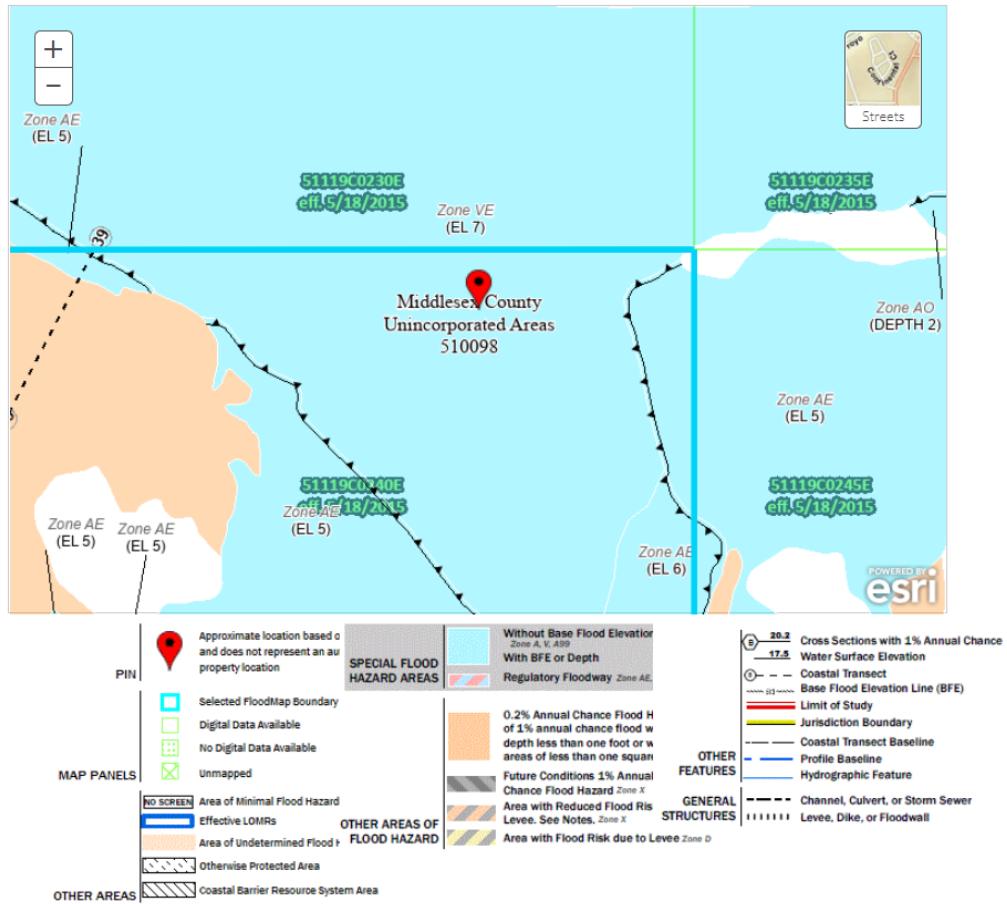


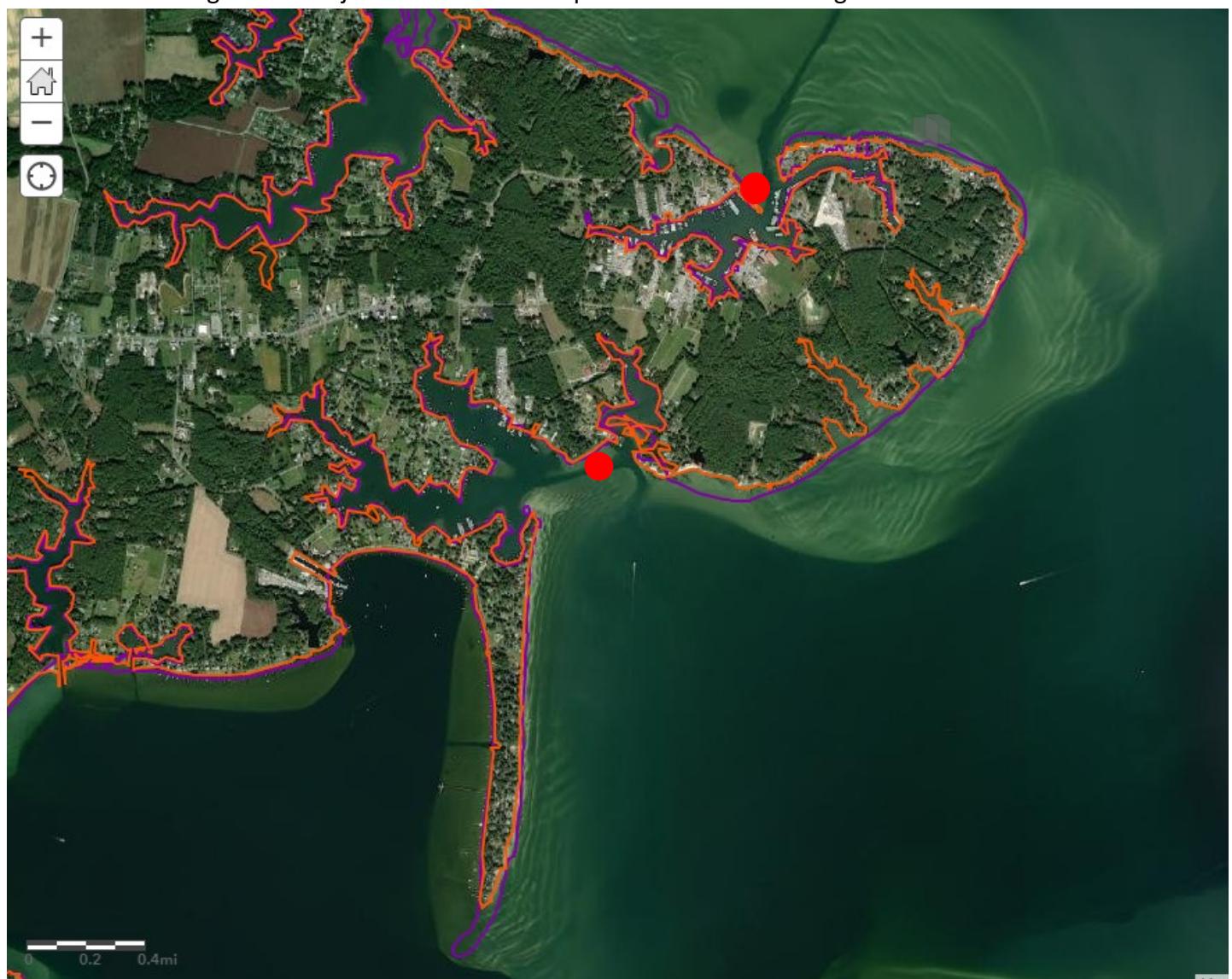
Figure 9b: Map of FEMA Flood Zones – Broad Creek



Due to the project sites' proximity to the water and relatively low elevation, the site has an extensive history of experiencing flooding events that have resulted in significant impacts to infrastructure and the environment. Based on the historical shoreline data from the Virginia Institute of Marine Science Shoreline Studies Program, **Figure 10** shows the 1937 and the 2017 shorelines. From the figure one can see the change in the shoreline at the project location and the approximate loss of square feet of shoreline. The project location has and continues to be impacted by tropical, sub-tropical, and nor'easter events.

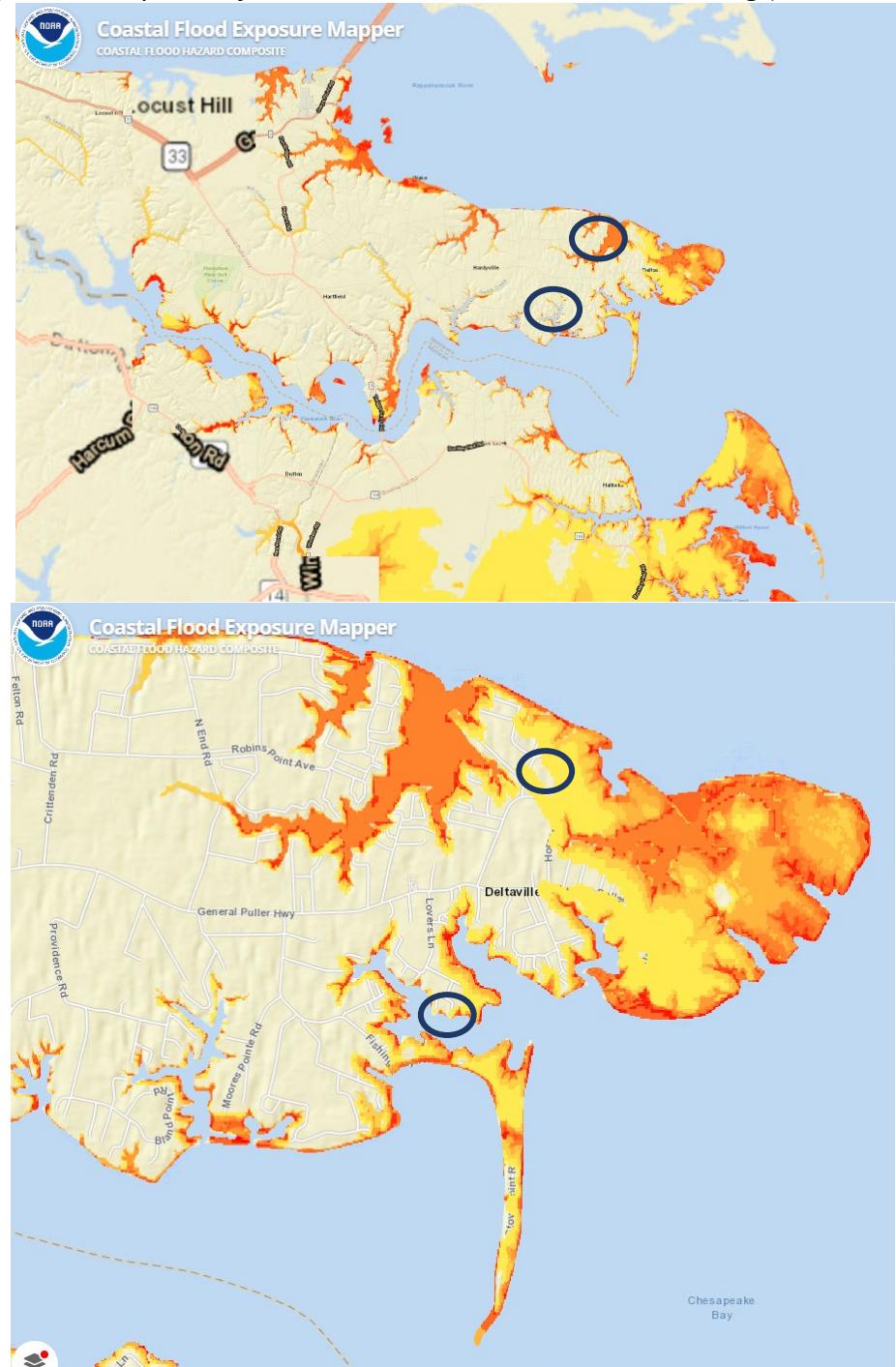
**Appendix 3** lists 79 storm events for Jackson Creek as well as 79 storm events for Broad Creek and provides a map with the project location. Without the flood protection measures proposed, the land, habitat, and infrastructure will be compromised, resulting in degradation of the environment and revenue loss to the local tax base.

