

# 2618 - MPPDC\_DCR2\_Multi\_CFPF\_parametric

## Application Details

|                               |                                                                                 |
|-------------------------------|---------------------------------------------------------------------------------|
| Funding Opportunity:          | 2336-Virginia Community Flood Preparedness Fund - Project Grants - CY24 Round 5 |
| Funding Opportunity Due Date: | Jan 24, 2025 11:59 PM                                                           |
| Program Area:                 | Virginia Community Flood Preparedness Fund                                      |
| Status:                       | Under Review                                                                    |
| Stage:                        | Final Application                                                               |
| Initial Submit Date:          | Jan 10, 2025 9:02 AM                                                            |
| Initially Submitted By:       | Jackie Rickards                                                                 |
| Last Submit Date:             |                                                                                 |
| Last Submitted By:            |                                                                                 |

## Contact Information

### Primary Contact Information

|               |                                                                                                                                              |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Active User*: | Yes                                                                                                                                          |
| Type:         | External User                                                                                                                                |
| Name*:        | Ms. Jackie Rickards<br><small>Salutation First Name Middle Name Last Name</small>                                                            |
| Title:        | Senior Planning Project Manager                                                                                                              |
| Email*:       | <a href="mailto:jrickards@mppdc.com">jrickards@mppdc.com</a>                                                                                 |
| Address*:     | PO Box 399<br>4521 Lewis B. Puller Memorial Highway<br><br>Shacklefords Virginia 23156<br><small>City State/Province Postal Code/Zip</small> |
| Phone*:       | (804) 785-8100 Ext.<br><small>Phone</small><br>###-###-####                                                                                  |
| Fax:          | ###-###-####                                                                                                                                 |
| Comments:     |                                                                                                                                              |

### Organization Information

|                                  |                                                             |
|----------------------------------|-------------------------------------------------------------|
| Status*:                         | Approved                                                    |
| Name*:                           | Middle Peninsula Planning District Commission               |
| Organization Type*:              | Local Government - PDC                                      |
| Tax ID*:                         |                                                             |
| Unique Entity Identifier (UEI)*: |                                                             |
| Organization Website:            | <a href="https://www.mppdc.com/">https://www.mppdc.com/</a> |

**Address\*:** PO Box 286

Saluda Virginia 23149  
City State/Province Postal Code/Zip

**Phone\*:** (804) 758-2311 Ext.  
### ### #####

**Fax:** ### ### #####

**Benefactor:**

**Vendor ID:**

**Comments:**

## VCFPF Applicant Information

### *Project Description*

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

Your locality's CID number can be found at the following link: [Community Status Book Report](#)

**NFIP/DCR Community Identification Number (CID)\*:** 510071

If a state or federally recognized Indian tribe,

**Name of Tribe:**

**Authorized Individual\*:** Lewis Lawrence  
First Name Last Name

**Mailing Address\*:** PO Box 299  
Address Line 1  
4521 Lewis B. Puller Memorial Highway  
Address Line 2  
Shacklefords Virginia 23156  
City State Zip Code

**Telephone Number\*:** 804-758-2311

**Cell Phone Number\*:** 804-832-6747

**Email\*:** [llawrence@mppdc.com](mailto:llawrence@mppdc.com)

Is the contact person different than the authorized individual?

**Contact Person\*:** Yes

**Contact:** Jackie Rickards  
First Name Last Name  
4521 Lewis B. Puller Memorial Highway  
Address Line 1  
PO Box 299  
Address Line 2  
Shacklefords Virginia 23156  
City State Zip Code

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

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

**Email Address:** [jrickards@mppdc.com](mailto:jrickards@mppdc.com)

Enter a description of the project for which you are applying to this funding opportunity

**Project Description\*:**

The first goal of the proposed project is to design and deploy a network of tide gauges in the Mobjack Bay, to allow for parametric insurance to be

offered to currently uninsurable assets at risk along the waterfront and in flood-prone areas. The second goal of the project is to enhance and advance effective flood resilience in the region utilized the MPPDC FTF program to offer flood insurance policy reviews and strategies for making flood insurance more affordable for property owners.

Low-income geographic area means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

Is the proposal in this application intended to benefit a low-income geographic area as defined above?

Benefit a low-income geographic area\*: Yes

Information regarding your census block(s) can be found at [census.gov](https://census.gov)

Census Block(s) Where Project will Occur\*: 1005/1004/1002.03/9514/9513

Is Project Located in an NFIP Participating Community?\*: Yes

Is Project Located in a Special Flood Hazard Area?\*: Yes

Flood Zone(s)  
(if applicable):

Flood Insurance Rate Map Number(s)  
(if applicable):

## Eligibility CFPF - Round 4 - Projects

### Eligibility

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)?

Local Government\*: Yes  
Yes - Eligible for consideration  
No - Not eligible for consideration

Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?

Resilience Plan\*: Yes  
Yes - Eligible for consideration under all categories  
No - Eligible for consideration for studies, capacity building, and planning only

If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?

Letters of Support\*: Yes  
Yes - Eligible for consideration  
No - Not eligible for consideration  
N/A - Not applicable

Has this or any portion of this project been included in any application or program previously funded by the Department?

Previously Funded\*: No  
Yes - Not eligible for consideration  
No - Eligible for consideration

Has the applicant provided evidence of an ability to provide the required matching funds?

Evidence of Match Funds\*: Yes  
Yes - Eligible for consideration  
No - Not eligible for consideration  
N/A - Match not required

## Scoring Criteria for Flood Prevention and Protection Projects - Round 4

### Scoring

Category Scoring:  
Hold CTRL to select multiple options

Project Category\*: All other projects

Is the project area socially vulnerable? (based on [ADAPT Virginia's Social Vulnerability Index Score](#))

**Social Vulnerability Scoring:**

Very High Social Vulnerability (More than 1.5)

High Social Vulnerability (1.0 to 1.5)

Moderate Social Vulnerability (0.0 to 1.0)

Low Social Vulnerability (-1.0 to 0.0)

Very Low Social Vulnerability (Less than -1.0)

**Socially Vulnerable\*:** Moderate Social Vulnerability (0.0 to 1.0)

Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NRP?

**NFIP\*:** No

Is the proposed project in a low-income geographic area as defined below?

"Low-income geographic area" means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

**Low-Income Geographic Area\*:** Yes

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?

**Reduction of Nutrient and Sediment Pollution\*:** No

Does this project provide ?community scale? benefits?

**Community Scale Benefits\*:** More than one census block

Expected Lifespan of Project

**Expected Lifespan of Project\*:** Over 20 Years**Comments:**

## Scope of Work - Projects - Round 4

**Scope of Work**

Upload your Scope of Work

Please refer to Part IV, Section B. of the grant manual for guidance on how to create your scope of work

**Scope of Work\*:** [Parametric Gauges\\_2\\_SCOPE OF WORK.pdf](#)**Comments:**

Scope of work for the parametric insurance project

**Budget Narrative****Budget Narrative Attachment\*:** [Parametric Gauges\\_BUDGET NARRATIVE.pdf](#)**Comments:**

Parametric Insurance project budget narrative

## Scope of Work Supporting Information - Projects

**Supporting Information - Projects**

Provide population data for the local government in which the project is taking place

**Population\*:** 47243.00

Provide information on the flood risk of the project area, including whether the project is in a mapped floodplain, what flood zone it is in, and when it was last mapped. If the property or area around it has been flooded before, share information on the dates of past flood events and the amount of damage sustained

**Historic Flooding data and Hydrologic Studies\*:** [Historic Flooding data and Hydrologic Studies.pdf](#)

Include studies, data, reports that demonstrate the proposed project minimizes flood vulnerabilities and does not create flooding or increased flooding (adverse impact) to other properties

**No Adverse Impact\*:** [No adverse impact.pdf](#)

Include supporting documents demonstrating the local government's ability to provide its share of the project costs. This must include an estimate of the total project cost, a description of the source of the funds being used, evidence of the local government's ability to pay for the project in full or quarterly prior to reimbursement, and a signed pledge agreement from each contributing organization

**Ability to Provide Share of Cost\*:** [Match Commitment and Authorization.pdf](#)

A benefit-cost analysis must be submitted with the project application

**Benefit-Cost Analysis\*:** [BenefitCost Analysis.pdf](#)

Provide a list of repetitive loss and/or severe repetitive loss properties. Do not provide the addresses for the properties, but include an exact number of repetitive loss and/or severe repetitive loss structures within the project area

**Repetitive Loss and/or Severe Repetitive Loss Properties\*:** [RL\\_SRL Properties in Project Area.pdf](#)

Describe the residential and commercial structures impacted by this project, including how they contribute to the community such as historic, economic, or social value. Provide an exact number of residential structures and commercial structures in the project area

**Residential and/or Commercial Structures\*:**

The Middle Peninsula region currently has approximately 45,683 structures with an estimated exposure value of approximately \$12.5 Billion. Average estimated replacement value of buildings in the study area ranges from \$205,000 to \$312,000, with the mean approximation value of \$273,000. Ninety-four percent of the planning district's general occupancy is categorized as residential, followed by commercial (4%). The remaining two percent is a combination of industrial, agriculture, religion, government, and education buildings.

If there are critical facilities/infrastructure within the project area, describe each facility

**Critical Facilities/Infrastructure\*:**

See Supporting Document titled, "Critical Facilities and Infrastructure"

Explain the local government's financial and staff resources. How many relevant staff members does the local government have? To what relevant software does the local government have access? What are the local government's capabilities?

**Financial and Staff Resources\*:**

The PDC is a 52-year-old political subdivision of Virginia formed by the Middle Peninsula localities under VA Code §15.2-4203 to provide solutions to problems of greater than local significance. The PDC have worked on topics associated with the land water interface, including coastal use conflicts and policies, flooding, and resiliency. In 2020, the PDC launched the Fight the Flood (FTF) Program to connect property owners to contractors who can help them protect their property from flood waters. FTF offers a variety of financial tools to fund resiliency projects including but limited to the Septic Repair revolving loan fund program (RLFP), Living Shoreline RLFP, and plant insurance for living shorelines. Since the beginning of the program FTF has invested \$44,506,804 in flood protection in the region. The proposed project within relates to Middle Peninsula regional resilience efforts.

Currently PDC staff manages 49 projects funded by a variety of funding state and federal agencies. The PDC adopted an \$10,082,854 agency budget for FY25 (7/24 to 6/25). Several projects involve multiple projects, and some involve dozens of individual projects, most of which are located on private properties.

To ensure that projects are complete according to the scope of work, project timeline and budget, MPPDC staff work together. Staff includes:

- Lewis Lawrence, Executive Director, coordinates project partners, assists project execution, and provides updates to the MPPDC Board.
- Curt Smith, Deputy Director, assists project partner coordination, advises project execution & provides updates to the MPPDC Board.
- Rachael Peabody, Deputy Director, will administer and manage CFPF funded projects.
- Julie Kaylor, Chief Financial Officer, oversees all financial activities including preparation of financial reports & budget management. She also administrates the MPPDC Living Shoreline Incentives Revolving Loan and Grant Program
- Taylor Ovide, Coastal Planner, assist in managing partners, activities & information from the proposed project and project reports.
- Jackie Rickards, Senior Planning Project Manager, oversees reporting for CFPF funded projects.
- Jennifer Farmer, Hybrid Financial Clerk, Clerk to the Board, & Regional Planner, assists the CFO with administrative, fiscal, & clerical tasks and provide assistance to planning staff as needed.

Staff has access to Microsoft Suite for daily work tasks and uses ArcGIS to hold all data associated with the FTF Program.

Identify and describe the goals and objectives of the project. Include a description of the expected results of the completed project and explain the expected benefits of the project. This may include financial benefits, increased awareness, decreased risk, etc.

**Goals and Objectives\*:**

GOAL1: Structure and pilot the provision of parametric insurance coverage for residents of Mobjack Bay.

- Objective 1: Provide parametric insurance company with networked monitoring data (historic and new)
  - o Target: Update existing monitoring equipment
  - o Target: One completed plan for gauge deployment.
- Objective 2: Launch new gauge network.
  - o Target: Deploy six new gauges in the Mobjack Bay and its associated tributaries.
- Objective 3: Establish parametric insurance coverage marketable to a new Mobjack Bay parametric insurance service area.

- Objective 4: Launch Low-Income Parametric Insurance Accelerator
  - o Target: One campaign to solicit applications for free parametric insurance policies.
  - o Target: Successfully develop, launch, and promote parametric policies for citizens in partnership with Old Dominion University. Number of new policies to be determined based on premium levels with funds being allocated on a first come first served basis with priority for underserved property owners within designated low-income areas.
- Objective 5: Conduct analyses of parametric policy premiums and identify strategies for premium reductions.
  - o Target: Survey each participant in the Low-Income Parametric Insurance Accelerator to understand premium costs, affordability, likelihood of renewal/sustainability of coverage, etc.
  - o Target: Develop a summary of findings to inform future parametric service area networks and modifications/improvements to the pilot service area as needed.
- Objective 6: Ensure transferability to other communities.
  - o Target: One assessment of the success of pilot program toward the provision of services to communities beyond the proposals target geography.

GOAL 2: Enhance and advance flood insurance policies and premium affordability, sea level monitoring, and flood forecasting in the Middle Peninsula.

- Objective 1: Develop, share and promote flood and parametric insurance educational materials
- Objective 2: Hire Flood Insurance Consultant to engage all registered FTF participants and advise as to how to structure new and restructure existing flood insurance policies. Solicit additional FTF participation and provide the same services accordingly.
- Objective 3: Integrate new sensor data into the Tidewatch Network.
- Objective 4: Maintain and manage monitoring data through Tidewatch Network for continued insurance application, as well as flood forecasting and planning.

Outline a plan of action laying out the scope and detail of how the proposed work will be accomplished with a timeline identifying expected completion dates. Determine milestones for the project that will be used to track progress. Explain what deliverables can be expected at each milestone, and what the final project deliverables will be. Identify other project partners

**Approach, Milestones, and Deliverables\*:** [Approach Milestones and Deliverables.pdf](#)

Where applicable, briefly describe the relationship between this project and other past, current, or future resilience projects. If the applicant has received or applied for any other grants or loans, please identify those projects, and, if applicable, describe any problems that arose with meeting the obligations of the grant and how the obligations of this project will be met

**Relationship to Other Projects\*:**

See the Supporting Document titled, "Connection to Other Projects\_Cap Sin"

For ongoing projects or projects that will require future maintenance, such as infrastructure, flood warning and response systems, signs, websites, or flood risk applications, a maintenance, management, and monitoring plan for the projects must be provided

**Maintenance Plan\*:** [Maintenance Plan.pdf](#)

Describe how the project meets each of the applicable scoring criteria contained in Appendix B. Documentation can be incorporated into the Scope of Work Narrative

**Criteria\*:**

Eligible Projects - 10 pts  
 Social Vulnerability Index Score - 0 pts  
 Community scale of benefits - 30 pts  
 Expected lifespan of project - 10 pts  
 Remedy for NFIP probation or suspension - 0 pts  
 Proposed project part of a low-income geographic area - 10 pts  
 Proposed project implements a Chesapeake Bay TMDL BMP - 0 pts  
 TOTAL - 60 pts

## Budget

### *Budget Summary*

**Grant Matching Requirement\*:** LOW INCOME - All other Projects Fund 85%/Match 15%

Is a match waiver being requested?

**Match Waiver Request** Yes

Note: only low-income communities are eligible for a match waiver.

\*:

**I certify that my project is in a low-income geographic area:** Yes

**Total Project Amount (Request + Match)\*:** \$883,167.00  
 \*\*This amount should equal the sum of your request and match figures

**REQUIRED Match Percentage Amount:** \$132,475.05

## BUDGET TOTALS

Before submitting your application be sure that you meet the match requirements for your project type.