Figure 10. Project Location and Map of the Shoreline Change between 1937 and 2017



Finally, according to NOAA's Coastal Flood Mapper, this project is at the highest risk of coastal flooding as seen in **Figure 11**.

Figure 11. Map of Project Location and Risk of Coastal Flooding (NOAA, 2021)



For more information about this project area please see:

- A link to the Middle Peninsula PDC's All Hazards Mitigation Plan (2016) can be found at: [https://www.mppdc.com/articles/reports/AHMP\\_2016\\_FEMA\\_Approved\\_RED.pdf](https://www.mppdc.com/articles/reports/AHMP_2016_FEMA_Approved_RED.pdf)
- A link to Middlesex County's current floodplain ordinance can be found at: <https://www.co.middlesex.va.us/DocumentCenter/View/422/Floodplain-Management-PDF>.

## **COMMUNITY SCALE BENEFITS.**

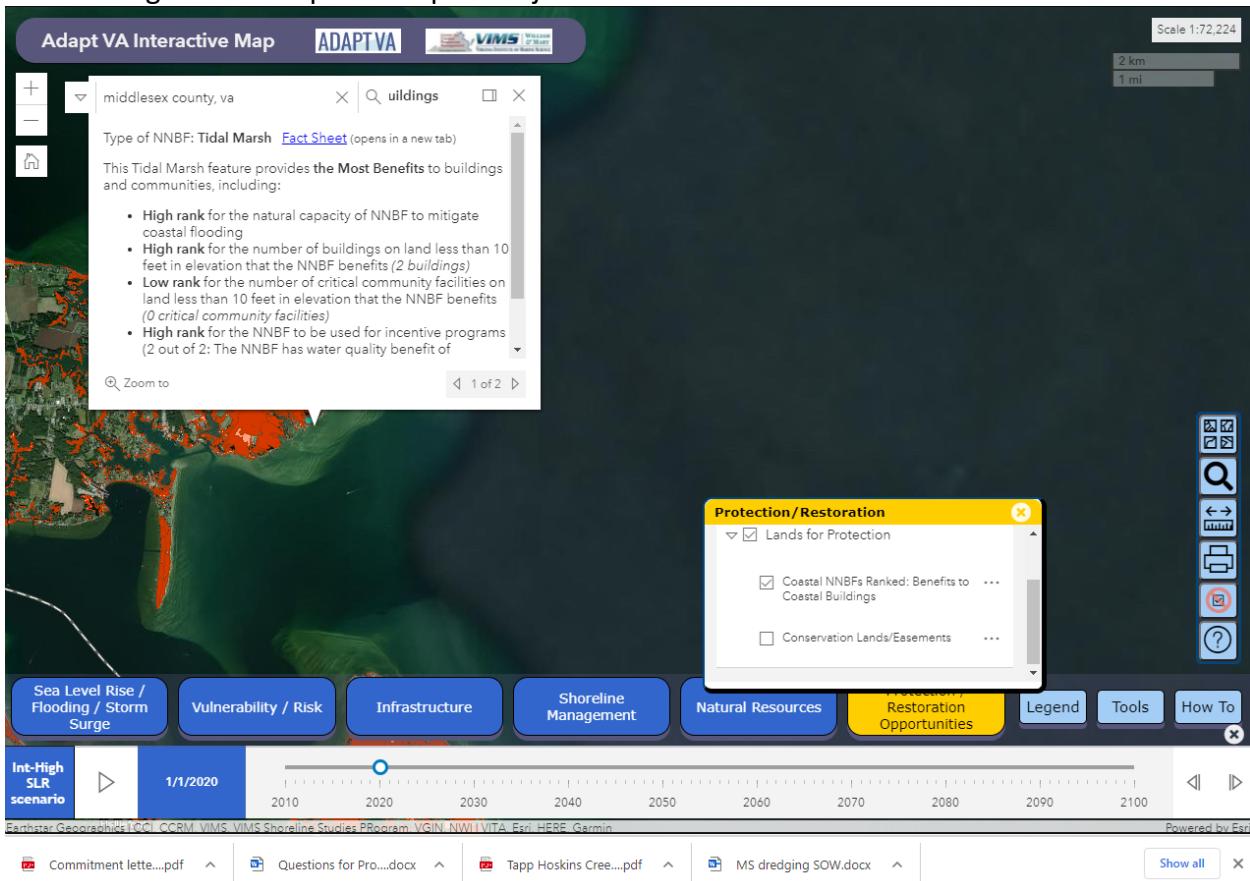
As explained in previous sections, the proposed activities represent a coordinated effort to address accelerating climate impacts altering and accelerating sand migration patterns driven by storm surge and wave energy. The MPPDC and Middlesex County will work together to protect the highly vulnerable water-based marine and recreational economies and properties along Broad and Jackson Creeks in Deltaville. The activities will have direct benefit to the general public in the form of navigability for the recreational and commercial boating activities occurring on these creeks as well as new and improved public access to the water from land, which is currently lacking in the Deltaville vicinity. Additionally, and most importantly, the shoaled conditions of the creek and flood vulnerabilities of the properties adjacent to the creeks represent an immediate and dire public safety issue desperately in need of DCR Flood Fund assistance.

The Commonwealth of Virginia may have some basis to give preference to projects larger in scale than those affecting one parcel or property owner. VA Code § 10.1-603.25(E) states, “Priority shall be given to projects that implement community-scale hazard mitigation activities that use nature-based solutions to reduce flood risk. However, this would not provide a basis for rejecting applications for one parcel or property owner as projects of all sizes are expressly to be considered. The issue is how the guidance defines “Community Scale project” which means a project that provides demonstrable flood reduction benefits at the U.S. census block level or greater. A census block is the smallest U.S. Census geography, but in rural application in many instances represents an extremely large area covering in excesses of 3,000 acres and almost 5 square miles, while an urban block may be as small as 2 acres or .003 of one square mile in size. If the basis for approving rural projects is based singularly on proving “demonstrable flood reduction” benefit, rural areas will never compete.

The Middle Peninsula PDC believes that proposing nature-based flood mitigation projects at the parcel scale and where possible, partnering with neighbors can accomplish more in terms of linear shoreline protected than urban areas which have smaller sized parcels. Therefore, consistent with the General Assembly directive to Virginia Marine Resources Commission (VMRC) that every VMRC permitted living shoreline project is the preferred solution, we believe submissions of each nature-based project is essentially a nature-based “brick in the wall” and over time the cumulative impact of this approach will be realized. The alternative is hardening of the shoreline, which is counter to the desires of the General Assembly.

Additionally, Adapt VA contains a data layer illustrating areas of less than 10 feet in elevation that show locations in the Middle Peninsula that offer benefits of natural and nature-based features (NNBF) to coastal buildings, habitat, and community protection as seen in Figure 12. All Round 1 applications from the Middle Peninsula have multiple community protection benefits which include combinations of mitigating coastal flooding, protecting buildings/community facilities and Credit for Habitat Protection credit.

Figure 12. Adapt VA Map of Project Locations and Elevation for NNBF Benefits



## ALTERNATIVES.

Alternative design solutions are not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not exceed \$3 million.

## GOALS AND OBJECTIVES.

The Code of Virginia § 28.2-104.1. defines "Living shoreline" as *shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.*

The goals and objectives of this project are as follows -

**Goal 1: Improve coastal resiliency within the community and the Commonwealth.**

- Objective A: Prevent loss of life and reduce property damage by mitigating for recurrent, repetitive, and future flooding within the project area using a nature-based design approach.

- Objective B: Stabilize the shoreline to ensure that the County's tax base does not erode and reduce the overall erosion rate within the project area using a nature-based design approach.

According to FEMA and NOAA, living shorelines are more resilient against storms compared to bulkhead. With the installation of sills, these structures will run parallel to the existing or vegetative shoreline, reduce wave energy, and prevent erosion. This will protect the land and it will protect, or at least prolong, the life of the Oak trees on the property. Additionally, eroding shorelines and sediment from stormwater runoff greatly contribute to the shoaling of navigable waterways. With maritime industries contributing substantially to the local and regional economy, the mitigation of continued sedimentation and shoaling provided by this project will protect and enhance the region's commercial and recreational maritime economies.

Additionally, as the installation of a living shoreline will reduce erosion of the property, this will reduce flood risks at the project site. Also, as flooding and erosion threaten the tax base within the locality, this project will help maintain the tax-base at this project location, which directly protects the largest employer in Middlesex County, which is local government, public schools, community services, and transportation.

#### Goal 2: Improve water quality for the Chesapeake Bay area.

- Objective A: Improve nitrogen, phosphorus, and sediment using a nature-based design approach.

Since this project is proposing a nature-based design solution for living shorelines, it could result in a design that will have nutrient and sediment reduction benefits to local waters. According to a report titled, Removal Rates of Shoreline Management Project, an expert Panel on Shoreline Management identified the living shorelines has having a nitrogen removal rate 0.01218 pounds per linear foot per year (lb/lf/yr) and a phosphorus removal rate of 0.00861 lbs/lf/yr. Additionally living shorelines were shown to reduce total suspended sediment by 42 lb/lf/yr. Therefore, with a proposed project of 150 linear feet of living shoreline this has the ability of removing 1.827 pounds of nitrogen per year, 1.2915 pounds of phosphorus per year and 6,300 pounds of sediment per year. Ultimately contributing to the overall water quality of the Chesapeake Bay.

In addition to water quality improvements, living shorelines offer new habitat for marine wildlife and birds. With the living shorelines reducing wave energy in this area this provides a calmer habitat to breed and nurse juvenile wildlife and fish. Also, incorporated plantings will offer more cover and protection from prey.

#### Goal 3: Transferability to other communities.

- Objective A: Improve the implementation of Fight the Flood projects and project as an example program to be replicated in other communities within the region or the Commonwealth.

For over 40 years the Middle Peninsula PDC and its participating localities have worked diligently on topics associated with the land-water interface, including coastal use conflicts and policies, sea level rise,

stormwater flooding, roadside ditch flooding, erosion, living shorelines, coastal storm hazards (i.e., hurricanes, tropical storms), riverine and coastal flooding, and coastal resiliency.

#### **APPROACH, MILESTONES, AND DELIVERABLES.**

The proposed project is to design two dredging projects for Jackson Creek and Broad Creek in the community of Deltaville in Middlesex County which will involve beneficial reuse of the dredged material for flood protection and prevention purposes. The dredging and beneficial reuse projects will provide immediate co-benefits for coastal resilience, flood protection, and navigability. Additionally, flood protection structures will be designed to provide additional resilience at the mouths of Jackson and Broad Creeks with regards to shorelines and navigable channels. Draft Joint Permit Applications will be developed for all activities to position the projects for future implementation. The project locations in relationship to flood hazard area as seen in **Figures 13a and 13b**.

Figure 13a. Project Flood Hazard Area – Jackson Creek

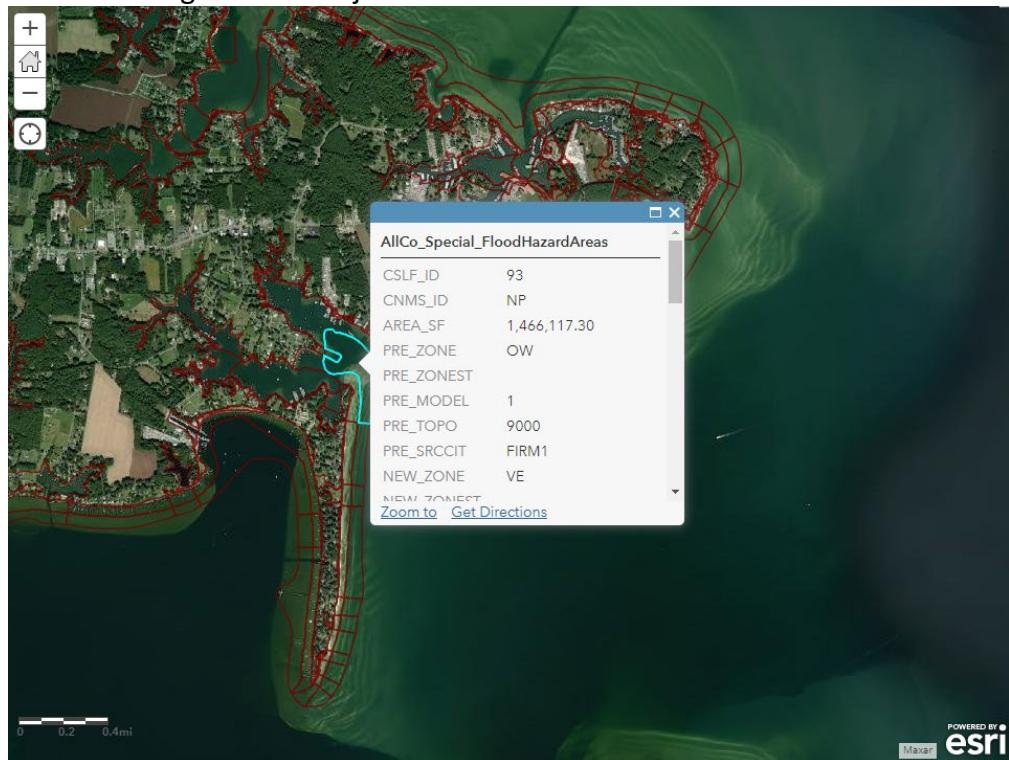
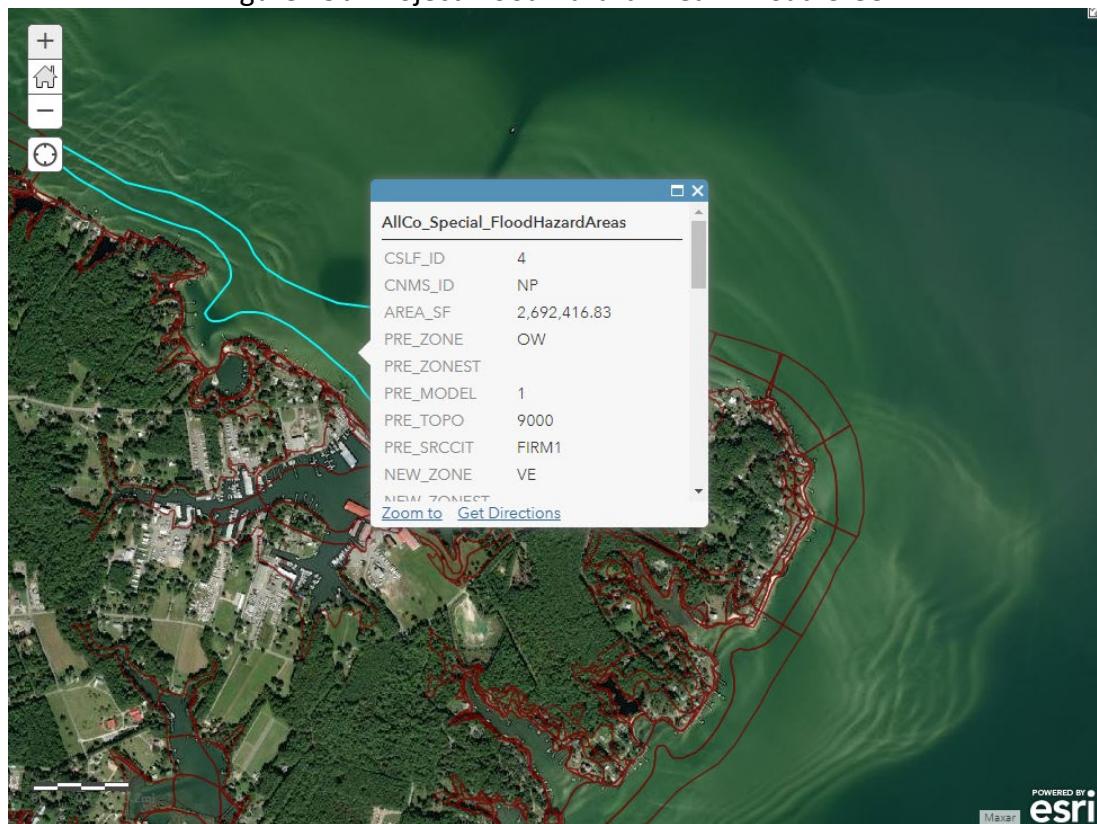


Figure 13b. Project Flood Hazard Area – Broad Creek



Upon receiving notification of an award to proceed, the Middle Peninsula PDC will commence work in moving forward with the project in partnership with Middlesex County, the VIMS Shoreline Studies Program and a procured engineering firm.

The proposed project includes four distinct activities to take place over the course of an 18-month period. It is anticipated that the proposed project will commence in January 2022 and be completed by June 2023. The activities are being proposed as joint or concurrent projects as the proximity of the project locations present a unique opportunity to combine and streamline field surveys and other field work which is desirable as it will result in a significant cost savings compared to approaching each activity individually.

The activities are described in detail in the following sections and are followed by a timeline for completion of all activities.

#### **Activity 1 – Broad Creek Dredging and Beneficial Reuse/Disposal Design and draft Joint Permit Application**

Broad Creek is in immediate need of dredging and the shorelines adjacent to the creek are suffering from severe erosion. The VIMS Shoreline Studies Program conducted some preliminary surveys during 2020 indicating that there is coarse sand that has shoaled the creek in some locations which has high reuse value for flood protection use along eroding shorelines. The VIMS Shoreline Studies Program would be contracted to conduct comprehensive and current bathymetric surveys and

core samples to characterize the dredge material volumes and characteristics. Grain size analyses would be performed on the core samples. Chemical analyses would be performed on the core sediments to verify the lack of contamination for when dredging occurs. The design will prioritize placing sandy material suitable for flood protection along shorelines. Flood protection reuse alternatives for material too fine for shoreline placement will be explored and incorporated into the design. Should flood protection alternatives for the fine-grained material not be feasible, then the backup option will be to dispose of the material at an upland disposal facility nearby in Deltaville which is owned by Middlesex County and has been used for dredge material disposal historically for Broad and other nearby creeks. Cost estimates and a draft JPA will be developed to position the project for implementation.

#### **Activity 2 – Broad Creek Flood & Shoaling Protection Structure Design and draft Joint Permit Application**

Broad Creek has several very active sand shoals at the mouth and approach channel of the creek which continuously shoal the channel. Middlesex County wishes to advance a design for a structure or system of structures which can offer a more resilient and sustainable long-term solution for shoaling and flood protection at Broad Creek to protect navigability and the many working waterfronts and marinas which serve as critical drivers for the county and regional economy. This design work will be procured in accordance with the VA Public Procurement Act should the costs exceed the MPPDC's small purchase policy threshold and conducted by a qualified engineer. The design will incorporate the findings of the bathymetric surveys and sediment core samples completed under Activity 1 and would also involve wave analysis of offshore and nearshore wave and energy conditions, settlement analysis to assess the capacity of the sub-bottom to support the weight of structures, and a base design of the structures or structure system. Cost estimates and a draft JPA will be developed to position the project for implementation.

#### **Activity 3 – Jackson Creek Dredging and Beneficial Reuse Design**

Like Broad Creek, Jackson Creek is in immediate need of dredging and the shorelines adjacent to the creek are suffering from severe erosion. Middlesex County has an active maintenance permit in place for dredging at the mouth of the creek, where the dredging need is located, and has paid for maintenance dredging there several times over the past 15-20 years with general funds; however, a more sustainable and cost-effective approach to maintaining the channel and disposing of the material is desperately needed as the County is struggling to sustain the funding commitment at the rate the channel mouth is shoaling. Prior to every dredging, the US Army Corps of Engineers has provided bathymetric surveys at no cost to the County; however, it is not guaranteed that the Corps will provide this free service again for the next round. As such funds are requested so that the MPPDC can contract the VIMS Shoreline Studies Program to conduct bathymetric surveys, core sample, and sedimentological and chemical analyses, all of which will be utilized to develop a final dredging and beneficial reuse design. Additionally, the entire creek will be incorporated for the design and not just the area at the mouth of the creek that is regularly surveyed by the Corps and covered by the current permit. Should a dredging need be identified in the design, which is outside of the active permit footprint, then an additional draft JPA will be drafted to position additional dredging activities outside of the active permit footprint for implementation.