**Match Percentage:** 15.00%  
 Verify that your match percentage matches your required match percentage amount above.

**Total Requested Fund Amount:** \$883,167.00

**Total Match Amount:** \$155,853.00

**TOTAL:** \$1,039,020.00

### Personnel

| Description       | Requested Fund Amount | Match Amount | Match Source |
|-------------------|-----------------------|--------------|--------------|
| No Data for Table |                       |              |              |

### Fringe Benefits

| Description       | Requested Fund Amount | Match Amount | Match Source |
|-------------------|-----------------------|--------------|--------------|
| No Data for Table |                       |              |              |

### Travel

| Description       | Requested Fund Amount | Match Amount | Match Source |
|-------------------|-----------------------|--------------|--------------|
| No Data for Table |                       |              |              |

### Equipment

| Description       | Requested Fund Amount | Match Amount | Match Source |
|-------------------|-----------------------|--------------|--------------|
| No Data for Table |                       |              |              |

### Supplies

| Description       | Requested Fund Amount | Match Amount | Match Source |
|-------------------|-----------------------|--------------|--------------|
| No Data for Table |                       |              |              |

### Construction

| Description       | Requested Fund Amount | Match Amount | Match Source |
|-------------------|-----------------------|--------------|--------------|
| No Data for Table |                       |              |              |

### Contracts

| Description                                                  | Requested Fund Amount | Match Amount | Match Source |
|--------------------------------------------------------------|-----------------------|--------------|--------------|
| Legal for Insurance Consultant Procurement & Contract        | \$7,500.00            | \$0.00       | RVRF Loan    |
| Consociate Media for videos and digital and printed outreach | \$30,667.00           | \$0.00       | RVRF Loan    |
| Low Income Parametric Policies Purchase                      | \$300,000.00          | \$0.00       | RVRF Loan    |

|                                              |                     |                  |
|----------------------------------------------|---------------------|------------------|
| VMS Gauge Purchase, Deployment & Maintenance | \$300,000.00        | \$0.00 RVRF Loan |
|                                              | <b>\$638,167.00</b> | <b>\$0.00</b>    |

Maintenance Costs

| Description       | Requested Fund Amount | Match Amount | Match Source |
|-------------------|-----------------------|--------------|--------------|
| No Data for Table |                       |              |              |

PreAward and Startup Costs

| Description       | Requested Fund Amount | Match Amount | Match Source |
|-------------------|-----------------------|--------------|--------------|
| No Data for Table |                       |              |              |

Other Direct Costs

| Description           | Requested Fund Amount | Match Amount        | Match Source |
|-----------------------|-----------------------|---------------------|--------------|
| Insurance Consultant  | \$245,000.00          | \$0.00              | RVRF Loan    |
| MPPDC RVRF Loan Funds | \$0.00                | \$155,853.00        | RVRF Loan    |
|                       | <b>\$245,000.00</b>   | <b>\$155,853.00</b> |              |

Long and Short Term Loan Budget - Projects - VCFPF

Budget Summary

Are you applying for a short term, long term, or no loan as part of your application?

If you are not applying for a loan, select "not applying for loan" and leave all other fields on this screen blank

Long or Short Term\*: Not Applying for Loan

Total Project Amount: \$0.00

Total Requested Fund Amount: \$0.00

TOTAL: \$0.00

Salaries

| Description       | Requested Fund Amount |
|-------------------|-----------------------|
| No Data for Table |                       |

Fringe Benefits

| Description       | Requested Fund Amount |
|-------------------|-----------------------|
| No Data for Table |                       |

Travel

| Description       | Requested Fund Amount |
|-------------------|-----------------------|
| No Data for Table |                       |

Equipment

| Description               | Requested Fund Amount |
|---------------------------|-----------------------|
| No Data for Table         |                       |
| <b>Supplies</b>           |                       |
| Description               | Requested Fund Amount |
| No Data for Table         |                       |
| <b>Construction</b>       |                       |
| Description               | Requested Fund Amount |
| No Data for Table         |                       |
| <b>Contracts</b>          |                       |
| Description               | Requested Fund Amount |
| No Data for Table         |                       |
| <b>Other Direct Costs</b> |                       |
| Description               | Requested Fund Amount |
| No Data for Table         |                       |

## Supporting Documentation

### Supporting Documentation

| Named Attachment                                                                                              | Required | Description                                                               | File Name                                                                              | Type | Size   | Upload Date         |
|---------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------|--------|---------------------|
| Detailed map of the project area(s) (Projects/Studies)                                                        |          | Map of project area.                                                      | <a href="#">Detailed Map of Project Area.pdf</a>                                       | pdf  | 156 KB | 11/01/2024 01:55 PM |
| FIRMeTte of the project area(s) (Projects/Studies)                                                            |          | Firmette of Project Area                                                  | <a href="#">FIRMETTE of Project Area.pdf</a>                                           | pdf  | 213 KB | 11/06/2024 02:32 PM |
| Historic flood damage data and/or images (Projects/Studies)                                                   |          | Historic Flooding data for the Mobjack Bay area.                          | <a href="#">Historic Flooding data and Hydrologic Studies.pdf</a>                      | pdf  | 405 KB | 11/06/2024 02:26 PM |
| A link to or a copy of the current floodplain ordinance                                                       |          | Flood Ordinances from Gloucester and Mathews County                       | <a href="#">List of Flood Ordinances GloMat.pdf</a>                                    | pdf  | 86 KB  | 11/01/2024 02:36 PM |
| Maintenance and management plan for project                                                                   |          | Maintenance plan for sensors                                              | <a href="#">Maintenance Plan.pdf</a>                                                   | pdf  | 143 KB | 11/06/2024 02:26 PM |
| A link to or a copy of the current hazard mitigation plan                                                     |          | Link to the Middle Peninsula Regional All Hazards Mitigation Plan (2021). | <a href="#">Link to the Middle Peninsula Regional All Hazards Mitigation Plan.docx</a> | docx | 14 KB  | 10/21/2024 09:41 AM |
| A link to or a copy of the current comprehensive plan                                                         |          | Links to the comprehensive plans of all Middle Peninsula localities.      | <a href="#">Comprehensive Plan Links MP Region.pdf</a>                                 | pdf  | 44 KB  | 10/21/2024 09:49 AM |
| Social vulnerability index score(s) for the project area                                                      |          | Social Vulnerability Score for project area                               | <a href="#">SVI Score_Mobjack Bay.pdf</a>                                              | pdf  | 230 KB | 11/01/2024 02:34 PM |
| Authorization to request funding from the Fund from governing body or chief executive of the local government |          | Match commitment and authorization letter                                 | <a href="#">Match Commitment and Authorization.pdf</a>                                 | pdf  | 827 KB | 11/06/2024 02:32 PM |
| Signed pledge agreement from each contributing organization                                                   |          | Match Commitment                                                          | <a href="#">Match Commitment and Authorization.pdf</a>                                 | pdf  | 827 KB | 11/06/2024 02:33 PM |

|                                                                                                                                                                                                                                                                                                                                                                                               |                                                                            |                                                            |     |        |                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------|-----|--------|---------------------|
| Maintenance Plan                                                                                                                                                                                                                                                                                                                                                                              | Maintenance for the sensors                                                | <a href="#">Maintenance Plan.pdf</a>                       | pdf | 143 KB | 11/06/2024 02:33 PM |
| <i>Benefit-cost analysis must be submitted with project applications over \$2,000,000. in lieu of using the FEMA benefit-cost analysis tool, applicants may submit a narrative to describe in detail the cost benefits and value. The narrative must explicitly indicate the risk reduction benefits of a flood mitigation project and compares those benefits to its cost-effectiveness.</i> |                                                                            |                                                            |     |        |                     |
| Benefit Cost Analysis                                                                                                                                                                                                                                                                                                                                                                         | Benefit cost analysis statement                                            | <a href="#">BenefitCost Analysis.pdf</a>                   | pdf | 67 KB  | 10/30/2024 08:40 AM |
| Other Relevant Attachments                                                                                                                                                                                                                                                                                                                                                                    | Critical facilities and infrastructure within the Middle Peninsula region. | <a href="#">Critical Facilities and Infrastructure.pdf</a> | pdf | 244 KB | 11/01/2024 12:41 PM |

Letters of Support

| Description                                         | File Name                                                                                  | Type | Size   | Upload Date         |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------|------|--------|---------------------|
| Gloucester County Letter of Support                 | <a href="#">Gloucester County_Letter of Support to DCR for Flood Fund Applications.pdf</a> | pdf  | 168 KB | 10/30/2024 11:56 AM |
| King & Queen County Letter of Support               | <a href="#">King Queen County_Support Letter for Fight the Flood - Round 5.pdf</a>         | pdf  | 145 KB | 10/30/2024 11:57 AM |
| King William Letter of Support                      | <a href="#">King WilliamCounty_Letter of Support to MPPDC_10082024.pdf</a>                 | pdf  | 1 MB   | 10/30/2024 11:57 AM |
| Mathews County Letter of Support                    | <a href="#">Mathews_CFPF Application Support Letter.pdf</a>                                | pdf  | 355 KB | 10/30/2024 11:57 AM |
| Middlesex County Letter of Support                  | <a href="#">Middlesex County_Support letter for MPPDC_FTF_flood.pdf</a>                    | pdf  | 322 KB | 10/30/2024 11:58 AM |
| Old Dominion University Support Letter              | <a href="#">ODU_2024-11-01_MPPDC CFPF Support Letter.pdf</a>                               | pdf  | 123 KB | 11/01/2024 01:24 PM |
| Support Letter from Essex County                    | <a href="#">Essex County_Letter of Support to MPPDC_10082024.pdf</a>                       | pdf  | 46 KB  | 10/21/2024 09:46 AM |
| Support Letter from the Three River Health District | <a href="#">Three River Health District_LetterofSupportFloodPreparedness.pdf</a>           | pdf  | 154 KB | 10/21/2024 09:46 AM |
| Support Letter from the Town of Tappahannock        | <a href="#">Town of Tappahanock_Letter Supporting - Round 5.pdf</a>                        | pdf  | 100 KB | 10/21/2024 09:47 AM |
| Support Letter from the Town of Urbanna             | <a href="#">Town of Urbanna Letter of Support Rnd 5.pdf</a>                                | pdf  | 153 KB | 10/21/2024 09:47 AM |
| Support Letter from the Town of West Point          | <a href="#">West Point_CFPF Application Support Letter Round 5.pdf</a>                     | pdf  | 189 KB | 10/21/2024 09:47 AM |

Resilience Plan

Resilience Plan

| Description                                | File Name                                                                 | Type | Size   | Upload Date         |
|--------------------------------------------|---------------------------------------------------------------------------|------|--------|---------------------|
| Approved Middle Peninsula Resilience Plan. | <a href="#">Resilience Plan_Aproved-8_19_DCR-packet_letterandplan.pdf</a> | pdf  | 850 KB | 10/21/2024 10:14 AM |

# Application Form for Grant and Loan Requests for All Categories

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

## A. ORGANIZATIONAL INFORMATION

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

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

- ☐ Capacity Building/Planning  
☒ Project  
☐ Study

**NFIP/DCR Community Identification Number (CID)** 510048/510071/510096/510082/510304/510098/510083/510049/510292

**Name of Authorized Official and Title:** 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:** \_\_\_\_\_

**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 \_X\_ No \_\_\_\_\_

**Project Grants and Loans (Check All that Apply – Hybrid Solutions will include items from both the “Nature-Based” and “Other” categories)**

### Nature-based solutions

- ☐ 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, and where the flood mitigation benefits will be achieved as a part of the same project as the property acquisition.

- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ 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, or the acquisition of developed land for future conservation.
- ☐ Dam removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.

#### **Other Projects**

- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.
- ☐ Dam restoration.
- ☐ Beneficial reuse of dredge materials for flood mitigation purposes
- ☐ Removal or relocation of structures from flood-prone areas where the land will not be returned to open space.
- ☐ 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, and where the flood mitigation benefits will **not be** achieved as a part of the same project as the property acquisition.

X Other project identified in a DCR-approved Resilience Plan.

**Location of Project or Activity (Include Maps):** The counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex and the incorporated towns of Tappahannock, Urbanna, and West Point. Elements of the project are focused solely on the Mobjack Bay area within Gloucester and Mathews Counties.

**NFIP Community Identification Number (CID#) :** Gloucester (510071) and Mathews (510096)

**Is Project Located in an NFIP Participating Community?**

X Yes   ☐ No

**Is Project Located in a Special Flood Hazard Area?**

☒ Yes   ☐ No

**Flood Zone(s) (If Applicable):** All flood zones will be targeted and benefit from the proposed activities

**Flood Insurance Rate Map Number(s) (If Applicable):** All FIRMs in the Middle Peninsula Localities

**Total Cost of Project: \$883,167 (if the Match Waiver is Excepted or \$1,039,020 if match waiver is rejected);**

**Total Amount Requested: \$883,167**

**Amount Requested as Grant: \$883,167**

**For projects, planning, capacity building, and studies in low-income geographic areas: Are you requesting that match be waived? ☒ Yes   ☐ No**

## **B. SCOPE OF WORK NARRATIVE**

### **General Requirements**

#### **1. Needs and problems:**

##### **a. Specific problem being solved (not just that flooding exists or may occur in the future).**

The Middle Peninsula and in particular the Mobjack Bay suffer from one of the highest rates of relative sea-level rise in the Nation. With this ongoing and accelerating threat, many assets in the region and throughout the Commonwealth are not currently insurable by FEMA Flood Insurance or Homeowners Insurance. This represents one of the greatest weaknesses in Virginia's Coastal Resilience Master Planning effort and bringing new and affordable parametric insurance products and strengthening flood insurance outreach and education in Virginia represent one of the greatest opportunities to strengthen both the Middle Peninsula and the Commonwealth's overall resilience to coastal flooding and erosion driven by accelerating sea-level rise.

The first goal of the proposed project is to design and deploy a network of tide gauges in the Mobjack Bay, an area designated as a low income area as defined by the Flood Fund guidance, to allow for parametric insurance to be offered to currently uninsurable assets at risk along the waterfront and in flood-prone areas, such as engineered septic systems (system costs ~\$35,000-\$80,000) and living shorelines (costs running ~\$20,000- \$1,000,000). These assets are in many cases publicly funded for protection or public health, but no insurance exists to insure assets against the threat posed by recurrent storm damage. The network of tide gauges will be established in partnership with the Virginia Institute of Marine Science (VIMS), whose staff will deploy, monitor, and maintain the gauges as a pilot which can support the long-term expansion of gauges which can provide parametric insurance for the Commonwealth. Parametric insurance offers financial protection against losses that are often hard, or even impossible, to get insurance for, except in a non-traditional insurance structure. Traditional indemnity insurance pays out based on the cost of the loss incurred. Parametric insurance pays out when a predefined loss event occurs, and the loss event exceeds a specific dollar or index amount that was pre-agreed to in the policy. Examples of perils covered, and typical triggers include hurricane (wind speed), flood (height), earthquake (shake intensity), pandemic (number of infections). Advantages to parametric insurance are that because

the insurer knows how much the policy is going to pay out before the loss, claims are settled virtually immediately, and the insured gets paid out quickly after a triggering event occurs. If the insured has the coverage and the flood is at their premises, then the policy will payout, regardless of if there was actual damage, so the insured knows they will receive a payout once the water level reaches the established threshold. The insurer knows exactly how many policies will be affected by a given flood, eliminating uncertainty. Therefore, the policies are less expensive to the insured, and the insurer has greater predictability of losses and can set rates accordingly. The first objective for the first goal of the proposed project will be to launch the gauge network needed for parametric insurance providers to begin offering policies in the Mobjack Bay watershed in a manner where the project can serve as a pilot by providing lessons learned so that additional coverage can be rolled out across the Commonwealth over time. The second objective of Goal 1 is to launch the Middle Peninsula Fight the Flood (FTF) Low-Income Area Parametric Insurance Accelerator Program, which will serve as an innovative effort to purchase parametric insurance during the period of the grant award to provide citizens living within a low-income area within the newly created service area in Mobjack Bay immediate parametric insurance coverage to help the most socioeconomically vulnerable property owners be able to attain and afford parametric insurance. A media firm will be contracted to promote and solicit participation in the program. MPPDC has hired a new planner under a current CFPF grant (Grant # CFPF 24-04-20) who will manage the Parametric Insurance Accelerator Program, including the processing of program applications and oversee the issuance of policies on a first come, first served basis until the awarded funds for the effort are expended. Additionally, MPPDC will partner with Old Dominion University to oversee the methodology for how the free premiums are dispersed based on their experience in deploying similar programs in other states. Participants of this program will be required to provide access to general information regarding their policies including but not limited to coverage amounts, items covered, and premium amounts and this information will be utilized by the Insurance Consultant to better understand the affordability of premium costs and be able to coordinate with parametric insurance providers regarding strategies for what can be done to ensure affordability for the greatest number of citizens as possible. These lessons learned will inform the MPPDC, VIMS, and the state how best to structure tide gauge networks to drive parametric insurance premiums to affordable levels for low-income citizens in particular.

The second goal of the project is to enhance and advance effective flood resilience in the Middle Peninsula by utilizing the MPPDC Fight the Flood (FTF) program to offer flood insurance policy reviews and strategies for making flood insurance more affordable for local property owners. MPPDC will procure a Flood Insurance consultant who will work one on one with FTF participants to advise them, at no cost to the property owner, how best to structure new flood insurance policies and how best to restructure existing policies in a manner which lowers premium costs and allows for greater and more widespread flood insurance coverage, thereby enhancing the region's overall resilience to flooding events. Additionally, a media firm will be contracted to develop educational and outreach materials to help enhance property owners' general understanding of flood insurance and to promote this new FTF service available at no cost to local constituents.

These two goals represent priority actions under the region and the Commonwealth's resilience strategies and will result in substantial progress towards enhancing Coastal Resilience to coastal flooding, erosion, and sea-level rise.