Regarding beneficial reuse opportunities, historic dredging cycles have utilized some adjacent shorelines for beneficial reuse flood protection as well as upland disposal at the County-owned upland dredge disposal area in Deltaville. For this dredging project and future dredging projects, the County wishes to use a more sustainable reuse approach which has the greatest benefit to the public as possible. As such, the County's preference for beneficial reuse will be at a piece of property at the mouth of Jackson Creek, which the County is actively considering purchasing to create what would be the first public beach and public access point in the Deltaville area. The property of interest has over 300' of beach fronting the mouth of Jackson Creek and the Piankatank River. The shoreline has eroded 50'-100' over the past 75 years and continues to erode severely. This location presents an excellent opportunity to serve as a location to place the dredged sand from this and future dredging cycles for the future as it the public beach would not only provide much needed public water access to the water in this vicinity but provide restored and critical habitat and water quality benefits.

#### **Activity 4 – Flood Protection Structure Design and draft Joint Permit Application**

Once the dredged sand is placed on what will be the first public water access site in Deltaville, it will be critical to design a solution that can prevent erosion on this improved public asset. As such the VIMS Shoreline Studies Program will be contracted to design nature-based shoreline protection structures which can provide needed flood protection and enhanced marine habitat and water quality benefits. VIMS Shoreline Studies Program is currently serving in this capacity for the MPPDC and Mathews County on a dredging and beneficial reuse project where a series of offshore breakwaters were designed and will be constructed at a public beach owned by Mathews County which will be improved with dredged sand from a nearby channel. For this project, alternative structures to granite are being utilized to test the effectiveness of the alternative structures with regards to flood protection and habitat benefits. The alternative structures are also being evaluated for cost effectiveness as one producer of these types of structures estimates that alternative structures can be deployed along high energy shorelines at up to 50% of the cost of traditional granite structures. Should the pilot study demonstrate the effectiveness of the alternative structures along the high energy shorelines nearby in Mathews County then the same approach will be utilized at the high energy shorelines adjacent to the mouth of Jackson Creek. Cost estimates and a draft JPA will be developed to position the project for implementation.

Action Item	Q1	Q2	Q3	Q4	Q5	Q6
<b>Activity 1 – Broad Creek Dredging and Beneficial Reuse/Disposal Design and draft Joint Permit Application</b>						
Contract with VIMS Shoreline Studies Program	X					
Conduct bathymetric surveys, core sediment samples, and sediment and chemical analyses	X	X				
Develop cost estimates and draft JPA to include in final design report.		X	X			
<b>Activity 2 – Broad Creek Flood &amp; Shoaling Protection Structure Design and draft Joint Permit Application</b>						
Procure design in accordance with the VA Public Procurement Act should the costs exceed the MPPDC's small purchase policy threshold	X					
Selected contractor to conduct wave analysis, settlement analysis			X	X		
Finalize structure design utilizing model outcomes and Activity 1 findings					X	X
Develop cost estimates and draft JPA to include in final design report.						X
<b>Activity 3 – Jackson Creek Dredging and Beneficial Reuse Design</b>						
Contract with VIMS Shoreline Studies Program	X					
Conduct bathymetric surveys, core sediment samples, and sediment and chemical analyses	X	X				
Develop cost estimates and draft JPA to include in final design report.		X	X			
<b>Activity 4 – Flood Protection Structure Design and draft Joint Permit Application</b>						
Contract with VIMS Shoreline Studies Program	X					
Assess site conditions and develop design	X	X				
Develop cost estimates and draft JPA to include in final design report.		X	X			

#### ***RELATIONSHIP TO OTHER PROJECTS.***

In response to emerging flood challenges, the Middle Peninsula PDC launched the Middle Peninsula FTF Program in 2020 which leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners (private and public) gain access to programs, funding (i.e., grants and loans), and services to better manage challenges posed by flood water.

Other plans and resources which are integral to the implementation of the Flood Resiliency Plan are:

#### Long Term Planning

- Middle Peninsula All Hazards Mitigation Plan – FEMA and Middle Peninsula locality approved 2016

- The overarching project that provides updates every five years of the hazards within the region is the Middle Peninsula All Hazards Mitigation Plan. This plan identifies the top hazards within the region and provides a HAZUS assessment that analyzes flooding (riverine and coastal), sea-level rise and hurricane storm surge impacts in the region. Additionally, this plan lists strategies and objectives that guide member localities to mitigate for these strategies.
- Middle Peninsula Comprehensive Economic Development Strategy – Middle Peninsula PDC approved 2021
- Middle Peninsula VDOT Rural Long Range Transportation Plan – Middle Peninsula PDC approved annually

### Short Term Implementation

- Middle Peninsula PDC Fight the Flood (FTF) Program Design – Middle Peninsula PDC, approved June 2020 and chairman approved update 2021
- Middle Peninsula PDC Living Shoreline Resiliency Incentive Funding Program – Virginia Revolving Loan Fund Program Design and Guidelines, approved 2015

As the Middle Peninsula PDC has continuously worked on flooding and coastal resiliency topics. All of these projects have built upon each other to establish a solid foundation of regional expertise in flooding and coastal resiliency topics. Now, with such a wealth of information, the Middle Peninsula PDC can move beyond research and studies to begin implementing projects on the ground. One effort, in particular, was launched in 2020 in response to emerging flood challenges; the Middle Peninsula PDC Commission authorized staff to develop the Middle Peninsula FTF Program. This program leverages state and federal funding to deliver flood mitigation solutions directly to constituents, for both the built environment and the natural environment with an emphasis on nature-based flood mitigation solutions. The FTF Program helps property owners gain access to programs and services to better manage challenges posed by flood water. Therefore, the Middle Peninsula PDC have partnered with private property owners that have registered for the FTF Program to assist them in finding funding for their shoreline as seen in **Appendix 4**.

Finally, the Flood Resiliency Plan and associated programs strive to carry out the guiding principles and goals set forth in the Virginia Coastal Resilience Master Planning Framework established in 2020. The proposed activities are proposed in accordance with the guiding principles and with the intent that the outcomes will help the Commonwealth meet the goals set forth in the planning framework.

### **MAINTENANCE PLAN.**

Maintenance plan is not applicable in this application. The proposed project is to develop a nature-based or hybrid design solutions and its cost does not require ongoing operation and future maintenance.

### **CRITERIA.**

1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or

pursuant to the Constitution or laws of the Commonwealth, or any combination of these or a recognized state or federal Indian tribe?

The Middle Peninsula PDC is a political subdivision of the Commonwealth of Virginia formed under VA Code §15.2-4203 and pursuant to the Constitution or laws of the Commonwealth.

2. Does the local government have an approved resilience plan meeting the criteria as established by this grant manual? Has it been attached or a link provided?

The Middle Peninsula PDC does have an Approved Regional Flood Resiliency Plan as of August 19, 2021, which can be found at the following link: [https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8\\_19\\_DCR-packet\\_letterandplan.pdf](https://fightthefloodva.com/wp-content/uploads/2021/08/Approved-8_19_DCR-packet_letterandplan.pdf).

3. For local governments that are not towns, cities, or counties, have letters of support been provided from affected local governments?

The Middle Peninsula PDC does have support letters from all nine localities including the Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex Counties and the Towns of Tappahannock, West Point, and Urbanna as seen in **Appendix 1**.

4. Has the applicant provided evidence of an ability to provide the required match funds?

The property owner has provided a match commitment letter to the Middle Peninsula PDC indicating their responsibility to provide the appropriate match if their design solution project proposal is awarded as seen in **Appendix 5**.

5. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding?

Yes, nature-based solutions—such as reconnecting floodplains to give rivers more room during floods or restoring reefs, marshes or dunes that can protect coastal communities during storms—as well as hybrid solutions can also help improve water quality, provide prime wildlife habitat, enhance recreational opportunities, and produce related economic and social benefits.

6. Has the applicant demonstrated to the extent possible, the positive impacts of the project or study on prevention of flooding? Yes.

**SCORING CRITERIA FOR FLOOD PREVENTION AND PROTECTION PROJECTS.**

<b>Applicant Name:</b>		Middle Peninsula Planning District Commission	
<b>Eligibility Information</b>			
Criterion	Description		Check One
<b>1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?</b>			
Yes	Eligible for consideration		<input checked="" type="checkbox"/>
No	Not eligible for consideration		
<b>2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?</b>			
Yes	Eligible for consideration under all categories		<input checked="" type="checkbox"/>
No	Eligible for consideration for studies, capacity building, and planning only		
<b>3. If the applicant is <u>not</u> a town, city, or county, are letters of support from all affected local governments included in this application?</b>			
Yes	Eligible for consideration		<input checked="" type="checkbox"/>
No	Not eligible for consideration		
<b>4. Has this or any portion of this project been included in any application or program previously funded by the Department?</b>			
Yes	Not eligible for consideration		
No	Eligible for consideration		<input checked="" type="checkbox"/>
<b>5. Has the applicant provided evidence of an ability to provide the required matching funds?</b>			
Yes	Eligible for consideration		<input checked="" type="checkbox"/>
No	Not eligible for consideration		
N/A	Match not required		

Project Eligible for Consideration		X Yes <input type="checkbox"/> No
Applicant Name:	Middle Peninsula Planning District Commission	
Scoring Information		
Criterion	Point Value	Points Awarded
<b>6. Eligible Projects (Select all that apply)</b>		
<b>Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.</b>		
<b>1.a.</b> Acquisition of property consistent with an overall comprehensive local orregional plan for purposes of allowing inundation, retreat, or acquisition of structures.	<b>50</b>	
<input type="checkbox"/> Wetland restoration, floodplain restoration <input type="checkbox"/> Living shorelines and vegetated buffers. <input type="checkbox"/> Permanent conservation of undeveloped lands identified as having flood resiliencevalue by <i>ConserveVirginia</i> Floodplain and Flooding Resilience layer or a similar datadriven analytic tool <input type="checkbox"/> Dam removal <input type="checkbox"/> Stream bank restoration or stabilization. <input type="checkbox"/> Restoration of floodplains to natural and beneficial function. <input type="checkbox"/> Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.	<b>45</b>	
<b>1.b.</b> Any other nature-based approach	<b>40</b>	40
All hybrid approaches whose end result is a nature-based solution	<b>35</b>	
All other projects	<b>25</b>	
<b>7. Is the project area socially vulnerable? (Based on <a href="#">ADAPT VA's Social Vulnerability Index Score.</a>)</b>		
Very High Social Vulnerability (More than 1.5)	<b>15</b>	
High Social Vulnerability (1.0 to 1.5)	<b>12</b>	
Moderate Social Vulnerability (0.0 to 1.0)	<b>8</b>	8
Low Social Vulnerability (-1.0 to 0.0)	<b>0</b>	
Very Low Social Vulnerability (Less than -1.0)	<b>0</b>	
<b>8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?</b>		
Yes	<b>10</b>	
No	<b>0</b>	0

<b>9. Is the proposed project in a low-income geographic area as defined in this manual?</b>		
Yes	<b>10</b>	10
No	<b>0</b>	
<b>10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?</b>		
Yes	<b>5</b>	5
No	<b>0</b>	
<b>11. Does this project provide “community scale” benefits?</b>		
Yes	<b>20</b>	20
No	<b>0</b>	
<b>Total Points</b>		<b>83</b>

**SCOPE OF WORK CHECKLIST.**

<b>Scope of Work Narrative</b>	
<b>Supporting Documentation</b>	<b>Included</b>
Detailed map of the project area(s) (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
FIRMette of the project area(s) (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Historic flood damage data and/or images (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current floodplain ordinance	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current hazard mitigation plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current comprehensive plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Social vulnerability index score(s) for the project area from <a href="#">ADAPT VA's Virginia Vulnerability Viewer</a>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
If applicant is not a town, city, or county, letters of support from affected communities	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
<b>Budget Narrative</b>	
<b>Supporting Documentation</b>	<b>Included</b>
Authorization to request funding from the Fund from governing body or chief executive of the local government	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Signed pledge agreement from each contributing organization	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

### III. BUDGET NARRATIVE

The proposed project has an estimated Total budget of \$586,064  
 Requested amount: \$468,851

Justifications for the budget request items are included in the Activity Descriptions included in the Approach, Milestones, and Deliverables section.

Title: Middlesex County Beneficial Reuse of Dredged Material for Flood Prevention and Protection at Jackson and Broad Creeks						Budget (Cat. D)
			PDC %	Match %	Annual Salary	
Personnel Salaries/Wages	Staff		0.00%	0.00%	\$70,000	
						\$45,638
	Personnel		<i>Proj Admin Split</i>	<b>DCR</b>	<b>Owner</b>	\$45,638
			Total	80%	20%	
<b>Fringe, 26.21% salaries;</b>			\$480,000	384,000.00	96,000.00	\$11,962
			15%	72,000.00	57,600.00	14,400.00
	<b>Total Personnel</b>		<b>552,000.00</b>	<b>441,600.00</b>	<b>110,400.00</b>	\$57,600
<b>Direct Costs: SubAward/SubContract Agreements</b>				<b>80%</b>	<b>20%</b>	
<i>VIMS Shoreline Studies Program designs for dredging, beneficial reuse and flood protection structures</i>				\$100,000	\$80,000	\$20,000
<i>Legal bid docs and procurement preparation for Broad Creek structure design</i>				\$5,000	\$4,000	\$1,000
<i>Procured contractor design for Broad Creek flood protection structure design</i>				\$375,000	\$300,000	\$75,000
<i>Project financial services (50000/50500/55900/56100)</i>				\$20,808	\$16,646	\$4,162
<i>Facility services (52100/52200/52400/54200/54500)</i>				\$5,932	\$4,746	\$1,186
<i>Communication services (52250/52255/55150/57100/57300)</i>				\$1,869	\$1,495	\$374
<i>Data services (53100/53101/53200/57900)</i>				\$563	\$450	\$113
<i>Material services (53400/53500/57200/57500)</i>				\$2,206	\$1,765	\$441
<i>Consulting services (55100/56300/56400/56700)</i>				\$2,685	\$2,148	\$537
				<b>\$514,063</b>		
<b>SUBTOTAL: Direct Costs</b>					\$468,851	\$117,214
<b>Total</b>						<b>\$586,064</b>
<b>Other Match:</b>						
<i>Source of Match</i>					\$0	\$0
<b>GRAND TOTAL</b>					<b>\$468,851</b>	<b>\$117,214</b>
						<b>\$586,064</b>

Cost estimates for Activities 1, 3, and 4 were provided by the VIMS Shoreline Studies Program. Cost estimates for Activity 2 were based on costs for a US Army Corps of Engineers design for a structure designed in a relatively similar wave energy environment, substrate, and channel size and depth.

MPPDC staff will manage and administer this project. Thus, personnel time is needed to ensure that project deliverables are completed within the project timeline. Along with personnel expenses, MPPDC fringe is needed. This includes health insurance, retirement, group life insurance, workman's comp, and unemployment insurance. MPPDC fringe rate for FY22 is

26.58% and comprised of: Health Insurance – 49.33%, Retirement – 18.35%, Workers Comp – 27.42%, Social Security – 4.46%, Life Insurance – 0.40%, Unemployment – 0.04%. Direct charges are costs associated with overall projects costs consistent with general accounting principles.

Authorization to request for funding:



COMMISSIONERS

10/19/21

*Essex County*  
*Hon. Edwin E. Smith, Jr.*  
*Hon. John C. Magruder*  
*Ms. Sarah Pope*  
*Mr. Michael A. Lombardo*

*Town of Tappahannock*  
*Hon. Fleet Dillard*

*Gloucester County*  
*Hon. Ashley C. Chriscoe*  
*(Vice-Chairman)*  
*Hon. Michael R.*  
*Winebarger*  
*Dr. William G. Reay*  
*Mr. J. Brent Fedors*

*King and Queen County*  
*Hon. Sherrin C. Alsop*  
*Hon. R. F. Bailey*  
*Mr. Thomas J.*  
*Swartzwelder*  
*(Chairman)*

*King William County*  
*Hon. Ed Moren, Jr.*  
*Hon. Travis J. Moskalski*  
*(Treasurer)*  
*Mr. Otto O. Williams*

*Town of West Point*  
*Hon. James Pruett*  
*Mr. John Edwards*

*Mathews County*  
*Hon. Michael C. Rowe*  
*Hon. Melissa Mason*  
*Mr. Thornton Hill*

*Middlesex County*  
*Hon. Wayne H. Jessie, Sr.*  
*Hon. Reggie Williams, Sr.*  
*Mr. Gordon E. White*

*Town of Urbanna*  
*Hon. Marjorie Austin*

*Secretary/Director*  
*Mr. Lewis L. Lawrence*

To: DCR Staff

From: Lewie Lawrence, MPPDC Executive Director

REF: Authorization to request for funding

Matching funds for all construction and design projects provided under any DCR application round of the Community Flood Preparedness Fund are provided by the property owner for which the project is proposed, unless otherwise noted. The match commitment letter acknowledges that the owner of the projects (landowner) understands that a match commitment is required and will be provided should the project be funded.

The required elements are found within the submitted application proposal packet. A notation of where each required item is noted in "parentheses"

- The name, address, and telephone number of the contributor (application packet and match commitment letter)
- The name of the applicant organization (application cover sheet)
- The title of the project for which the cash contribution is made (application cover sheet)
- The source of funding for the cash contribution (match commitment letter)
- The dollar amount of the cash contribution (application budget)
- A statement that the contributor will pay the cash contribution during the agreement period (match commitment letter).

Signed pledge agreement from each contributing organization:

Matthew L. Walker  
County Administrator  
877 General Puller Hwy  
Saluda, VA 23149  
804-758-4330  
[m.walker@co.middlesex.va.us](mailto:m.walker@co.middlesex.va.us)



Betty S. Muncy  
Assistant County Administrator  
  
Ann Marie S. Ricardi  
Assistant County Administrator

**County of Middlesex**  
Office of the County Administrator

October 28, 2021

Lewis L Lawrence, Executive Director  
Middle Peninsula Planning District Commission  
P.O. Box 286  
Saluda, VA 23149

RE: Support Letter for Jackson Creek and Broad Creek

Dear Mr. Lawrence:

Middlesex County supports the Jackson Creek and Broad Creek dredging proposal under the Round 2 Flood Fund.

If the project is funded by the DCR, the County plans to provide the required matching funds.

Should you have any questions concerning our support for this project, I can be reached at 804-758-4330.

Respectfully,



Matt Walker  
County Administrator

## I. SUPPORTING DOCUMENTATION

- Letters of support from all affected local government
- Detailed map of the project area(s)
- FIRMette of the project area(s)
- Historic flood damage data and/or images

## **APPENDIX 1**

### **Community Support Letter**

Matthew L. Walker  
*County Administrator*  
877 General Puller Hwy  
Saluda, VA 23149  
804-758-4330  
[m.walker@co.middlesex.va.us](mailto:m.walker@co.middlesex.va.us)



Betty S. Muncy  
*Assistant County Administrator*  
Ann Marie S. Ricardi  
*Assistant County Administrator*

**County of Middlesex**  
Office of the County Administrator

July 20, 2021

Lewis L Lawrence, Executive Director  
Middle Peninsula Planning District Commission  
P.O. Box 286  
Saluda, Va 23149

**RE: Support Letter for Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund**

Dear Mr. Lawrence:

Middlesex County supports all eligible applications requesting funding under the DCR Flood Preparedness Fund. Proposals submitted by MPPDC on behalf of our constituents are part of our necessary governmental functions and are consistent with regional and local resilience planning efforts. We further support project proposals that demonstrate a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding. The MPPDC Fight the Flood (FTF) Program serves as the region's flood resiliency coordination program. The MPPDC Living Shoreline Program Design and the MPPDC FTF Program provide the operational and administrative oversite for resiliency planning, coordination and implementation for our constituents suffering from flooding challenges. These programs assist to secure the tax base of coastal localities and reduce the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types.

The FTF and the Living Shoreline programs exist to help the owners of flood-prone properties access programs and services to better manage challenges posed by flood water and to direct constituents to appropriate mitigation solutions, such as nature-based solutions. When grants and loans are available, we fully support the MPPDC to provide such to qualified constituents, to support the public purpose(s) for which the funds, such as the Virginia Community Flood Preparedness Funds, have been allocated.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-758-4330.