#### **b. Factors which contribute to the identified problem.**

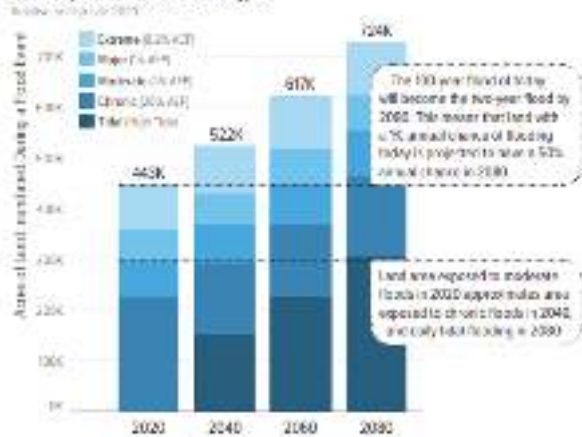
More insurance companies are pulling out of states deemed a "high climate risk." AAA and Farmers Insurance are the latest companies to pull out of some coastal states. Meanwhile, State Farm and

Allstate have stopped accepting new home insurance policies in some states. According to the Virginia Coastal Resilience Master Plan, the Middle Peninsula is at the epicenter of these risks.

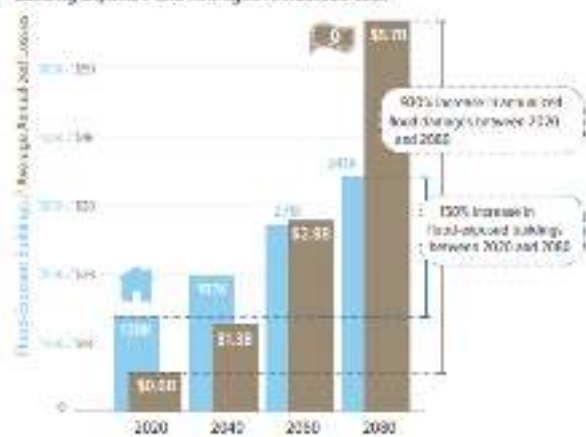
| Land Acres Exposed      |               | 2020    | 2080    | Change | Buildings Exposed       |               | 2020   | 2080   | Change  |
|-------------------------|---------------|---------|---------|--------|-------------------------|---------------|--------|--------|---------|
| Accomack-Norhampton PDC | High tide     | 90,300  | 176,200 | + 95%  | Accomack-Norhampton PDC | High tide     | 100    | 6,700  | + 6173% |
|                         | Extreme flood | 206,600 | 238,700 | + 16%  |                         | Extreme flood | 8,500  | 10,600 | + 25%   |
| Northern Neck PDC       | High tide     | 9,400   | 30,000  | + 219% | Northern Neck PDC       | High tide     | 130    | 1,900  | + 1444% |
|                         | Extreme flood | 37,200  | 63,700  | + 71%  |                         | Extreme flood | 3,000  | 7,700  | + 155%  |
| Middle Peninsula PDC    | High tide     | 25,500  | 76,200  | + 199% | Middle Peninsula PDC    | High tide     | 120    | 5,900  | + 4796% |
|                         | Extreme flood | 102,600 | 140,500 | + 37%  |                         | Extreme flood | 10,100 | 15,400 | + 52%   |

Differences in asset exposure numbers and percentage changes can be attributed to rounding for presentation. Percentage changes reflect exact exposure numbers.

Land Exposure Across Event Types



Building Exposure and Averaged Annualized Loss



c. Why the project is needed either locally or regionally.

At risk assets generate taxable revenue which in turn fund local government programs and support fundamental local government services such as schools, public safety, and emergency services. Without insurance coverage to mitigate financial risk and loss, the underpinning of the rural coastal tax base is placed at significant risk with projections indicating that the problem will only continue to worsen over time. Elected officials within the MPPDC have directed staff to develop programs and services to protect the tax base from a clear and present danger. The proposed activities represent a key step towards advancing the overall resilience of the Middle Peninsula, but also represent key advancements towards achieving resilience related goals in several state planning efforts.

d. How the project decreases the risk to public safety through flood risk reduction.

Parametric insurance exists to resolve the drawbacks and the hard market of traditional insurance, which is existing coastal communities. Parametric insurance is designed to provide bespoke contracts which are tailor made to fit specific needs, simplify the pay-out process, optimize costs, and build resilience, especially on hard-to-assess intangibles such as business interruption.

Additionally, the project will offer needed education with regards to flood and parametric insurance, offer innovative programming which provides free parametric insurance for the most socioeconomically vulnerable areas and free flood insurance consultation and advising, and

improves the overall flood resiliency of the region and Commonwealth through additional insurance coverage and education, which in turn is critical to preserving the local rural coastal tax base which is essential to the MPPDC local governments' ability to be able to fund essential local government services against the challenge of recurrent flooding and sea-level rise.

e. **How the project protects or conserves natural resources.**

Parametric Insurance will allow homeowners to insure nature-based flood mitigation assets, such as living shorelines, residential septic systems, docks and piers, and virtually any other assets which are currently uninsurable. The Mobjack Bay parametric insurance pilot will inform other similar efforts in the future around the Commonwealth and set the stage for insuring of nature-based solutions such as living shorelines at a greater scale throughout the Commonwealth. This includes many of the investments being made under state grant programs such as the DCR Community Flood Preparedness Fund. This program serves as the state's primary funding mechanism for coastal resilience and flood protection, yet these millions of dollars of investments are constructed and remain uninsured. While many of these projects are built to standards intended to withstand certain flood protections, financial backing for reconstruction or damages may not exist if the owner of the project is unable to cover the costs following a major storm event or over time as sea level rise continues to accelerate.

f. **Who is protected.**

All who need insurance within Gloucester and Mathews Counties residing within the insurable area will be able to avail themselves of the new parametric insurance coverage. This proposal also proposes to purchase parametric policies for the period of the grant award to provide citizens who own property within low-income areas immediate insurance coverage under a new program termed: Low-Income Parametric Insurance Accelerator. All property owners within the Middle Peninsula will receive new educational materials through targeted and regional outreach efforts utilizing the FTF program. The new tide gauge data will be utilized to enhance forecasting within the VIMS Tidewatch program. This information is publicly available and the FTF program will be utilized to raise awareness and increase the use of the forecasting tool locally.

g. **The safety threats, or environmental concerns related to flood risk.**

Water does not discriminate, flooding problems impact the rich and the poor universally, harming the built and the natural environment equally. Without having parametric insurance available as is the case currently in the Commonwealth, critical public health hazards, such as septic systems and environmentally beneficial living shorelines will remain uninsured. This means that property owners will need to pay out of pocket to rebuild or repair these assets in the event of storm damage and many citizens in coastal Virginia do not have the means to rebuild or repair to return the assets to their intended level of functionality. This constitutes one of the greatest threats from flooding and sea-level rise to public health and environmental quality facing the Commonwealth. This proposal represents a transformational first step for the Middle Peninsula and the Commonwealth to begin addressing these great threats to overall resilience.

h. **Groups to be targeted who might directly benefit from this flood risk reduction effort.**

According to the Virginia Coastal Resilience Master Plan, the Middle Peninsula is the epicenter of risk. Those targeted for insurance will be the owners owning land and buildings within the insurable area of the Middle Peninsula. The insurance program will prioritize property owners (1) within low-income areas and (2) that have utilized MPPDC Resiliency Virginia Revolving Loan

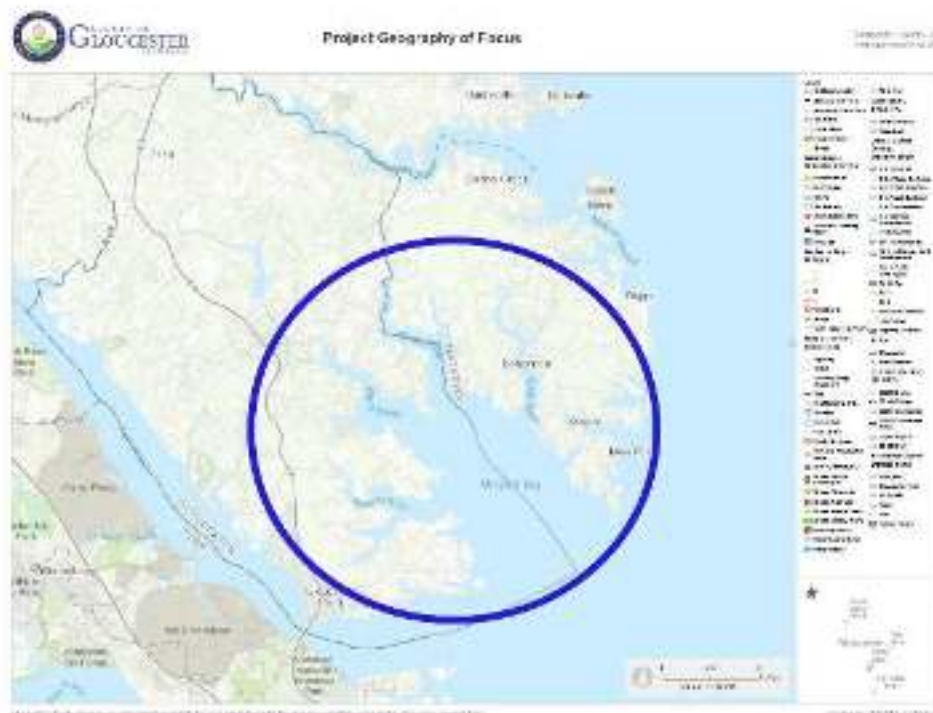
Fund (RVRF – requested by MPPDC during November 2023) for a flood protection project at their property within the Mobjack Bay area. If property owners demonstrate both criteria, they will move to the top of the program list to assist. All citizens will be availed of new and free flood insurance consultation. All citizens will be targeted with insurance education materials and have access to enhanced Tidewatch flood forecasting technologies.

| Land Acres Exposed       |               |         |         | Buildings Exposed |                          |                      |               |        |        |
|--------------------------|---------------|---------|---------|-------------------|--------------------------|----------------------|---------------|--------|--------|
|                          |               | 2020    | 2080    | Change            |                          | 2020                 | 2080          | Change |        |
| Accomack-Northampton PDC | High tide     | 90,300  | 176,200 | +95%              | Accomack-Northampton PDC | High tide            | 100           | 6,700  | +6773% |
|                          | Extreme flood | 206,600 | 238,700 | +16%              |                          | Northampton PDC      | Extreme flood | 8,500  | 10,600 |
| Northern Neck PDC        | High tide     | 9,400   | 30,000  | +219%             | Northern Neck PDC        |                      | High tide     | 130    | 1,900  |
|                          | Extreme flood | 37,200  | 63,700  | +71%              |                          | Middle Peninsula PDC | Extreme flood | 3,000  | 7,700  |
| Middle Peninsula PDC     | High tide     | 25,500  | 76,200  | +199%             | Middle Peninsula PDC     |                      | High tide     | 120    | 5,900  |
|                          | Extreme flood | 102,600 | 140,500 | +37%              |                          | Peninsula PDC        | Extreme flood | 10,100 | 15,400 |

Differences in actual exposure numbers and percentage changes can be attributed to rounding for presentation. Percentage changes reflect actual exposure numbers.

Interconnected social, economic and environmental characteristics are shared by Gloucester and Mathews counties, each member of the Rural Coastal Virginia Community Enhancement Authority (Code of Virginia § 15.2-7600). These characteristics include but are not limited to a low income and aging demographic, as well as increasing relative sea level contributing to flood exposure. Operating at the nexus of these adverse influences, are the residents adjacent to Mobjack Bay (**Figure 1**).

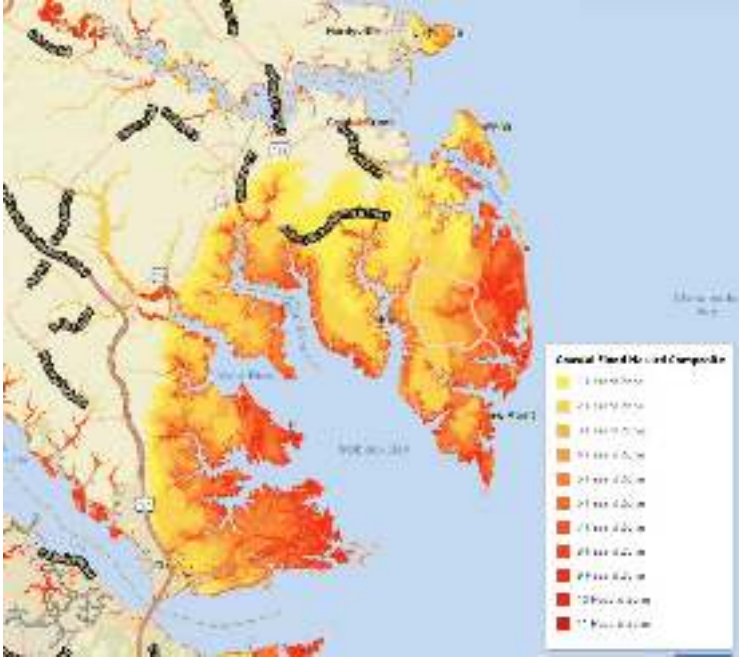
**Figure 1. Project geography of focus.**



Located at the terminus of Virginia's Middle Peninsula, an area susceptible to flood hazard (**Figure 2**), eight Census Block Groups pertaining to two counties, Gloucester and Mathews,

are home to approximately 12,156 residents. These residents share socioeconomic and demographic characteristics that reflect vulnerabilities in numerous respects (**Table 1**).

**Figure 2. Spatial extent of multiple coastal flood hazard data sets combined for geography of interest (circled), including: high tide and flooding, Federal Emergency Management Agency (FEMA) flood data, storm surge inundation for category 1, 2 and 3 hurricanes, and sea level rise scenarios for 1, 2 and 3 feet above mean higher high water (NOAA Coastal Flood Exposure Mapper, 2024).**



**Table 1. Socioeconomic and demographic characteristics for the eight Census Block Groups adjacent to Mobjack Bay based on ACS 2021 5-Year estimates.**

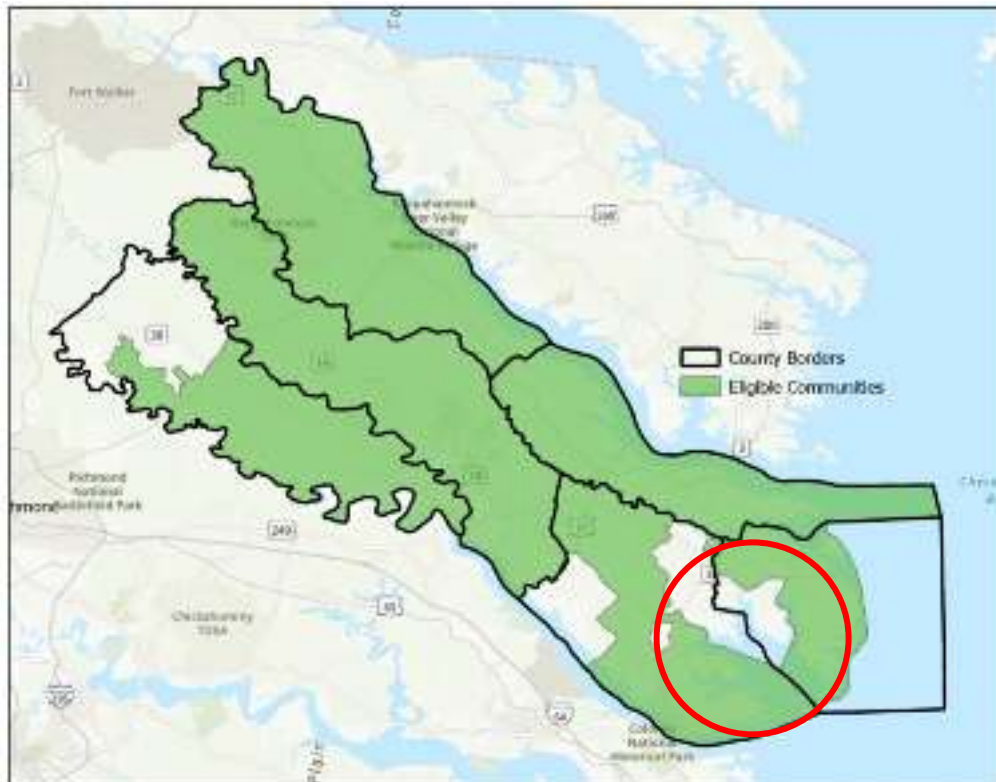
| Census Block Group and Tract                                     | Total Population | Total Families | % Families income in the past 12 months below poverty level: | % Households with one or more people 65 years and over: | % Population 16 years and over in the labor force | % Housing units with a mortgage: | % of households with mortgage dedicating 90% or more of income in past 12 months to mortgage: |
|------------------------------------------------------------------|------------------|----------------|--------------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------|
| Block Group 2, Census Tract 1002.05, Gloucester County, Virginia | 1,006            | 259            | 0.00%                                                        | 45.52%                                                  | 65.78%                                            | 61.48%                           | 34.33%                                                                                        |
| Block Group 3, Census Tract 1002.05, Gloucester County, Virginia | 892              | 252            | 12.30%                                                       | 40.72%                                                  | 56.39%                                            | 51.29%                           | 16.55%                                                                                        |
| Block Group 1, Census Tract 1004, Gloucester County, Virginia    | 1,441            | 419            | 13.13%                                                       | 49.75%                                                  | 60.56%                                            | 45.63%                           | 42.52%                                                                                        |
| Block Group 1, Census Tract 1005, Gloucester County, Virginia    | 4,285            | 1,207          | 7.87%                                                        | 38.45%                                                  | 62.08%                                            | 65.16%                           | 32.15%                                                                                        |
| Block Group 1, Census Tract 9514.01, Mathews County, Virginia    | 518              | 158            | 13.29%                                                       | 62.59%                                                  | 52.99%                                            | 41.26%                           | 0.00%                                                                                         |
| Block Group 2, Census Tract 9514.01, Mathews County, Virginia    | 1,240            | 282            | 0.00%                                                        | 54.55%                                                  | 44.31%                                            | 28.67%                           | 20.80%                                                                                        |
| Block Group 3, Census Tract 9514.01, Mathews County, Virginia    | 326              | 35             | 0.00%                                                        | 94.85%                                                  | 45.72%                                            | 57.02%                           | 23.19%                                                                                        |
| Block Group 1, Census Tract 9514.02, Mathews County, Virginia    | 2,448            | 542            | 15.68%                                                       | 50.66%                                                  | 46.68%                                            | 39.10%                           | 37.85%                                                                                        |

According to DCR guidelines, specific areas of the Middle Peninsula region are considered a “low-income geographic area” per the DCR definition included in the 2024 Funding Manual for the Virginia Community Flood Preparedness Fund. Each county had its ‘Eligible Household Income’ identified by using US Census data, and then calculated by multiplying the County’s median household income by .8. Any census geography (Block Group, Census Tract, or Zip Code Tabulation Area) identified under the .8 eligibility threshold has been identified as low income. This resulted in the following numbers:

|                                                 | Virginia | Essex    | Middlesex | Mathews  | King William | King & Queen | Gloucester |
|-------------------------------------------------|----------|----------|-----------|----------|--------------|--------------|------------|
| Median household income (in 2021 dollars), 2021 | \$80,615 | \$54,375 | \$63,782  | \$73,229 | \$74,592     | \$61,672     | \$77,733   |
| Eligible Household income                       | \$64,492 | \$43,500 | \$51,025  | \$58,583 | \$59,673     | \$49,337     | \$62,186   |

Based on the finding above, three counties in Middle Peninsula fall 100% within the eligible household income criteria. The remaining census tracts, zip codes, block groups, and opportunity zones identified as green also qualify in accordance with the DCR “low-income geographic area” definition. The eligibility map for Middle Peninsula is below (**Figure 3**) and includes a red dot indicating the proposed project’s location.

**Figure 3: Regional Low-Income Communities**



Environmental stressors compound these vulnerabilities and imperil community livelihoods, safety, health and well-being; in doing so, they contribute to this region's collective vulnerability to external stressors (**Figure 4**). Notably, this collective vulnerability, while serving as one indicator of adversity experienced in the region, does not accurately portray the susceptible nature of the region's most compromised community members; doing so would necessitate data collection and provision at resolutions higher than census block level.

**Figure 4. Mobjack Bay's eight adjacent Block Groups with social vulnerability index scores per Virginia Flood Risk Information System (VFIS).**



While required for homes purchased through a federally backed mortgage, flood insurance is not required of homeowners in Virginia and is unattainable for many of the Commonwealth's low-income communities, including those located in the geography of focus. To encourage flood insurance purchase and lessen the impact (and deterrence) of high insurance premiums, MPPDC staff propose to establish the provision of parametric insurance services for residents of Mobjack Bay.

Residential parametric insurance provision, while unprecedented in the Commonwealth and [initially slow to be adopted in the U.S.](#), is [increasingly being adopted](#) by communities along coasts facing flood and adverse weather events. Distinguished from its traditional counterparts by events that trigger predetermined payouts, parametric insurance offers insurance coverage based solely on the occurrence of an event, rather than coverage for the loss incurred. Parametric insurance providers offer policies to address a variety of place-based environmental conditions; along the coast, policies often use wind and/or flooding (water level) metrics to establish the trigger events for payouts. Together, both wind (a relatively dynamic variable) and water level (a relatively static variable) indices can provide unique coverage tailored to a specific region.

i. [What would happen \(or not happen\) if the applicant does not receive funding.](#)

The thousands of citizens suffering from flooding and erosion will continue to see land and building values decline, loss of wealth and disinvestment. The continued emergence of a regressive tax framework will accelerate where those living in the interior will pay more in taxes to offset lost revenue needed to maintain the basic levels of fundamental government services for education, health and welfare. Living shorelines, septic systems, and other assets throughout the Mobjack Bay and the Commonwealth are currently uninsurable and represent one of the greatest resilience challenges when a major storm event strikes

Virginia's coasts. The Mobjack Bay parametric insurance pilot will be the first effort in Virginia to address this challenge by providing insurance to currently uninsurable assets. If the pilot is not funded, the Middle Peninsula's Mobjack Bay area and the Commonwealth will continue to fail to meet this critical resilience need.

Without the funds sought in this proposal, VIMS would not be able to update, install and integrate the network of monitoring gauges as proposed. Moreover, awareness and provision of a parametric insurance option would not be afforded by Mobjack Bay residents; the lack of a pilot would preclude any future transfer to other, critical areas in need within the Middle Peninsula region and beyond throughout the Commonwealth. While the [Middle Peninsula's All Hazard Mitigation Plan](#) outlines strategies and funding opportunities for residents and localities alike, the effort proposed herein seeks to fill a gap entirely untouched in the plan; a gap that is becoming increasingly concerning. Addressing this gap in concert with those strategies outlined in the hazard mitigation plan, through programs like [Fight the Flood](#) for instance, is at the core of this proposal – and will offer regional residents the most comprehensive planning options and recourses in the face, and wake, of adverse events.

- j. [Alternatives analysis of the viability of the project, how selected project reduces risk to populations at risk of flooding. Provide examples of current or previous related projects, data, outcomes etc. that justify the approach chosen. Include how long and how much protection to be achieved.](#)

The Middle Peninsula and in particular the portion for the Mobjack Bay and associated rivers comprise part of 3,000 NFIP FEMA Flood insurance policies with a combined coverage of more than \$47,000,000. As part of this effort, Mike Vernon, CEO for [Flood Fixer](#), which is also a participating Fight the Flood business, continues to work direct with NFIP policy holders to reduce premium costs due to poorly drafted policies as well as welcomes the ability to partner with New Paradigm ([www.npuins.com](http://www.npuins.com)) bring Parametric Insurance to the Commonwealth as a pilot for at risk. There is significant risk and the financial and insurance markets are responding. Coastal Virginia must bring new insurance products to market to diversify risk and add cost efficiencies.

MPPDC staff have explored parametric insurance provision for its six localities in concert with [New Paradigm Underwriters \(NPU\)](#). Over the past 6 years, this partnership has collaborated toward feasible and marketable service provision in the region, iterating on triggers, events, and locations. The current proposal reflects the work of this partnership, in concert with the evidence-based research support and programmatic expertise of VIMS faculty and staff.

Underlying the provision of parametric insurance, is a historical understanding of triggering events in the region, in concert with continued and reliable data collection. To this end, MPPDC staff are partnering with VIMS to provide NPU historical data on water levels in the Mobjack Bay region, which will be used in concert with wind data to determine flooding event triggers. Moreover, VIMS programs will update current sensors and install new tide gauge stations in an effort to both refine triggering event conditions and to ensure that the continued provision of data collection is not compromised during adverse weather events. The provision of historical data, alongside increased data collection at finer resolution in Mobjack Bay, will allow for NPU to establish policies with greater certainty of triggering

event conditions and occurrences. Ultimately, this increased certainty is anticipated to result in affordable premiums for all Mobjack Bay residents.

NPU will determine the specific radius of the service area following the provision of historic data; subsequent data from newly installed tide gauges will further refine service area boundaries. NPU will also determine triggers and coverage provisions based on this collective data. Together, the identified service area and coverage policies will structure a pilot program that provides parametric insurance services to Mobjack Bay residents. With grant funding, these services will be marketed to all residents in the focal geography, in large part alongside Middle Peninsula PDC's [Fight the Flood](#) effort. To encourage adoption and support the region's most underserved residents, applicants demonstrating need will receive at least one free year of insurance coverage – made available on a first come first served basis as funding allows. Residential buy-in for all covered parties will be assessed following the first year of pilot program implementation.

Notably, the service area resulting from combined data inputs (existing and new sensors) may be larger than that of the focal geography proposed. Therein, coverage for residents outside of the Mobjack Bay area could be established with the baselines developed in this proposal, a prime next step for future iterations of the proposed program; as it stands, the coverage area of this pilot effort will be restricted to Mobjack Bay area.

Central to the continued provision of robust environmental data is the management and maintenance of equipment, as well as stewardship of the data itself. Herein, VIMS will play a key role, providing data from existing operations while overseeing the deployment of new, complementary sensors. Together, this network of data will provide robust analytics necessary to inform NPU's policies. Moreover, data from existing and new gauges will be ingested into the Tidewatch Network, enhancing the Commonwealth's asset as prescribed in the 2021 Coastal Resilience Master Plan:

*A comprehensive coastal and riverine gauge system can give localities, planners, emergency managers, engineers, businesses and residents the tools they need to monitor and prepare themselves for changing flood risks. More and better-integrated data is critical to anticipate the severity of flood events, a growing need for coastal communities experiencing nuisance flooding, and the effects of sea level rise (page 235).*

**The collective monitoring efforts proposed will not only contribute to insurance structuring but will reduce risk to public safety through increased understanding and forecasting of flood risk, as well as informed planning.** In recognition of the services to the Commonwealth that this data provides, VIMS is fully prepared to offer continued maintenance and management of the equipment and data mentioned in this proposal, beyond the life of the proposal itself. Using legislated funds existing as part of a "Support Implementation of the Coastal Resilience Plan" budget, VIMS will oversee equipment maintenance and steward related data in concert with the existence of said legislated funds.

## 2. Goals and Objectives:

- a. Goals should be listed as an outcome or result and solve the problem or need identified.
- b. Objectives must be specific, measurable and timebound.

c. Objectives be achievable within the agreement period.

**The goals and objectives of this project are as follows:**

**Goal 1:** Structure and pilot the provision of parametric insurance coverage for residents of Mobjack Bay.

- Objective 1: Provide parametric insurance company with networked monitoring data (historic and new)
  - Target: One completed plan for gauge deployment.
- Objective 2: Launch new gauge network.
  - Target: Update existing monitoring equipment, including 3 Chesapeake Bay National Estuarine Research Reserve in Virginia (CBNERR-VA) stations.
  - Target: Deploy six new gauges in the Mobjack Bay and its associated tributaries.
- Objective 3: Establish parametric insurance coverage marketable to a new Mobjack Bay parametric insurance service area.
  - Target: Activation of parametric insurance policies in the Mobjack Bay service area
  - Target: Development of informational and educational materials and launch of campaign promoting new parametric insurance availability.
- Objective 4: Launch Low-Income Parametric Insurance Accelerator
  - Target: One campaign to solicit applications for free parametric insurance policies.
  - Target: Successfully develop, launch, and promote parametric policies for citizens in partnership with Old Dominion University. Number of new policies to be determined based on premium levels with funds being allocated on a first come first served basis with priority for underserved property owners within designated low-income areas.
- Objective 5: Conduct analyses of parametric policy premiums and identify strategies for premium reductions.
  - Target: Survey each participant in the Low-Income Parametric Insurance Accelerator to understand premium costs, affordability, likelihood of renewal/sustainability of coverage, etc.
  - Target: Develop a summary of findings to inform future parametric service area networks and modifications/improvements to the pilot service area as needed.
- Objective 6: Ensure transferability to other communities.
  - Target: One assessment of the success of pilot program toward the provision of services to communities beyond the proposal's target geography.

**Goal 2:** Enhance and advance flood insurance policies and premium affordability, sea level monitoring, and flood forecasting in the Middle Peninsula.

- Objective 1: Develop, share and promote flood and parametric insurance educational materials
- Objective 2: Hire Flood Insurance Consultant to engage all registered FTF participants and advise as to how to structure new and restructure existing flood insurance policies. Solicit additional FTF participation and provide the same services accordingly.
- Objective 3: Integrate new sensor data into the Tidewatch Network.
- Objective 4: Maintain and manage monitoring data through Tidewatch Network for continued insurance application, as well as flood forecasting and planning.

The MPPDC anticipates that these comprehensive enhancements will:

1. **Increase access to flood insurance coverage and payouts** through reduced premiums and

parametric alternative.

2. **Mitigate loss of property and property value** in the face of adverse weather events, while capitalizing on the useful life of properties as much as is possible.
3. **Enhance quality of life for local residents** through increased monitoring data and related planning and forecasting.

### 3. Work Plan:

- a. What are the major activities and tasks.
- b. Who is responsible for completing the activities and tasks.
- c. What is the timeframe for accomplishing activities and tasks.
- d. Identify the required partners to ensure success and where they are represented in the workplan.
- e. Deliverables
- f. Maintenance plan tied to the identified viability of the project. Plan for sustaining the project after the agreement period (if applicable).

The anticipated work plan and schedule is as follows:

- **Year 1:**
  - Provision of historic data (VIMS to NPU)
  - Establish partnership with ODU to oversee the methodology for how the free premiums are dispersed.
  - NPU determines parametric insurance policy triggers, service area
  - NPU plans and begins implementing pilot provision in Mobjack Bay area
  - NPU and VIMS collaborate on location of additional tide gauges
    - VIMS communicates with municipalities and MPPDC where sensors will be installed to confirm that there are no issues that may prohibit installation at the chosen site; suggest alternative nearby site(s) if so
    - VIMS communicates with GreenStream (sensor developer) to confirm sensor purchase and delivery timeline
  - Tide gauges are installed on publicly owned infrastructure
    - Install water level sensors, and vertically calibrate via survey crew for converting distances to water surface to measured heights above NAVD88
    - Conduct sensitivity tests and collect data for tidal calibration
  - Data from new tide gauges is ingested into Tidewatch (VIMS)
    - Develop StormSense online platform to prepare for new sensors' inclusion into existing streaming database
  - VIMS will communicate with localities regarding new sensor installations, and publicize work at local and regional flood adaptation forums
  - Consociate Media will develop educational materials for the FTF website and other promotional avenues and promote new policy review and advisory services offered by new FTF Insurance Consultant
  - MPPDC FTF Program Administrator will develop Low-Income Parametric Insurance Accelerator program guidelines

- Procurement and contracting of FTF Insurance Consultant.
- Insurance Consultant will engage and advise registered and new FTF participants
- **Year 2:**
  - Continued maintenance and management of sensors and their data
  - Continue working with ODU to oversee the methodology for how the free premiums are dispersed.
  - NPU refine parametric insurance policy triggers based on new data
  - Consociate Media to promote availability of new parametric insurance coverage availability
  - Consociate Media to promote availability of Low-Income Parametric Insurance Accelerator program and solicit participation
  - MPPDC FTF Program Administrator will process Low-Income Parametric Insurance Accelerator applications and coordinate with first responding and eligible property owners
  - NPU and FTF Insurance Consultant will develop policies for property owners receiving assistance through the Accelerator program
  - Insurance Consultant will continue to engage and advise registered and new FTF participants on flood insurance policies
  - VIMS will calibrate Tidewatch tidal prediction model and begin sharing storm tide forecasts via Tidewatch web portal and GreenStream Cloud
  - VIMS will continue to communicate with localities regarding new sensor installations, and publicize work at local and regional flood adaptation forums
- **Year 3:**
  - MPPDC FTF Program Administrator will continue to oversee the Low-Income Parametric Insurance Accelerator program
  - MPPDC FTF Program Administrator and FTF Insurance Consultant will conduct a survey of Accelerator Program participants to solicit and compile general information regarding their policies including but not limited to coverage amounts, items covered, and premium amounts. The Insurance Consultant will use this information to better understand the affordability of premium costs and be able to coordinate with NPU regarding strategies for what can be done to ensure affordability for the greatest number of citizens as possible.
  - VIMS will coordinate with NPU to address any tweaks needed for continued provision of services
  - VIMS will provide continued maintenance and management of sensors and their data
  - Insurance Consultant will continue to engage and advise registered and new FTF participants on flood insurance policies
  - VIMS will continue to communicate with localities regarding new sensor installations, and publicize work at local and regional flood adaptation forums
- **Beyond grant:**
  - Transfer pilot program based on experience in Mobjack Bay
  - VIMS will perform continued maintenance and management of sensors and their data

Additional details and detailed scope of sensor updates, installation and data provision outlined by VIMS is provided as below.