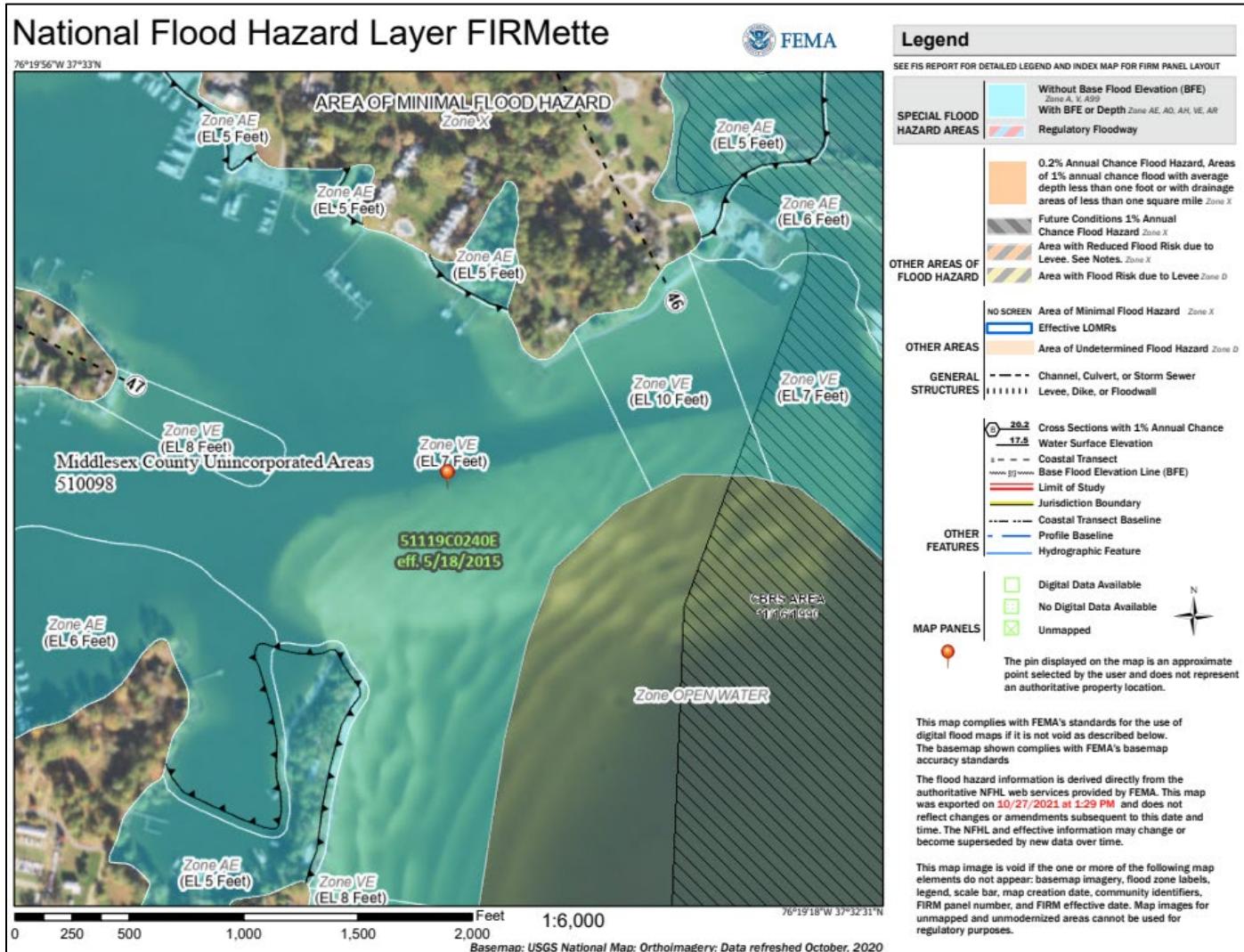
Respectfully,

Matt Walker  
County Administrator

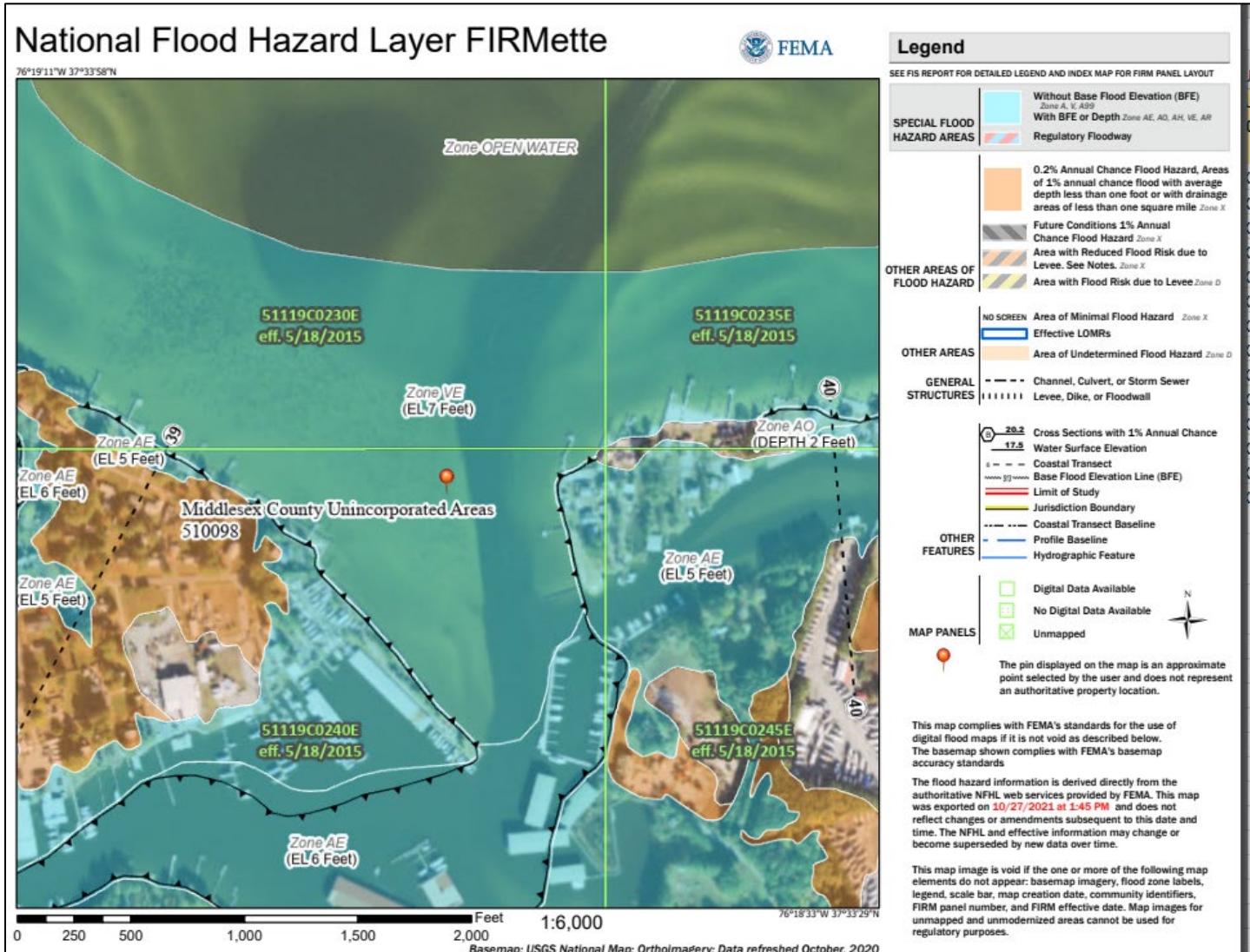
## APPENDIX 2

### Project Locations FIRMette

#### A. Jackson Creek (FIRMette #: 51119C0240E)



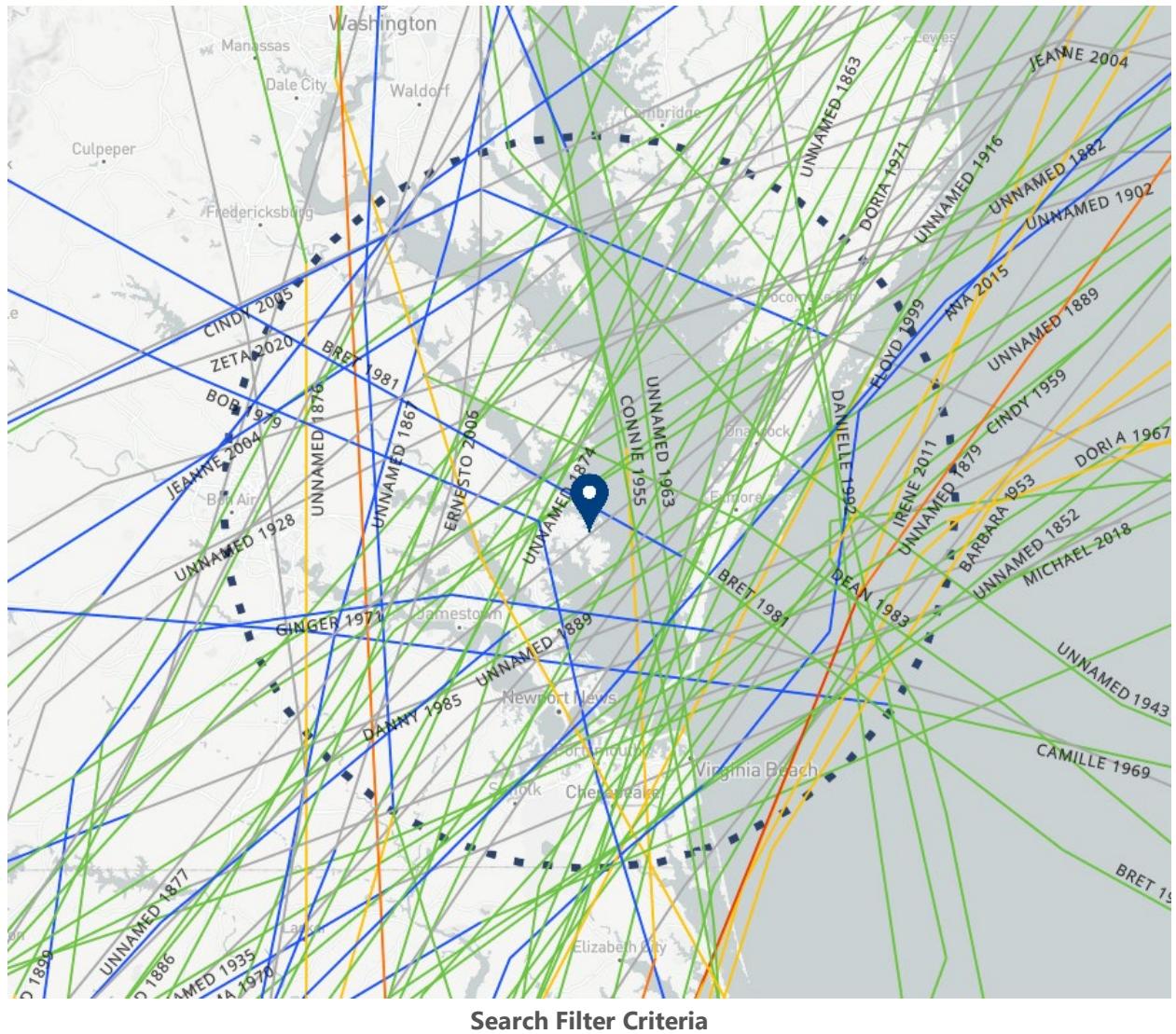
## B. Broad Creek (FIRMette #: 51119C0240E)