**1. Overview of VIMS and Work on Sea Level Rise:** *Building flood resilience in coastal communities requires a precise understanding of the temporal and spatial scales of inundation and the ability to detect*

*and predict changes in flooding.*

The Virginia Institute of Marine Science (VIMS) is the graduate school in marine science for the College of William & Mary. VIMS has a three-part mission to conduct research in coastal ocean and estuarine science, educate students and citizens, and provide advisory service to policy makers, industry, and the public. VIMS provides these services to Virginia, the nation, and the world. Chartered in 1940, VIMS is currently among the largest marine research and education centers in the United States. In service to VIMS's three-part mission, the institution has shared its long-standing record of flood prediction expertise through its Estuarine Coastal Modeling Research Group, flood-related advisory services via the Center for Coastal Resources Management, and most recently, the VA state legislature has recognized VIMS as a founding member of the new VA Commonwealth Center for Recurrent Flooding Resiliency (CCRFR), established in 2016.<sup>1</sup> The CCRFR is a state-funded virtual research center established between VIMS, Old Dominion University, and the Virginia Coastal Policy Center at the William and Mary Law School, and serves as a source of scientific, socio-economic, legal, and policy analyses aimed at building Virginia's resiliency against flooding.<sup>2</sup>

In 2021, the Virginia Coastal Resilience Master Plan, Phase 1 Report encouraged the expansion of an integrated network of ocean, earth, and atmospheric data collection from both private and public sector organizations that are engaged in active scientific monitoring and observing.<sup>1</sup> The existing sensor network has grown to include monitoring of water levels, land subsidence, wave measurements, current measurements, and atmospheric conditions. These products have been incorporated into data portals and integrated services for public access and to help support resilience planning for municipalities, and commercial businesses. This proposal reviews 21 potential sites for the installation of 6 new water level sensors in Mobjack Bay, VA. The sensor scope of work presents estimated purchasing costs for the installation of 6 new water level sensors near: 1) State-Owned, Locally-Owned, or Jointly-Owned Working Waterfront sites in Gloucester and Mathews County within the MPPDC, and 2) bridges over tidal waterways adjacent to frequently inundated lands.

**2. Description of Sensor Network and Tidewatch:** *Here, information on the present regional sensor network is described, along with VIMS' efforts to collect, analyze, and communicate data about sea level rise and forecasts through Tidewatch.*

There are currently 65 publicly-streaming water level monitoring stations throughout southeastern Virginia (Fig. 1). Many of these were recently installed by the USGS, who has installed 19 Ka-band radar sensors in coastal Virginia in 2015 and 2016, and StormSense, which is a smart cities project led by Dr. Derek Loftis at VIMS, which has installed 31 water level sensors in 2018 (28 ultrasonic sonar, and 3 Ka-band radar sensors).<sup>2</sup> Among federal entities, NOAA has 6 (marked in blue) and USGS maintains 19 (noted in green), while among local entities, VIMS has 1, and StormSense has 31 (all marked in red).<sup>3</sup> VIMS operates and maintains a water level monitoring and tidal prediction service called Tidewatch, which now operates under the CCRFR.<sup>2</sup>

Tidewatch ingests web service data streams from NOAA, USGS, and StormSense, but VIMS maintains two gauges of its own in Back River near Langley AFB, and Tangier Island in central Chesapeake Bay.<sup>3</sup> Tidewatch is an operational tidal forecast product that forms its 36-hr forward-looking predictions by extracting tidal harmonic constituents for amplitude, phase, and frequency from observations collected by a water level sensor and can begin making tidal forecasts after a minimum of a 90-day continuous data record after installation and vertical calibration is complete. Tidewatch forecasts update every 30 minutes, and it is set apart from other tidal prediction algorithms by its automated assessment of monitoring observation anomalies in the form of an applied monthly moving average (m30). The residual m30 signal is a unique form of data assimilation used to enhance Tidewatch's tidal predictive accuracy.<sup>2</sup> Predictions from

Tidewatch are available on the [CCRFR website](#), the [VIMS website](#), and the VIMS Center for Coastal Resources Management's [AdaptVA portal](#).

It is the intention that the 6 new sensors proposed herein will employ Tidewatch as a starting point to integrate sensors throughout the Mobjack Bay region (Fig. 2). There are 2 NOAA NWLON tide gauges near Mobjack Bay: to the north near the mouth of the Rappahannock River at Windmill Point ([Windmill Point, VA - Station 8636580](#)), and to the south near the mouth of the York River at Yorktown USCG Training Center near Gloucester Point ([Gloucester Point - Station 8637689](#)). There is also a relatively new USGS tide gauge installed in 2019 at the Ware River Yacht Club in Mobjack Bay near Naxera ([Ware River - Station 01670060](#)). These three federally-maintained water level sensors are highly-accurate water level monitoring sensors with sufficient elevation benchmarking surveys to serve as primary data sources for parametric insurance models, which are used to derive flood risk for infrastructural assets in and around coastal floodplains. The goal of installing 6 new sensors in Mobjack Bay is to provide secondary sensor sites with high accuracy water level standards and accurate elevation benchmarking to sufficiently supplement the primary NOAA and USGS sensor sites to supply a parametric insurance model with additional data in each of the tidal tributaries leading to Mobjack Bay to help improve risk estimation for the rural localities near the proposed sensors. Of the 21 proposed sensor sites depicted in red in Fig. 2, there are: 13 near Public Working Waterfront sites (7 Locally-Owned, 1 State-Owned, and 6 Jointly-Owned), and 7 near VDOT-maintained bridges over tidal headwaters of tributaries feeding Mobjack Bay.

In addition to these new sensors, existing sensors, managed by the Chesapeake Bay National Estuarine Research Reserve in Virginia (CBNERR-VA) will contribute to historic and ongoing tidal monitoring. Specifically, CBNERR-VA maintains water level gauges at three of its reserve sites on the York River. Two of its stations have real-time data telemetry capabilities; all have data archives supported by CBNERR-VA and VIMS; none are yet integrated real-time into the Tidewatch Network. Archived data from these sites will contribute to the historic record informing insurance provision. Meanwhile, ongoing monitoring at these stations will provide complementary data for a holistic picture of Mobjack Bay water levels and flooding. In an effort to ensure that these sensors are equipped for continued and accurate data provision, and to integrate data from these stations into the Tidewatch Network, funds are sought in support of CBNERR-VA equipment telemetry and related staff time.

**3. Description of How Additional Sensors Will Contribute to Understanding Impacts of Sea Level Rise, and Explanation of Sensor Suitability Model for Mobjack Bay:** *VIMS' long-standing research expertise in the region will be leveraged along with the new proposed sensors to better understand localized influences on eustatic sea level change from the Gulf Stream off the shore of Virginia's coast, while identifying the effects on observed sea level change attributed to land subsidence.*

The local communities will benefit from more neighborhood-specific flood forecasts and from appropriating a targeted early warning system to notify stakeholders of potentially hazardous flood conditions predicted and observed at proximal sensors, upon integration into the StormSense network. Additional synergistic emergency management benefits include feedback credits for progressive communities enrolled in FEMA's National Flood Insurance Program, in the interest of providing discounted costs for flood insurance to all. Both the short- and long-term impacts of sea level rise and flooding may be effectively researched and better understood to aid in flood resilience and new partnerships are being established that enable the interconnection of smart communities and technology innovation across agency missions. In a relatively recent presentation to the Hampton Roads Planning District Commission's Regional Resilience Working Group, a regionally resolute simulated gaps analysis review of 85 new suitable bridge-mounted water level sensor locations throughout southeastern Virginia was presented.<sup>4</sup> Suitability was determined by Lidar-detected deck heights for all bridges over open tidally-connected

waterways. The sites were identified using SCHISM hydrodynamic modeling simulations compared with the existing network of water level sensor observations, and then a list was exported favoring sites that were <85% match in predictions, when compared with the next nearest suggested location during heavy wind conditions, and <95% match during regular tidal conditions. Of the 85 sites reviewed, 7 new suggested sensor installation sites near Mobjack Bay were identified as potential locations with bridges of sufficient elevation with consideration of projected sea level trends.<sup>4</sup> A map of those suggested sites are presented in Fig. 2, and a small number of these sites have since had sensors installed nearby by StormSense or the USGS, and [StormSense's data portal](#) updates every 6 minutes with new real-time water elevation measurements, and it contains cloud archiving of all past recorded water level observations.<sup>3,6,7,8</sup>

#### **4. Description of Coordination with Local Governments on Sensor Installation and Maintenance:**

*Dr. Loftis regularly participates and presents StormSense's progress on sensor installations in local flood adaptation forums and to localities, Regional Planning District Commissions, and the Commonwealth of Virginia.*

StormSense currently holds data management and maintenance calls with GreenStream and participating localities monthly to address to discuss data integration, planned sensor installations, and any support needs for currently-installed water-level sensors. In the first three quarters of this project, Dr. Loftis will communicate with the localities/entities involved, including Gloucester County, Mathews County and MPPDC, to help determine sensor placement sites and feasibility at those sites ultimately chosen. Moreover, the MPPDC's communication with county administrators during these three first project quarters will include education on the benefits of parametric insurance and exploration of local benefits toward potential future cost sharing.

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#### 4. Evaluation

##### a. Indicators of success.

The indicators of success are indicated by the target metrics provided for each objective in the previous sections.

##### b. Data that will be collected and how the data will be used to measure success.

This information is provided in previous sections. All data generated through the proposed activities is instrumental to achieving the goals and objectives of the project.

##### c. How was cost effectiveness evaluated and measured against the expected outcomes?

This is thoroughly explained in previous sections. The cost of not carrying out the proposed activities is failure to achieve community wide improvements towards coastal resilience.

##### d. What products, services, meetings, outreach efforts etc. will be conducted and how will success be measured?

This information is provided in previous sections. Success will be made by reaching the target metrics previously provided.

##### e. Project progress monitoring plan to ensure project meets the requirements of the agreement and is delivered on time. Outline how delays or other findings may be used to modify or improve outcomes/deliverables.

Progress will be monitored monthly by comparing the actual progress to the anticipated progress in the original project schedule. Progress will be reported quarterly to DCR along with a reimbursement invoice in compliance with the terms of the grant contract. Explanations for discrepancies in anticipated and actual progress will be provided along with corrective action steps and/or a request to revise the project

schedule. Project delays may result in a request to extend the deadline. Other findings that may impact outcomes, deliverables, and the schedule will be described. We understand that activities must commence within 12 months of the agreement date and must be completed within 36 months. The final reimbursement request will be submitted to DCR within 90 days of the project completion date in compliance with the grant contract.

f. If applicable, how the study may improve Virginia's flood protection and prevention abilities in a statewide context.

NA; the project contains analytical elements but is centered around construction and deployment of a new network of gauges/sensors.

g. Other necessary information to establish project priority

As stated previously, the project has been identified as a top priority for the MPPDC and through various state plans related to flood protection and coastal resilience.

h. Repetitive Loss and/or Severe Repetitive Loss Properties

The red dots on the map below identify the location of repetitive loss and/or severe repetitive loss properties within the project area. As a total there are 146 properties in Gloucester County that are repetitive and/or severe repetitive loss properties and there are 169 properties in Mathews County that are classified as repetitive and/or severe repetitive loss properties.



Residential and/or Commercial Structures – Describe the residential and commercial structures impacted by this project, including how they contribute to the community such as historic,

economic, or social value. Provide an exact number of residential structures and commercial structures in the project area.

Residential and commercial structures within the project area will be candidates to participate in the second part of this project where flood insurance policies will be reviewed, and strategies will be developed to make flood insurance more affordable for local property owners.

Within Gloucester County residential land comprises the largest developed land use within the County, with the highest residential concentrations located in the Court House and Gloucester Point/Hayes areas. As public water and sewer are available throughout much of the Route 17 corridor between Gloucester Point and the Court House, areas inside the Development District are identified for higher density commercial and residential development. Gloucester Point/Hayes and the Court House are identified as Village Development Areas (VDA's), areas designated for higher density development due to proximity to transportation facilities, public water and sewer availability, and/ or a developed area to be used for redevelopment or infill development. Outside of the VDA's, residential development has primarily occurred along major roadways with scattered residential lots and subdivisions dispersed throughout other rural areas.

Within Mathews County According to the 2010 Census, most of the residential structures in the County were single-family homes (85%). Apartments or duplex structures represented less than 3% of the housing stock, while mobile homes represented approximately 12.5% of the housing stock.

It is important to mention that the majority of structures located within the project area are residential. Since many of these structures are waterfront, they contribute substantially to the tax base of each County. Additionally, based on outcomes from the 2021 Regional All Hazards Mitigation Plan Gloucester County and Mathews County has the highest potential annualized loss due to sea-level rise and hurricanes. Therefore, as this project area is highly vulnerable to inundation these residents need assistance.

i. Critical Facilities/Infrastructure – If there are critical facilities/infrastructure within the project area, describe each facility.

According to the Middle Peninsula Regional All Hazards Mitigation Plan, there are critical Facilities/infrastructure within Gloucester and Mathews County. Below provides details about each county.

**GLOUCESTER COUNTY** - The county has a relatively extensive network of public water and sewer facilities in and around the Gloucester Courthouse area. The Beaverdam Reservoir, located just north of the courthouse area, serves as the drinking water source for the county's public water supply system. As discussed earlier in the Dam Impoundment Section of the plan, the dam is structurally well-built and remains fully certified by the DCR (Figure 3). Below the dam there are approximately 200 homes that would flood if the Reservoir structure failed. However, in 1999 the impoundment overflowed during Hurricane Floyd yet no flood damage to the home since the excess water flowed downstream using the emergency spillway.

The table below provides a list of dams from the Virginia Department of Conservation and Recreation's Certification List within Gloucester County that may be impacted by natural hazards as well.

The water distribution system does not suffer damage during severe storm events since it is a closed

underground system. The sewerage collection lines and pumps stations are owned and operated by Gloucester County. There are 2 pump stations in the Gloucester Courthouse area (Pump # 11 and Pump #13) that sustained damage during Hurricane Floyd in 1999. The damage was caused by floodwaters resulting from the overtopping of the Beaverdam Reservoir as previously mentioned. After the wastewater is collected, it is transported in a large force main that runs down Route 17, crosses under the York River and then flows into the York River Wastewater Treatment Plant in York County. The large force main and treatment plant are owned and operated by the Hampton Roads Sanitation District. The force main is a closed underground system that does not sustain damage during severe flooding events.

The Achilles Elementary School site, located in the southeastern section of the county, is adversely affected by flood waters from storms surges associated with a Category 1 hurricane.