## APPENDIX 3

### List of Historic Hurricanes Impacting the Property Location

#### A. Jackson Creek



Categories: H5, H4, H3, H2, H1, TS, TD, ET

Months: ALL

Years: ALL

El Niño-Southern Oscillation (ENSO): ALL

Minimum Pressure (mb) below: 1150

Include Unknown Pressure Rating: TRUE

Buffer Distance: 60

Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3

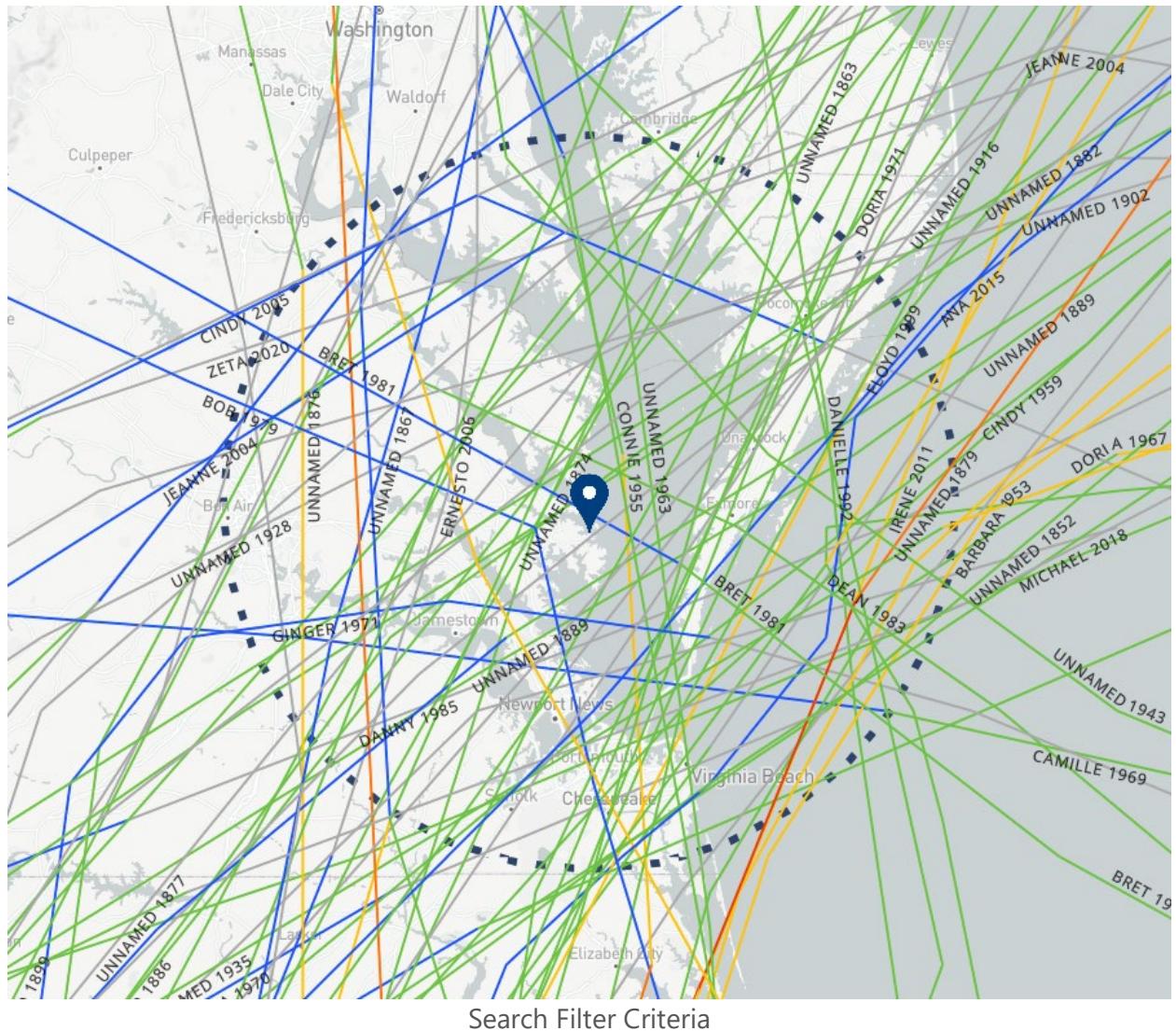
STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

## B. Broad Creek



Location: 37.5621 -76.3144

Categories: H5, H4, H3, H2, H1, TS, TD, ET

Months: ALL

Years: ALL

El Niño-Southern Oscillation (ENSO): ALL

Minimum Pressure (mb) below: 1150

Include Unknown Pressure Rating: TRUE

Buffer Distance: 60

Buffer Unit: Nautical Miles

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
ZETA 2020	Oct 24, 2020 to Oct 30, 2020	100	970	H3
ISAIAS 2020	Jul 28, 2020 to Aug 05, 2020	80	986	H1
NESTOR 2019	Oct 17, 2019 to Oct 21, 2019	50	996	TS
MICHAEL 2018	Oct 06, 2018 to Oct 15, 2018	140	919	H5
ANA 2015	May 06, 2015 to May 12, 2015	50	998	TS
ANDREA 2013	Jun 05, 2013 to Jun 08, 2013	55	992	TS
IRENE 2011	Aug 21, 2011 to Aug 30, 2011	105	942	H3
HANNA 2008	Aug 28, 2008 to Sep 08, 2008	75	977	H1
ERNESTO 2006	Aug 24, 2006 to Sep 04, 2006	65	985	H1
CINDY 2005	Jul 03, 2005 to Jul 11, 2005	65	991	H1
JEANNE 2004	Sep 13, 2004 to Sep 29, 2004	105	950	H3
IVAN 2004	Sep 02, 2004 to Sep 24, 2004	145	910	H5
GASTON 2004	Aug 27, 2004 to Sep 03, 2004	65	985	H1
CHARLEY 2004	Aug 09, 2004 to Aug 15, 2004	130	941	H4
ALLISON 2001	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
GORDON 2000	Sep 14, 2000 to Sep 21, 2000	70	981	H1
FLOYD 1999	Sep 07, 1999 to Sep 19, 1999	135	921	H4
DANNY 1997	Jul 16, 1997 to Jul 27, 1997	70	984	H1
BERTHA 1996	Jul 05, 1996 to Jul 17, 1996	100	960	H3
DANIELLE 1992	Sep 22, 1992 to Sep 26, 1992	55	1001	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
CHARLEY 1986	Aug 13, 1986 to Aug 30, 1986	70	980	H1
DANNY 1985	Aug 12, 1985 to Aug 20, 1985	80	987	H1
DEAN 1983	Sep 26, 1983 to Sep 30, 1983	55	999	TS
BRET 1981	Jun 29, 1981 to Jul 01, 1981	60	996	TS
BOB 1979	Jul 09, 1979 to Jul 16, 1979	65	986	H1
GINGER 1971	Sep 06, 1971 to Oct 05, 1971	95	959	H2
DORIA 1971	Aug 20, 1971 to Aug 29, 1971	55	989	TS
ALMA 1970	May 17, 1970 to May 27, 1970	70	993	H1
CAMILLE 1969	Aug 14, 1969 to Aug 22, 1969	150	900	H5
DORIA 1967	Sep 08, 1967 to Sep 21, 1967	75	973	H1
UNNAMED 1963	Jun 01, 1963 to Jun 04, 1963	50	1000	TS
UNNAMED 1961	Sep 12, 1961 to Sep 15, 1961	55	995	TS
BRENDA 1960	Jul 27, 1960 to Aug 07, 1960	60	976	TS
CINDY 1959	Jul 04, 1959 to Jul 12, 1959	65	995	H1
CONNIE 1955	Aug 03, 1955 to Aug 15, 1955	120	944	H4
BARBARA 1953	Aug 11, 1953 to Aug 16, 1953	80	973	H1
UNNAMED 1945	Sep 12, 1945 to Sep 20, 1945	115	949	H4
UNNAMED 1944	Oct 12, 1944 to Oct 24, 1944	125	937	H4
UNNAMED 1944	Jul 30, 1944 to Aug 04, 1944	70	985	H1

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1943	Sep 28, 1943 to Oct 02, 1943	55	997	TS
UNNAMED 1935	Aug 29, 1935 to Sep 10, 1935	160	892	H5
UNNAMED 1934	Sep 01, 1934 to Sep 04, 1934	45	-1	TS
UNNAMED 1933	Aug 13, 1933 to Aug 28, 1933	120	948	H4
UNNAMED 1929	Sep 19, 1929 to Oct 05, 1929	135	924	H4
UNNAMED 1928	Sep 06, 1928 to Sep 21, 1928	140	929	H5
UNNAMED 1928	Aug 03, 1928 to Aug 13, 1928	90	971	H2
UNNAMED 1924	Sep 27, 1924 to Oct 01, 1924	55	999	TS
UNNAMED 1916	May 13, 1916 to May 18, 1916	40	990	TS
UNNAMED 1907	Jun 24, 1907 to Jun 30, 1907	55	-1	TS
UNNAMED 1904	Sep 08, 1904 to Sep 15, 1904	70	-1	H1
UNNAMED 1902	Oct 03, 1902 to Oct 13, 1902	90	970	H2
UNNAMED 1902	Jun 12, 1902 to Jun 17, 1902	50	-1	TS
UNNAMED 1899	Oct 26, 1899 to Nov 04, 1899	95	-1	H2
UNNAMED 1894	Oct 01, 1894 to Oct 12, 1894	105	-1	H3
UNNAMED 1893	Oct 20, 1893 to Oct 23, 1893	50	-1	TS
UNNAMED 1889	Sep 12, 1889 to Sep 26, 1889	95	-1	H2
UNNAMED 1888	Sep 06, 1888 to Sep 13, 1888	50	999	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1886	Jun 27, 1886 to Jul 02, 1886	85	-1	H2
UNNAMED 1886	Jun 17, 1886 to Jun 24, 1886	85	-1	H2
UNNAMED 1882	Sep 21, 1882 to Sep 24, 1882	50	1005	TS
UNNAMED 1882	Sep 02, 1882 to Sep 13, 1882	110	949	H3
UNNAMED 1881	Sep 07, 1881 to Sep 11, 1881	90	975	H2
UNNAMED 1879	Aug 13, 1879 to Aug 20, 1879	100	971	H3
UNNAMED 1878	Oct 18, 1878 to Oct 25, 1878	90	963	H2
UNNAMED 1877	Sep 21, 1877 to Oct 05, 1877	100	-1	H3
UNNAMED 1876	Sep 12, 1876 to Sep 19, 1876	100	980	H3
UNNAMED 1874	Sep 25, 1874 to Oct 01, 1874	80	980	H1
UNNAMED 1872	Oct 22, 1872 to Oct 28, 1872	70	-1	H1
UNNAMED 1867	Aug 10, 1867 to Aug 18, 1867	45	-1	TS
UNNAMED 1864	Jul 23, 1864 to Jul 26, 1864	35	-1	TS
UNNAMED 1863	Sep 16, 1863 to Sep 19, 1863	60	-1	TS
UNNAMED 1861	Oct 31, 1861 to Nov 03, 1861	60	992	TS
UNNAMED 1861	Sep 27, 1861 to Sep 28, 1861	70	-1	H1
UNNAMED 1859	Sep 15, 1859 to Sep 18, 1859	70	-1	H1
UNNAMED 1858	Aug 11, 1858 to Aug 20, 1858	45	994	TS