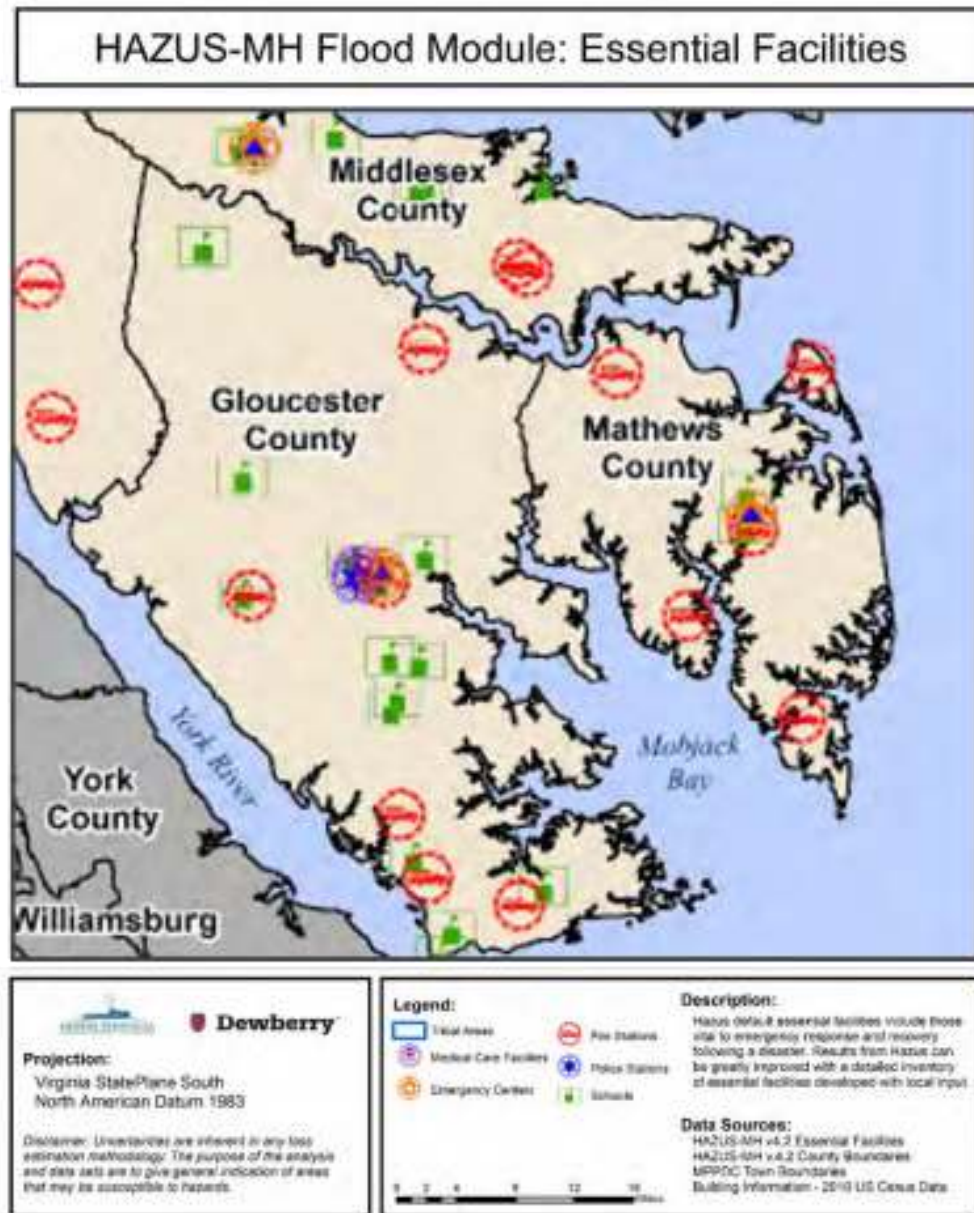
**MATHEWS COUNTY** - New Point Comfort Lighthouse, located at the southern tip of Mathews County, has undergone significant flood damage resulting from the lighthouse being separated from the mainland due to severe erosion.

Mathews County owns the lighthouse facility. In 2016 the Waterfront Development Corporation installed a new pier at the lighthouse that allowed contractors to access the site for restoring the stone tower.

Restoration of the tower started in 2020 and concluded on October 12, 2021, when a ceremony was held to relight the lighthouse.

**Figure 5** is a map of the critical facilities within Gloucester and Mathews Counties.

Figure 5: Essential facilities map of Gloucester and Mathews Counties.



Therefore, through this project the parts of the counties will be able to access parametric and flood insurance for their structures and properties. Ultimately creating a more resilient community.

## Budget Narrative- Required for All Categories

Each application must include a detailed Budget Narrative explaining all proposed expenditures. A budget narrative is applicable to requests from any category of grants in this manual. **Applicants must submit a budget narrative via the WebGrants Portal.**

The following items must be included in the Budget Narrative:

**Estimated total project cost:** This amount must reflect the total cost of bringing the project to completion. Estimates for all work to be completed by third parties (engineers, contractors, etc.) on the specified project should be included. If multiple project types are selected, a detailed breakdown of how the funding is proposed to be allocated must be included for each selected project type.

Based upon the identified scope of work the total estimated project cost is \$883,167. A match waiver is being requested; however, the MPPDC is willing to commit \$155,853 of Resilient VA Revolving Loan Funds (RVRF) as match if the match waiver is not accepted. The free parametric premium coverage program will prioritize property owners who can demonstrate that they 1) own property within a designate low-income area and 2) have utilized MPPDC RVRF loan funds for a flood protection project at their property. If participants demonstrate both criteria they will move to the top of the program list to assist. The total request includes the following estimated costs:

MPPDC Legal Counsel for Procurement and Contracting: \$7,500

*Description: MPPDC Legal will prepare procurement and contract documents critical to subcontracts and the overall project efficiency.*

Flood and Parametric Insurance Consultant: \$245,000 for three years (including up to \$240,000 salary and \$5,000 mileage for necessary travel for property site visits).

*Description – A subcontract with a qualified and experienced Insurance Consultant will be procured following VPPA requirements. The consultant will coordinate directly with Fight the Flood participants who have indicated that they are interested in learning more about flood insurance or have indicated that they need consultation on existing policies. As a new service under the FTF Program, participants will have access to expert advice and guidance at no cost. The Consultant will advise on how new and existing policies can be structured or restructured to optimize overall flood protection while providing much needed savings via lower or reduced policy premium costs. There are an ample number of currently registered FTF participants indicating insurance needs to ensure the Consultant will remain busy for at least 1 to 2 years. It is important to note that the MPPDC has been very hesitant to promote the FTF program via paid marketing due to staffing capacity restrictions and that the vast majority if not all of current FTF participants are finding the site on their own or via local word of mouth. This new service will be promoted via all FTF outreach avenues including local print media and online digital media (see Consociate subcontract below) to ensure ample participation and since this will be the first time a free insurance advisory service will have been offered via the FTF program, it is anticipated that there will be an extremely high level of demand for this service. The Insurance Consultant will also coordinate directly with ODU and parametric insurance companies as necessary to oversee efficient and effective launch of new parametric insurance offerings once the new gauges have been deployed and brought online. The*

*anticipated outcomes will be new and improved individual flood insurance policies which is a primary strategy of the MPPDC Resilience Plan and a critical solution for enhancing the region's overall coastal resilience.*

Consociate Media for development of new flood insurance educational materials and promotion of new services and products available via the Fight the Flood Program: \$30,667

*Description: Local media firm, Consociate Media, who has served as the outreach, marketing, and educational service provider for MPPDC programs for many years and is well versed in effectively communicating with local citizens regarding flood protection, resiliency and the overall FTF program, will be contracted to develop educational videos and other digital materials regarding flood and parametric insurance, their benefits, technical matters regarding attaining policies, and how to utilize the FTF program to access educational materials and tangible services. Consociate will use both local printed media, targeted promotions and outreach using geofencing to high priority and flood prone areas within the Middle Peninsula, and incorporation of materials onto the FTF website. In addition to general education and outreach, Consociate will promote the services available via the new Flood Insurance Consultant as well as the opportunity for citizens to apply for and participate in the MPPDC Low-Income Area Parametric Insurance Accelerator program.*

MPPDC Low-Income Area Parametric Insurance Accelerator Program: \$300,000

*Description: MPPDC will promote and solicit applications from designated low-income areas within the Mobjack Bay watershed for individual parametric insurance policies for at least one-year as funding allows. Priority will be given to property owners within the program service area who own property within a designated low-income area and who have financed a flood protection project through the MPPDC RVRP loan program. This will be done most likely during Year 3 of the project once the new gauges have been deployed and the parametric insurance providers have activated the Mobjack Bay area by offering new policies. The FTF Program Administrator will assist applicants and coordinate with those selected to receive the free policies through the accelerator program. Participants will be required to provide access to general information regarding their policies including but not limited to coverage amounts, items covered, and premium amounts and this information will be utilized by the Insurance Consultant to better understand the affordability of premium costs and be able to coordinate with parametric insurance providers regarding strategies for what can be done to ensure affordability for the greatest number of citizens as possible. These lessons learned will inform the MPPDC, VIMS, and the state how best to structure tide gauge networks to drive parametric insurance premiums to affordable levels for citizens residing in low-income areas in particular.*

Virginia Institute of Marine Science (VIMS) for gauge network planning and coordination and purchase, deployment and maintenance of tide gauges and other related grant activities: \$300,000

*Description – VIMS staff will coordinate a planning work group consisting of New Paradigm Underwriters, MPPDC staff, the FTF Insurance Consultant, and others as necessary to finalize strategies for determining policy trigger levels, the Mobjack Bay service area, and optimal locations of existing and new gauges. VIMS will compile historic data to support the planning process. VIMS will purchase and deploy six new sensors/gauges and 3 backup sensors/gauges around the Mobjack Bay watershed on publicly owned infrastructure. This will involve updating telemetry equipment related to existing sensors, conducting site surveys, calibration, maintenance (over the duration of the DCR funded project. VIMS will assume maintenance responsibilities once the grant funded*

project is complete), and closed data management for each new sensor. VIMS will communicate and conduct educational outreach to communities regarding new sensor installation, publicize work at local and regional flood adaptation forums, calibrate the Tidewatch tidal prediction model with the new sensor data, and support other grant related activities as necessary.

**VIMS Sensor Hardware Costs** - The cost to purchase a solar-powered Ka-band radar water level monitoring station with real-time Iridium satellite data transmission capabilities necessary as an input for parametric insurance models is approximately ~\$16,500/each to purchase. The estimated cost is \$16,500/sensor for a total of \$148,500 for the purchase of 6 sensors, and 3 backups. In addition, telemetry equipment to enhance the three sensors managed by CBNERR-VA in the York River, for integration into the Tidewatch Network is expected to total: \$16,500.

**VIMS Installation, Maintenance, and Operation Costs** - Newport News found that installation costs using their own Public Works department ranged based upon the installation type and fabrication required (bridge-rail mounted ~\$2,600/each; separate pole-mounted ~\$3,500/each). Virginia Beach hired a nationwide engineering contractor, Oceaneering, with a local office based in Chesapeake, VA to install, survey, and vertically calibrate the sensors to the tune of ~\$4,200/each. This can be estimated to be an average of ~\$3,000. **Monthly Operation Costs:** sensors communicate via Iridium satellite uplink and vary based upon monthly Iridium data transmission costs. The GreenStream Cloud also carries a nominal monthly fee per sensor to support public data streaming via a designated URL in a variety of interoperable data formats (including JSON, CSV, XML, and RSS), data management, and customizable virtual alarms to notify local government employees or emergency managers when observed water levels are high, or designated contractors when battery levels are low, or when sensors aren't reporting correctly, at a current cost of \$12/sensor/mo. After the period of this project concludes, it is the intent that these costs will be solely furnished by VIMS where the new sensors are installed. Should localities determine that cost sharing is of local benefit, new payment structures can be adopted, and are to be reevaluated on a regular basis. In summary, the sensors are likely to cost ~\$3,000 in year one for installation, plus ~\$12/sensor/month (~\$144/sensor/year) for data transmission and management, and ~\$500/sensor/year for maintenance and upkeep during year one and every year thereafter ~\$3,644/sensor during year one, and ~\$644/sensor to maintain each year thereafter; totaling \$29,592 for 6 sensors over three years. In addition, funds sought to supplement VIMS-related travel and vessels to/from sensor sites, amount to \$3,900.

**VIMS Sensors' Vertical and Tidal Calibration, Research, and Data Integration Costs** - Dr. Loftis at VIMS works with GreenStream to vertically calibrate each sensor's reported 4-20mA values (as distances to the water's surface) and convert them using the survey crews' elevation benchmark measurements to water levels above NAVD88. These data are then passed from GreenStream's cloud environment via a public Application Programming Interface (API) to Tidewatch with the assistance of Dr. Forrest at VIMS for public data ingestion and analysis for extraction of tidal harmonics (over a minimum of a 90-day period), to begin tidal forecasting at the newly gauged sites. Dr. Loftis' efforts on this project will amount to .5 mo/year, at a rate beginning at \$8,219; Dr. Forrest's time equates to .75 mo/year beginning at a rate of \$8,286; a 40% fringe rate in addition to these salaries is requested. In addition, salary is sought for Scott Lerberg of CBNERR-VA at a rate beginning with \$6300 for 0.5 months/year to assist with data provision and telemetry and continued maintenance of CBNERR-VA sensors; 40% fringe would be applied in addition.

***Amount of funds requested from the Fund:*** This is the total amount of any grant assistance sought from the Fund. Include a detailed breakdown of how this funding is proposed to be allocated. At a minimum this should include a breakdown of salaries, including any position requested, position title, 100 percent of salary amount and percent directly dedicated to grant activity fringe benefits, travel, equipment, supplies, construction, contracts, and any other direct costs. The budget narrative must include details and costs for each budget category sufficient to determine reasonableness and allowability.

The total amount of requested grant assistance is \$883,167 as the project is being conducted and is intended to serve the Mobjack Bay watershed, of which the vast majority is comprised of areas meeting the DCR definition of “low-income geographic area” (see Figure 3 in Scope of Work).

The MPPDC is requesting a match waiver considering the vast benefits to designated low-income areas covered under the proposed activities. However, the MPPDC is willing to commit \$155,853 of Resilient VA Revolving Loan Funds (RVRF) as match if the match waiver is not accepted.

***Indirect costs are not eligible for funding.*** Salaries of existing staff are ineligible; however, salaries of staff who provide direct and documented support to the grant effort may be considered as match. Please refer to the match requirements in Part III of this manual. For local governments designated as low-income geographic areas, 100 percent of the estimated total project costs should be included.

No indirect costs are requested.

***Amount of funds available:*** This amount, when combined with the amount of funding requested from the Fund, must reflect the total estimated project cost to demonstrate that all necessary funding has been secured to complete the project. Include a description of the source of these funds and evidence of the applicant’s ability to obtain these funds to complete the project.

\$883,167 of DCR grant funds are being requested and a match waiver is being requested for this project serving low-income areas. However, the MPPDC is willing to commit \$155,853 of Resilient VA Revolving Loan Funds (RVRF) as match if the match waiver is not accepted. If the match waiver is not accepted, the total estimated project cost is \$1,039,020. The MPPDC match commitment and authorization letter has been uploaded to the grant portal.

***Authorization to request for funding:*** Local governments seeking funding shall also attach signed documentation authorizing the request for funding.

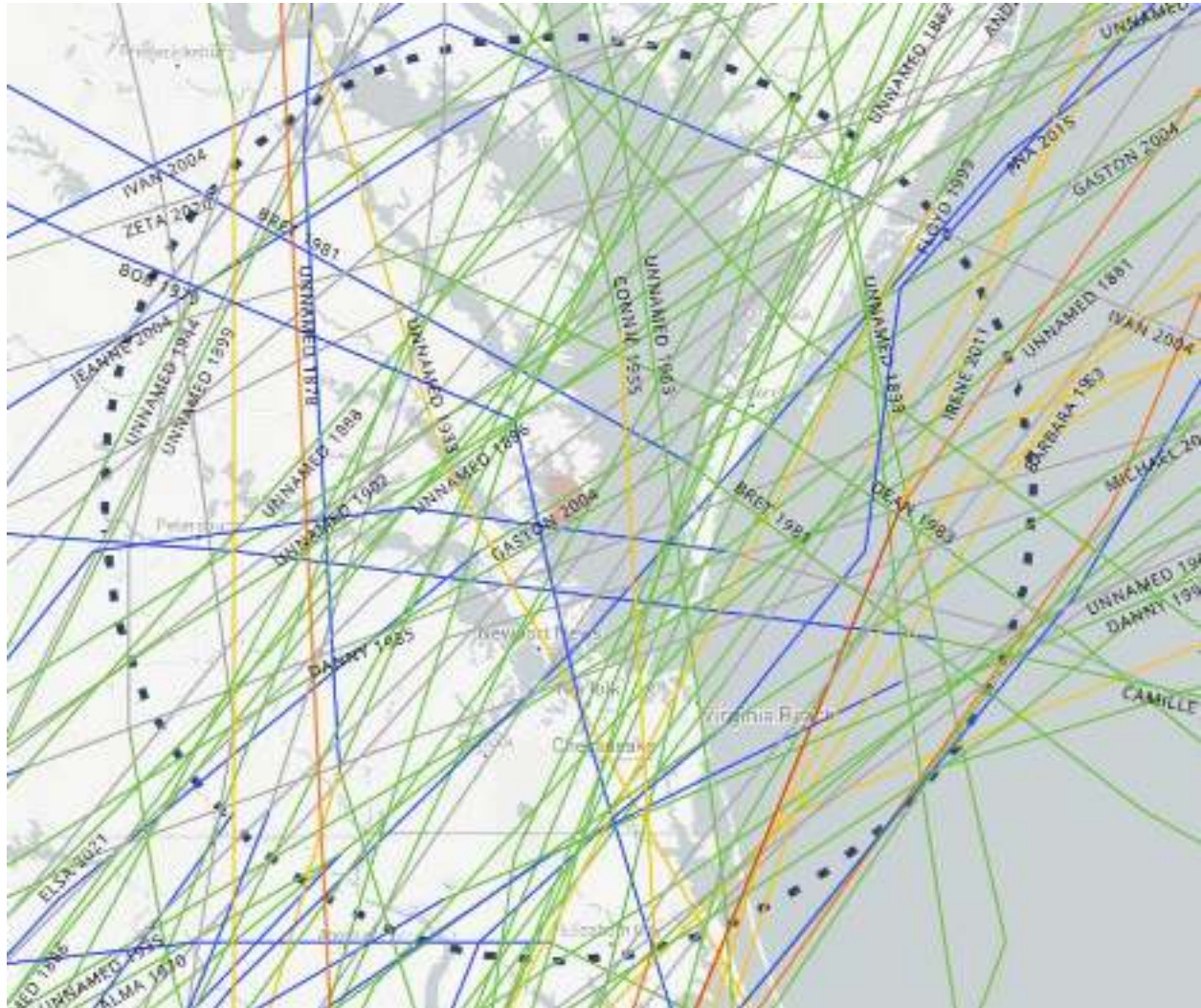
The authorization to request funding has been uploaded to the grant portal.