STORM NAME	DATE RANGE	MAX WIND SPEED	MIN PRESSURE	MAX CATEGORY
UNNAMED 1856	Aug 19, 1856 to Aug 21, 1856	50	-1	TS
UNNAMED 1854	Sep 10, 1854 to Sep 14, 1854	65	-1	H1
UNNAMED 1854	Sep 07, 1854 to Sep 12, 1854	110	938	H3
UNNAMED 1852	Aug 28, 1852 to Aug 31, 1852	50	-1	TS

## **APPENDIX 4**

### **Flood Prevention Project and its Relevance to Other Projects**

The Middle Peninsula PDC staff have worked throughout the years to understand the policy, research and impacts of flooding (i.e., stormwater, coastal, riverine, sea level rise) and coastal resiliency to the region. Below is a list of projects that have built upon each other over the year that have contributed to our understanding.

#### **Climate Change and Sea Level Rise (2009 to 2012)**

The Middle Peninsula PDC was funded for a 3 Phase project through the Virginia Coastal Zone Management Program to assess the impacts of climate and sea level rise throughout the region. With over 1,000 miles of linear shoreline, the Middle Peninsula has a substantial amount of coast under direct threat of accelerated climate change and more specifically sea-level. In Phase 1, Middle Peninsula PDC staff assessed the potential anthropogenic and ecological impacts of climate change. Phase 2 focused on the facilitating presentations and develop educational materials about sea level rise and climate change for the public and local elected officials. Finally, Phase 3 focused on developing adaptation public policies in response to the assessments.

#### **Emergency Management – Hazard Mitigation Planning (2009 to Present)**

Since 2009, the Middle Peninsula PDC has assisted regional localities in meeting the federal mandate to have an adopted local hazard plan. The Regional All Hazards Mitigation Plan addresses the natural hazards prone to the region, including hurricanes, winter storms, tornadoes, coastal flooding, coastal/shoreline erosion, sea level rise, winter storms, wildfire, riverine flooding, wind, dam failures, drought, lightning, and earthquakes. This plan also consists of a Hazus assessment of hurricane wind, sea level rise (i.e., Mean High Higher Water and the National Oceanic and Atmospheric Administration (NOAA) 2060 intermediate-high scenario), and flooding (coastal and riverine flooding) that estimates losses from each hazard. The Middle Peninsula All-Hazard Mitigation Plan Update 2021 is currently being updated. The 2021 All Hazards Mitigation Plan builds off and updates previous mitigation plans.

#### **Land and Water Quality Protection (2014)**

In light of changing Federal and State regulations associated with Bay clean up-nutrient loading, nutrient goals, clean water, onsite sewage disposal system (OSDS) management, storm water management, total maximum daily load (TMDL), etc., staff from the Middle Peninsula PDC will develop a rural pilot project which aims to identify pressing coastal issue(s) of local concern related to Bay clean up and new federal and state legislation which ultimately will necessitate local action and local policy development. Staff has identified many cumulative and secondary impacts that have not been researched or discussed within a local public policy venue. Year 1-3 will include the identification of key concerns related to coastal land use management/water quality and OSDS and community system deployment. Staff will focus on solution based approaches, such as the establishment of a regional sanitary sewer district to manage the temporal deployment of nutrient replacement technology for installed OSDS systems,

assessment of land use classifications and taxation implications associated with new state regulations which make all coastal lands developable regardless of environmental conditions; use of aquaculture and other innovative approaches such as nutrient loading offset strategies and economic development drivers.

#### **Department of Conservation and Recreation Stormwater Management (2014)**

The Virginia General Assembly created a statewide, comprehensive stormwater management program related to construction and post-construction activities (HB1065 - Stormwater Integration). The DCR requires stormwater management for projects with land disturbances of one acre or more. This new state mandate requires all Virginia communities to adopt and implement stormwater management programs by July 1, 2014, in conjunction with existing erosion and sediment control programs. Additionally, the communities within the Middle Peninsula PDC are required to address stormwater quality as stipulated by the Chesapeake Bay TMDL Phase II Watershed Implementation Plan and the Virginia Stormwater Regulations. The Middle Peninsula PDC Stormwater Program helped localities develop tools specific to the region necessary to respond to the state mandate requirement for the development of successful stormwater programs.

#### **Stormwater Management-Phase II (2014)**

Middle Peninsula PDC staff and Draper Aden Associates worked with localities (i.e., Middlesex, King William, and Mathews Counties and the Town of West Point) interested in participating in a Regional Stormwater Management Program. While each locality sought different services from the regional program, this project coordinated efforts, developed regional policies and procedures, and the proper tools to implement a regional Virginia Stormwater Management Program.

#### **Mathews County Rural Ditch Enhancement Study (2015)**

In contract with Draper Aden Associates, a comprehensive engineering study was developed to provide recommendations and conceptual opinions of probable costs to improve the conveyance of stormwater and water quality through the ditches in Mathews County.

#### **Drainage and Roadside Ditching Authority (2015)**

This report explored the enabling mechanism in which a Regional Drainage and Roadside Ditching Authority could be developed. An Authority would be responsible for prioritizing ditch improvement needs, partnering with Virginia Department of Transportation (VDOT) to leverage available funding, and ultimately working toward improving the functionality of the region's stormwater conveyance system.

#### **Living Shoreline Incentive Program (2016 to present)**

In 2011 Virginia legislation was passed designating living shorelines as the preferred alternative for stabilizing Virginia tidal floodplain shorelines. The Virginia Marine Resources Commission, in cooperation with the Virginia Department of Conservation and Recreation and with technical assistance from the Virginia Institute of Marine Science (VIMS), established and implemented a general permit regulation that authorizes and encourages the use of living shorelines however,

no financial incentives were put in place to encourage consumers to choose living shorelines over traditional hardening projects in the Commonwealth. To fill this need the Middle Peninsula PDC developed the Middle Peninsula PDC Living Shoreline Incentives Program to offer loans and/or grants to private property owners interested in installing living shorelines to stabilize their shoreline. Currently, loans are available to assist homeowners to install living shorelines on suitable properties. Loans up to \$10,000 can be financed for up to 5 years (60 months). Loans over \$10,000 can be financed for up to 10 years (120 months). Interest is at the published Wall Street Journal Prime rate on the date of loan closing - currently at 5.25% (11/29/18). Minimum loan amount is \$1,000. Maximum determined by income and ability to repay the loan. Finally, there are currently no grants available in this program. Since 2016 under the Middle Peninsula PDC Living Shoreline Revolving Loan program, 8 living shorelines have been financed and built to date encumbering ~\$500,000 in Virginia Resources Authority loan funding and ~\$400,000 in National Fish and Wildlife Foundation grant funding. Living Shoreline construction cost to date range per job \$14,000- \$180,000. Middle Peninsula PDC oversees all aspects (planning, financing, construction, and loan servicing) of these projects from cradle to grave.

#### **Mathews County Ditch Project – VCPC White Papers (2017)**

This report investigated the challenges presented by the current issues surrounding the drainage ditch network of Mathews County. The study summarized research conducted in the field; examined the law and problems surrounding the drainage ditches; and proposed some next steps and possible solutions.

#### **Mathews County Ditch Mapping and Database Final Report (2017)**

This project investigated roadside ditch issues in Mathews County through mapping and research of property deeds to document ownership of ditches and outfalls. This aided in understanding the needed maintenance of failing ditches and the design of a framework for a database to house information on failing ditches to assist in the prioritization of maintenance needs.

#### **Virginia Stormwater Nuisance Law Guidance (2018)**

This report was developed by the Virginia Coastal Policy Center to understand the ability of a downstream recipient of stormwater flooding to bring a claim under Virginia law against an upstream party, particularly a nuisance claim. The report summarizes how Virginia courts determine stormwater flooding liability between two private parties.

#### **Oyster Bag Sill Construction and Monitoring at Two Sites in Chesapeake Bay (2018)**

Virginia Institute of Marine Science (VIMS) Shoreline Studies Program worked with the Public Access Authority (PAA) to (1) install oyster bag sills as shore protection at two PAA sites with the goal of determining effective construction techniques and placement guidelines for Chesapeake Bay shorelines and (2) assess the effectiveness for shore protection with oyster bags on private property through time.

### **Fight the Flood Program (2020)**

The Fight the Flood (FTF) was launched in 2020 to connect property owners to contractors who can help them protect their property from rising flood waters. FTF also offers a variety of financial tools to fund these projects including but limited to the Septic Repair revolving loan program, Living Shoreline incentives revolving loan fund program, and plant insurance for living shorelines.

## APPENDIX 5

### Match Commitment Letter

Matthew L. Walker  
County Administrator  
877 General Puller Hwy  
Saluda, VA 23149  
804-758-4330  
[m.walker@co.middlesex.va.us](mailto:m.walker@co.middlesex.va.us)



Betty S. Muncy  
Assistant County Administrator  
Ann Marie S. Ricardi  
Assistant County Administrator

**County of Middlesex**  
Office of the County Administrator

October 28, 2021

Lewis L Lawrence, Executive Director  
Middle Peninsula Planning District Commission  
P.O. Box 286  
Saluda, VA 23149

RE: Support Letter for Jackson Creek and Broad Creek

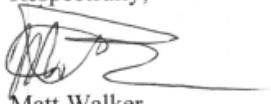
Dear Mr. Lawrence:

Middlesex County supports the Jackson Creek and Broad Creek dredging proposal under the Round 2 Flood Fund.

If the project is funded by the DCR, the County plans to provide the required matching funds.

Should you have any questions concerning our support for this project, I can be reached at 804-758-4330.

Respectfully,



Matt Walker  
County Administrator