Applicant Name: Middle Peninsula Planning District Commission  
Community Flood Preparedness Fund &  
Resilient Virginia Revolving Loan Fund  
Detailed Budget Narrative

Period of Performance: January 2025 (or upon receipt of award contract) through December 31, 2028 (or three years from date of award contract execution)  
Submission Date: November 9, 2024

| Grand Total State Funding Request                                                                                     |           |        |        |           |          |           |                |              | \$883,167          |
|-----------------------------------------------------------------------------------------------------------------------|-----------|--------|--------|-----------|----------|-----------|----------------|--------------|--------------------|
| Grand Total Local Share of Project                                                                                    |           |        |        |           |          |           |                |              | \$155,853***       |
| Federal Funding (if applicable)                                                                                       |           |        |        |           |          |           |                |              | \$0                |
| Project Grand Total                                                                                                   |           |        |        |           |          |           |                |              | \$1,039,020*<br>** |
| Locality Cost Match                                                                                                   |           |        |        |           |          |           |                |              | 15%***             |
| ***Match Waiver Requested, however MPPDC Resilient VA Revolving Funds are offered should the match waiver be rejected |           |        |        |           |          |           |                |              |                    |
| Breakout By Cost Type                                                                                                 | Personnel | Fringe | Travel | Equipment | Supplies | Contracts | Indirect Costs | Other Costs  | Total              |
| Federal Share (if applicable)                                                                                         | \$0       | \$0    | \$0    | \$0       | \$0      | \$0       | \$0            | \$0          | \$0                |
| Local Share                                                                                                           | \$0       | \$0    | \$0    | \$0       | \$0      | \$0       | \$0            | \$155,853*** | \$155,853***       |
| State Share                                                                                                           | \$        | \$0    | \$0    | \$0       | \$0      | \$638,167 | \$0            | \$245,000    | \$883,167          |
| Pre-Award/Startup                                                                                                     | \$0       | \$0    | \$0    | \$0       | \$0      | \$0       | \$0            | \$0          | \$0                |
| Maintenance                                                                                                           | \$0       | \$0    | \$0    | \$0       | \$0      | \$0       | \$0            | \$0          | \$0                |
| Total                                                                                                                 | \$0       | \$0    | \$0    | \$0       | \$0      | \$638,167 | \$0            | \$400,853*** | \$1,039,020*<br>** |

According to the NOAA Historical Hurricane Tracker, the Mobjack Bay has experienced 88 storms. The below map shows the tracks of the storms over the Mobjack Bay (highlighted in red).



Storm of '33 - Two hurricanes, one on August 23 and one on September 16, struck the North Carolina and Virginia coasts and caused much devastation on the Middle Peninsula. The August storm brought winds in excess of 80 mph and a storm surge that forced the tide nearly 10 feet above normal. The September storm struck the area 24 days later and had sustained winds as high as 88 mph (measured at the Naval Air Station in Norfolk) and the tide reached 8.3 feet above Mean Lower Low Water (Roth and Cobb, 2001). Much of the land around the Mobjack Bay was inundated.

The "Ash Wednesday Storm" hit Virginia during "Spring Tide" (sun and moon phase to produce a higher than-normal tide) on March 5-9, 1962. The storm moved north off the coast past Virginia Beach and then reversed its course moving again to the south and bringing with it higher tides and

higher waves which battered the coast for several days. Houses on the Middle Peninsula also saw extensive tidal flooding and wave damage. The beaches and shorefront had severe erosion

Hurricane Irene was hit the coast of North Carolina and had impacts on the Virginia coastal on August 26- 27, 2011. Heavy rain, including some totals more than 10 inches, fell on eastern sections of Virginia. Irene lashed the eastern third of Virginia with tropical storm and isolated hurricane force gusts.

Gusts of wind associated with all of these storms increase storm surge and coastal flooding throughout the Mobjack Bay.

Below is the entire list of storms that hit the Mobjack Bay area:

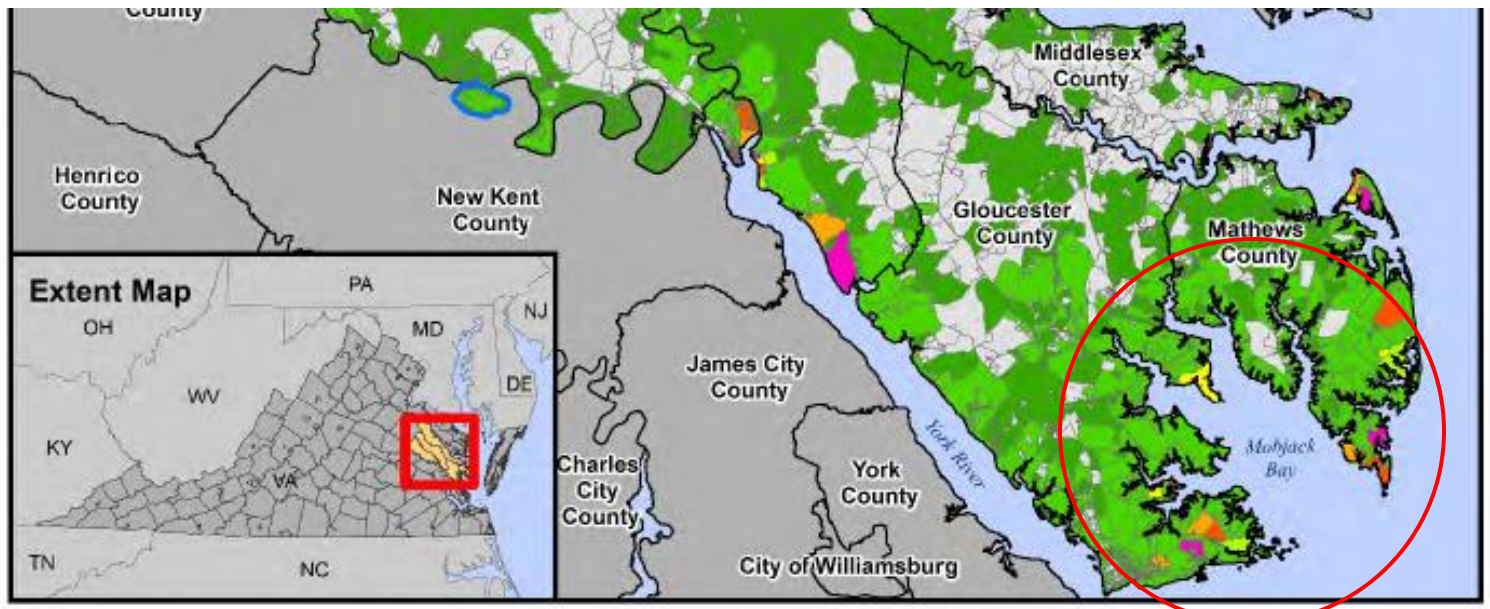
| <b>STORM NAME</b> | <b>DATE RANGE</b>               | <b>MAX WIND SPEED</b> | <b>MIN PRESSURE</b> | <b>MAX CATEGORY</b> |
|-------------------|---------------------------------|-----------------------|---------------------|---------------------|
| OPHELIA 2023      | Sep 21, 2023 to<br>Sep 24, 2023 | 60                    | 981                 | TS                  |
| ELSA 2021         | Jun 30, 2021 to Jul<br>10, 2021 | 75                    | 991                 | H1                  |
| ZETA 2020         | Oct 24, 2020 to Oct<br>30, 2020 | 100                   | 970                 | H3                  |
| ISAIAS 2020       | Jul 28, 2020 to Aug<br>05, 2020 | 80                    | 986                 | H1                  |
| NESTOR 2019       | Oct 17, 2019 to Oct<br>21, 2019 | 50                    | 996                 | TS                  |
| MICHAEL 2018      | Oct 06, 2018 to Oct<br>15, 2018 | 140                   | 919                 | H5                  |
| ANA 2015          | May 06, 2015 to<br>May 12, 2015 | 50                    | 998                 | TS                  |
| ANDREA 2013       | Jun 05, 2013 to Jun<br>08, 2013 | 55                    | 992                 | TS                  |
| IRENE 2011        | Aug 21, 2011 to<br>Aug 30, 2011 | 105                   | 942                 | H3                  |

| STORM NAME    | DATE RANGE                   | MAX WIND SPEED | MIN PRESSURE | MAX CATEGORY |
|---------------|------------------------------|----------------|--------------|--------------|
| HANNA 2008    | Aug 28, 2008 to Sep 08, 2008 | 75             | 977          | H1           |
| ERNESTO 2006  | Aug 24, 2006 to Sep 04, 2006 | 65             | 985          | 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           |
| BONNIE 2004   | Aug 03, 2004 to Aug 14, 2004 | 55             | 1001         | TS           |
| ALLISON 2001  | Jun 05, 2001 to Jun 19, 2001 | 50             | 1000         | TS           |
| HELENE 2000   | Sep 15, 2000 to Sep 25, 2000 | 60             | 986          | 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           |
| DORIA 1971    | Aug 20, 1971 to Aug 29, 1971 | 55             | 989          | TS           |
| ALMA 1970     | May 17, 1970 to May 27, 1970 | 65             | 993          | H1           |
| CAMILLE 1969  | Aug 14, 1969 to Aug 22, 1969 | 150            | 900          | H5           |
| DORIA 1967    | Sep 04, 1967 to Sep 21, 1967 | 85             | 973          | H2           |
| UNNAMED 1967  | Jun 15, 1967 to Jun 22, 1967 | 35             | 1006         | TS           |
| CLEO 1964     | Aug 20, 1964 to Sep 11, 1964 | 130            | 938          | H4           |
| UNNAMED 1963  | Jun 01, 1963 to Jun 04, 1963 | 50             | 1000         | TS           |
| UNNAMED 1961  | Sep 12, 1961 to Sep 15, 1961 | 55             | 995          | TS           |
| DONNA 1960    | Aug 29, 1960 to Sep 14, 1960 | 125            | 930          | H4           |
| BRENDA 1960   | Jul 27, 1960 to Aug 07, 1960 | 60             | 976          | TS           |
| CINDY 1959    | Jul 04, 1959 to Jul 12, 1959 | 65             | 995          | H1           |
| UNNAMED 1956  | Oct 14, 1956 to Oct 19, 1956 | 55             | 996          | TS           |

| STORM NAME   | DATE RANGE                   | MAX WIND SPEED | MIN PRESSURE | MAX CATEGORY |
|--------------|------------------------------|----------------|--------------|--------------|
| IONE 1955    | Sep 10, 1955 to Sep 27, 1955 | 120            | 938          | H4           |
| 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 1949 | Sep 11, 1949 to Sep 14, 1949 | 45             | -1           | TS           |
| 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 | Sep 04, 1916 to Sep 07, 1916 | 45             | -1           | 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 1897 | Oct 23, 1897 to Oct 31, 1897 | 55             | -1           | TS           |
| 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 1893 | Jun 12, 1893 to Jun 20, 1893 | 65             | -1           | H1           |
| UNNAMED 1889 | Sep 12, 1889 to Sep 26, 1889 | 95             | -1           | H2           |
| UNNAMED 1888 | Oct 08, 1888 to Oct 12, 1888 | 95             | 970          | H2           |
| UNNAMED 1888 | Sep 06, 1888 to Sep 13, 1888 | 50             | 999          | TS           |
| UNNAMED 1887 | Oct 09, 1887 to Oct 22, 1887 | 75             | -1           | H1           |
| UNNAMED 1886 | Jun 27, 1886 to Jul 02, 1886 | 85             | -1           | H2           |
| UNNAMED 1886 | Jun 17, 1886 to Jun 24, 1886 | 85             | -1           | H2           |

| STORM NAME   | DATE RANGE                   | MAX WIND SPEED | MIN PRESSURE | MAX CATEGORY |
|--------------|------------------------------|----------------|--------------|--------------|
| 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 1863 | Sep 16, 1863 to Sep 19, 1863 | 60             | -1           | 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 1856 | Aug 19, 1856 to Aug 21, 1856 | 50             | -1           | TS           |
| UNNAMED 1854 | Sep 07, 1854 to Sep 12, 1854 | 110            | 938          | H3           |
| UNNAMED 1851 | Aug 16, 1851 to Aug 27, 1851 | 100            | -1           | H3           |

According to the 2021 Middle Peninsula Regional All Hazards Mitigation Plan (AHMP), the Mobjack Bay has some of the greatest annualized losses due to flooding. The map below shows the project area (circled in red) at the areas that are ranked the highest for annualized loss. This means that they are the areas most impacted by floods.



**Dewberry**

#### Projection:

Virginia StatePlane South  
North American Datum 1983

*Disclaimer: Uncertainties are inherent in any loss estimation methodology. The purpose of the analysis and data sets are to give general indication of areas that may be susceptible to hazards.*

#### Legend:

Tribal Areas

#### Ranked Annualized Loss

- Rank 1 and 2
- Rank 3 and 4
- Rank 5 and 6
- Rank 7 and 8
- Rank 9 and 10
- Unranked Annualized Losses
- Annualized Loss is Zero
- No Annualized Losses

0 2 4 8 12 16 Miles

#### Description:

The greatest annualized losses were ranked by census block for each county. The top ten were given a 'rank' of one to ten, then mapped in groups of two. The remaining census blocks were either unranked, possessed no annualized losses, or were not included in the calculation due to the use of dasymetric data.

#### Data Sources:

HAZUS-MH v4.2 Flood Model  
HAZUS-MH v4.2 County Boundaries  
Building Information - 2010 US Census Data

## **No adverse impact**

The proposed activities will have no adverse impacts on flooding and strives to minimize flood resilience.



## COMMISSIONERS

### Essex County

*Hon. Edwin E. Smith, Jr.*  
*Hon. John C. Magruder*  
*Ms. Sarah Pope*

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*Hon. Dr. William T. Goldsmith*

### Secretary/Director

*Mr. Lewis L. Lawrence, III*

November 4, 2024

Mr. Jake Shaw

Virginia Department of Conservation and Recreation  
Community Flood Preparedness Fund  
600 East Main Street, 24<sup>th</sup> floor  
Richmond, VA 23219-2094

Dear Mr. Jake Shaw,

This is authorization for MPPDC staff to request funding through Virginia Department of Conservation and Recreation's Community Flood Preparedness Fund Round 5. The Middle Peninsula and in particular the Mobjack Bay suffer from one of the highest rates of relative sea-level rise in the Nation. With this ongoing and accelerating threat, many assets in the region and throughout the Commonwealth are not currently insurable by FEMA Flood Insurance or Homeowners Insurance. This represents one of the greatest weaknesses in Virginia's Coastal Resilience Master Planning effort and bringing new and affordable parametric insurance products and strengthening flood insurance outreach and education in Virginia represent one of the greatest opportunities to strengthen both the Middle Peninsula and the Commonwealth's overall resilience to coastal flooding and erosion driven by accelerating sea-level rise.

A match waiver is being requested for this project; however, the MPPDC is willing to commit \$155,853 of Resilient VA Revolving Loan Funds (RVRF) as match if the match waiver request is not accepted. MPPDC staff has been awarded a RVRF loan, but more than a year has lapsed, and MPPDC staff still do not have a signed contract for the RVRF. MPPDC staff anticipate this level of matching funds to be made available from the RVRF request submitted to DCR during November 2023. When the contract shows, until then, those funds remain unencumbered and are not dedicated as match for any other project or project proposal.

If you have any questions about the proposal application, please feel free to reach out to me by email at [llawrence@mppdc.com](mailto:llawrence@mppdc.com) or by phone at 804-758-2311.

Sincerely,

Lewis Lawrence  
Executive Director

## **Benefit-cost analysis**

No benefit-cost analysis is needed for this proposal since the funding request is below \$2,000,000.

## **Repetitive Loss and/or Severe Repetitive Loss Properties**

The red dots on the map below identify the location of repetitive loss and/or severe repetitive loss properties. Within Gloucester County there are a total of 146 properties in that are repetitive and/or severe repetitive loss properties and there are a total of 169 properties in Mathews County that are classified as repetitive and/or severe repetitive loss properties. Within the project area (the area circled in red) there is a total of 208 repetitive and/or severe repetitive loss properties.



## Approach, Milestones, and Deliverables

### Approach-

- **Year 1:**
  - Provision of historic data (VIMS to NPU)
  - NPU determines parametric insurance policy triggers, service area
  - NPU plans and begins implementing pilot provision in Mobjack Bay area
  - NPU and VIMS collaborate on location of additional tide gauges
    - VIMS communicates with municipalities and MPPDC where sensors will be installed to confirm that there are no issues that may prohibit installation at the chosen site; suggest alternative nearby site(s) if so
    - VIMS communicates with GreenStream (sensor developer) to confirm sensor purchase and delivery timeline
  - Tide gauges are installed on publicly owned infrastructure
    - Install water level sensors, and vertically calibrate via survey crew for converting distances to water surface to measured heights above NAVD88
    - Conduct sensitivity tests and collect data for tidal calibration
  - Data from new tide gauges is ingested into Tidewatch (VIMS)
    - Develop StormSense online platform to prepare for new sensors' inclusion into existing streaming database
  - VIMS will communicate with localities regarding new sensor installations, and publicize work at local and regional flood adaptation forums
  - Consociate Media will develop educational materials for the FTF website and other promotional avenues and promote new policy review and advisory services offered by new FTF Insurance Consultant
  - MPPDC FTF Program Administrator will develop Low-Income Parametric Insurance Accelerator program guidelines
  - Procurement and contracting of FTF Insurance Consultant.
  - Insurance Consultant will engage and advise registered and new FTF participants
- **Year 2:**
  - Continued maintenance and management of sensors and their data
  - NPU refine parametric insurance policy triggers based on new data
  - Consociate Media to promote availability of new parametric insurance coverage availability
  - Consociate Media to promote availability of Low-Income Parametric Insurance Accelerator program and solicit participation
  - MPPDC FTF Program Administrator will process Low-Income Parametric Insurance Accelerator applications and coordinate with first responding and eligible property owners
  - NPU and FTF Insurance Consultant will develop policies for property owners receiving assistance through the Accelerator program
  - Insurance Consultant will continue to engage and advise registered and new FTF participants on flood insurance policies
  - VIMS will calibrate Tidewatch tidal prediction model and begin sharing storm tide forecasts via Tidewatch web portal and GreenStream Cloud
  - VIMS will continue to communicate with localities regarding new sensor installations, and publicize work at local and regional flood adaptation forums

- **Year 3:**
  - MPPDC FTF Program Administrator will continue to oversee the Low-Income Parametric Insurance Accelerator program
  - MPPDC FTF Program Administrator and FTF Insurance Consultant will conduct a survey of Accelerator Program participants to solicit and compile general information regarding their policies including but not limited to coverage amounts, items covered, and premium amounts. The Insurance Consultant will use this information to better understand the affordability of premium costs and be able to coordinate with NPU regarding strategies for what can be done to ensure affordability for the greatest number of citizens as possible.
  - VIMS will coordinate with NPU to address any tweaks needed for continued provision of services
  - VIMS will provide continued maintenance and management of sensors and their data
  - Insurance Consultant will continue to engage and advise registered and new FTF participants on flood insurance policies
  - VIMS will continue to communicate with localities regarding new sensor installations, and publicize work at local and regional flood adaptation forums
- **Beyond grant:**
  - Transfer pilot program based on experience in Mobjack Bay
  - VIMS will perform continued maintenance and management of sensors and their data

Additional details and detailed scope of sensor updates, installation and data provision outlined by VIMS is provided as below.

**1. Overview of VIMS and Work on Sea Level Rise:** *Building flood resilience in coastal communities requires a precise understanding of the temporal and spatial scales of inundation and the ability to detect and predict changes in flooding.*

The Virginia Institute of Marine Science (VIMS) is the graduate school in marine science for the College of William & Mary. VIMS has a three-part mission to conduct research in coastal ocean and estuarine science, educate students and citizens, and provide advisory service to policy makers, industry, and the public. VIMS provides these services to Virginia, the nation, and the world. Chartered in 1940, VIMS is currently among the largest marine research and education centers in the United States. In service to VIMS's three-part mission, the institution has shared its long-standing record of flood prediction expertise through its Estuarine Coastal Modeling Research Group, flood-related advisory services via the Center for Coastal Resources Management, and most recently, the VA state legislature has recognized VIMS as a founding member of the new VA Commonwealth Center for Recurrent Flooding Resiliency (CCRFR), established in 2016.<sup>1</sup> The CCRFR is a state-funded virtual research center established between VIMS, Old Dominion University, and the Virginia Coastal Policy Center at the William and Mary Law School, and serves as a source of scientific, socio-economic, legal, and policy analyses aimed at building Virginia's resiliency against flooding.<sup>2</sup>

In 2021, the Virginia Coastal Resilience Master Plan, Phase 1 Report encouraged the expansion of an integrated network of ocean, earth, and atmospheric data collection from both private and public sector organizations that are engaged in active scientific monitoring and observing.<sup>1</sup> The existing sensor network has grown to include monitoring of water levels, land subsidence, wave measurements, current measurements, and atmospheric conditions. These products have been incorporated into data portals and integrated services for public access and to help support resilience planning for municipalities, and commercial businesses. This proposal reviews 21 potential sites for the installation of 6 new water level

sensors in Mobjack Bay, VA. The sensor scope of work presents estimated purchasing costs for the installation of 6 new water level sensors near: 1) State-Owned, Locally-Owned, or Jointly-Owned Working Waterfront sites in Gloucester and Mathews County within the Middle Peninsula Planning District Commission (MPPDC), and 2) bridges over tidal waterways adjacent to frequently inundated lands.

**2. Description of Sensor Network and Tidewatch:** *Here, information on the present regional sensor network is described, along with VIMS' efforts to collect, analyze, and communicate data about sea level rise and forecasts through Tidewatch.*

There are currently 65 publicly-streaming water level monitoring stations throughout southeastern Virginia (Fig. 1). Many of these were recently installed by the USGS, who has installed 19 Ka-band radar sensors in coastal Virginia in 2015 and 2016, and StormSense, which is a smart cities project led by Dr. Derek Loftis at VIMS, which has installed 31 water level sensors in 2018 (28 ultrasonic sonar, and 3 Ka-band radar sensors).<sup>2</sup> Among federal entities, NOAA has 6 (marked in blue) and USGS maintains 19 (noted in green), while among local entities, VIMS has 1, and StormSense has 31 (all marked in red).<sup>3</sup> VIMS operates and maintains a water level monitoring and tidal prediction service called Tidewatch, which now operates under the CCRFR.<sup>2</sup>

Tidewatch ingests web service data streams from NOAA, USGS, and StormSense, but VIMS maintains two gauges of its own in Back River near Langley AFB, and Tangier Island in central Chesapeake Bay.<sup>3</sup> Tidewatch is an operational tidal forecast product that forms its 36-hr forward-looking predictions by extracting tidal harmonic constituents for amplitude, phase, and frequency from observations collected by a water level sensor and can begin making tidal forecasts after a minimum of a 90-day continuous data record after installation and vertical calibration is complete. Tidewatch forecasts update every 30 minutes, and it is set apart from other tidal prediction algorithms by its automated assessment of monitoring observation anomalies in the form of an applied monthly moving average (m30). The residual m30 signal is a unique form of data assimilation used to enhance Tidewatch's tidal predictive accuracy.<sup>2</sup> Predictions from Tidewatch are available on the [CCRFR website](#), the [VIMS website](#), and the VIMS Center for Coastal Resources Management's [AdaptVA portal](#).

It is the intention that the 6 new sensors proposed herein will employ Tidewatch as a starting point to integrate sensors throughout the Mobjack Bay region (Fig. 2). There are 2 NOAA NWLON tide gauges near Mobjack Bay: to the north near the mouth of the Rappahannock River at Windmill Point ([Windmill Point, VA - Station 8636580](#)), and to the south near the mouth of the York River at Yorktown USCG Training Center near Gloucester Point ([Gloucester Point - Station 8637689](#)). There is also a relatively new USGS tide gauge installed in 2019 at the Ware River Yacht Club in Mobjack Bay near Naxera ([Ware River - Station 01670060](#)). These three federally-maintained water level sensors are highly-accurate water level monitoring sensors with sufficient elevation benchmarking surveys to serve as primary data sources for parametric insurance models, which are used to derive flood risk for infrastructural assets in and around coastal floodplains. The goal of installing 6 new sensors in Mobjack Bay is to provide secondary sensor sites with high accuracy water level standards and accurate elevation benchmarking to sufficiently supplement the primary NOAA and USGS sensor sites to supply a parametric insurance model with additional data in each of the tidal tributaries leading to Mobjack Bay to help improve risk estimation for the rural localities near the proposed sensors. Of the 21 proposed sensor sites depicted in red in Fig. 2, there are: 13 near Public Working Waterfront sites (7 Locally-Owned, 1 State-Owned, and 6 Jointly-Owned), and 7 near VDOT-maintained bridges over tidal headwaters of tributaries feeding Mobjack Bay.

In addition to these new sensors, existing sensors, managed by the Chesapeake Bay National Estuarine Research Reserve in Virginia (CBNERR-VA) will contribute to historic and ongoing tidal monitoring.

Specifically, CBNERR-VA maintains water level gauges at three of its reserve sites on the York River. Two of its stations have real-time data telemetry capabilities; all have data archives supported by CBNERR-VA and VIMS; none are yet integrated real-time into the Tidewatch Network. Archived data from these sites will contribute to the historic record informing insurance provision. Meanwhile, ongoing monitoring at these stations will provide complementary data for a holistic picture of Mobjack Bay water levels and flooding. In an effort to ensure that these sensors are equipped for continued and accurate data provision, and to integrate data from these stations into the Tidewatch Network, funds are sought in support of CBNERR-VA equipment telemetry and related staff time.

**3. Description of How Additional Sensors Will Contribute to Understanding Impacts of Sea Level Rise, and Explanation of Sensor Suitability Model for Mobjack Bay:** *VIMS' long-standing research expertise in the region will be leveraged along with the new proposed sensors to better understand localized influences on eustatic sea level change from the Gulf Stream off the shore of Virginia's coast, while identifying the effects on observed sea level change attributed to land subsidence.*

The local communities will benefit from more neighborhood-specific flood forecasts and from appropriating a targeted early warning system to notify stakeholders of potentially hazardous flood conditions predicted and observed at proximal sensors, upon integration into the StormSense network. Additional synergistic emergency management benefits include feedback credits for progressive communities enrolled in FEMA's National Flood Insurance Program, in the interest of providing discounted costs for flood insurance to all. Both the short- and long-term impacts of sea level rise and flooding may be effectively researched and better understood to aid in flood resilience and new partnerships are being established that enable the interconnection of smart communities and technology innovation across agency missions. In a relatively recent presentation to the Hampton Roads Planning District Commission's Regional Resilience Working Group, a regionally resolute simulated gaps analysis review of 85 new suitable bridge-mounted water level sensor locations throughout southeastern Virginia was presented.<sup>4</sup> Suitability was determined by Lidar-detected deck heights for all bridges over open tidally-connected waterways. The sites were identified using SCHISM hydrodynamic modeling simulations compared with the existing network of water level sensor observations, and then a list was exported favoring sites that were <85% match in predictions, when compared with the next nearest suggested location during heavy wind conditions, and <95% match during regular tidal conditions. Of the 85 sites reviewed, 7 new suggested sensor installation sites near Mobjack Bay were identified as potential locations with bridges of sufficient elevation with consideration of projected sea level trends.<sup>4</sup> A map of those suggested sites are presented in Fig. 2, and a small number of these sites have since had sensors installed nearby by StormSense or the USGS, and [StormSense's data portal](#) updates every 6 minutes with new real-time water elevation measurements, and it contains cloud archiving of all past recorded water level observations.<sup>3,6,7,8</sup>

**4. Description of Coordination with Local Governments on Sensor Installation and Maintenance:**

*Dr. Loftis regularly participates and presents StormSense's progress on sensor installations in local flood adaptation forums and to localities, Regional Planning District Commissions, and the Commonwealth of Virginia.*

StormSense currently holds data management and maintenance calls with GreenStream and participating localities monthly to address to discuss data integration, planned sensor installations, and any support needs for currently-installed water-level sensors. In the first three quarters of this project, Dr. Loftis will communicate with the localities/entities involved, including Gloucester County, Mathews County and Middle Peninsula Planning District Commission, to help determine sensor placement sites and feasibility at those sites ultimately chosen. Moreover, the Middle Peninsula PDC's communication with county administrators during these three first project quarters will include education on the benefits of parametric insurance and exploration of local benefits toward potential future cost sharing.

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### **Milestones:**

- **MILESTONE 1** - Tide gauges are installed on publicly owned infrastructure and ingested into Tidewatch
- **MILESTONE 2** - Consociate Media will develop educational materials for the FTF website and other promotional avenues and promote new policy review and advisory services offered by new FTF Insurance Consultant and availability of Low-Income Parametric Insurance Accelerator program and solicit participation.
- **MILESTONE 3** - MPPDC FTF Program Administrator will develop Low-Income Parametric Insurance Accelerator program guidelines and will process Low-Income Parametric Insurance Accelerator applications and coordinate with first responding and eligible property owners
- **MILESTONE 4** - Procurement and contracting of FTF Insurance Consultant and will engage and advise registered and new FTF participants
- **MILESTONE 5** - MPPDC FTF Program Administrator and FTF Insurance Consultant will conduct a survey of Accelerator Program participants to solicit and compile general information regarding their policies including but not limited to coverage amounts, items covered, and premium amounts. The Insurance Consultant will use this information to better understand the affordability of premium costs and be able to coordinate with NPU regarding strategies for what can be done to ensure affordability for the greatest number of citizens as possible.

### **Deliverables:**

- Plan and deploy six new gauges in the Mobjack Bay and its associated tributaries and ingest into Tidewatch.
- Launch Low-Income Parametric Insurance Accelerator. Develop, launch, and promote free parametric insurance policies. In part, MPPDC staff will survey each participant in the Low-Income Parametric Insurance Accelerator to understand premium costs, affordability, likelihood of renewal/sustainability of coverage, etc. A summary of findings will be developed to inform future parametric service area networks and modifications/improvements to the pilot service area as needed. Assess the success of pilot program toward the provision of services to communities beyond the proposal's target geography.
- Hire Flood Insurance Consultant to engage all registered FTF participants and advise as to how to structure new and restructure existing flood insurance policies. Solicit additional FTF participation and provide the same services accordingly. Integrate new sensor data into the Tidewatch Network.
- Educational campaign that promotes the new Mobjack Bay parametric insurance service area and services available through the hiring of a flood insurance consultant.

## Maintenance Plan

Virginia institute of Marine Science (VIMS) will be in charge of the maintenance of the StormSense sensors. The maintenance contracts for StormSense sensors deployed by municipal governments involve the company installing them to address:

- **Solar Components:** Revisit the site twice per year (every 6 months) to clean the solar panel and recalibrate the solar controller as necessary,
- **Battery:** Clean the battery terminals and contacts to remove any corrosive buildup,
- **Data Communications:** Ensure data communications are functioning correctly and diagnose any data communication latency issues in cellular broadband or satellite uplink,
- **Water Level Sensor:** Remove any obstructions between the remote sensor (ultrasonic sonar or Ka-Band Radar) and the water beneath it. Schedule maintenance to cut back foliage if needed.

These things are typically built into the contract with a specific sensor vendor for the first year for new sensors along with data communications and up to 2 periodic maintenance requests per year to deal with damaged sensor component replacement or initial communication errors. Then, the maintenance and data communications fees are paid separately beyond that point and can be adjusted by the site and as specific needs arise, as some sensor sites are likely to need much less maintenance than others. VIMS will take over the expense of maintenance and data communications fees beyond the project.

### Maintenance Schedule

| What will be maintained?                                                                    | Who will conduct maintenance? | When?          |
|---------------------------------------------------------------------------------------------|-------------------------------|----------------|
| <b>YEAR 1</b>                                                                               |                               |                |
| Solar Components                                                                            | Sensory Vendor                | Every 6 months |
| Battery                                                                                     | Sensory Vendor                | Every 6 months |
| Data Communications                                                                         | Sensory Vendor                | Every 6 months |
| Water Level Sensor                                                                          | Sensory Vendor                | Every 6 months |
| <i>*if additional maintenance is required VIMS can call the vendor up to 2 times a year</i> |                               |                |
| <b>YEAR 2</b>                                                                               |                               |                |
| Solar Components                                                                            | VIMS                          | Every 6 months |
| Battery                                                                                     | VIMS                          | Every 6 months |
| Data Communications                                                                         | VIMS                          | Every 6 months |
| Water Level Sensor                                                                          | VIMS                          | Every 6 months |
| <i>*if additional maintenance is required VIMS can call the vendor up to 2 times a year</i> |                               |                |
| <b>YEAR 3</b>                                                                               |                               |                |
| Solar Components                                                                            | VIMS                          | Every 6 months |
| Battery                                                                                     | VIMS                          | Every 6 months |
| Data Communications                                                                         | VIMS                          | Every 6 months |
| Water Level Sensor                                                                          | VIMS                          | Every 6 months |
| <i>*if additional maintenance is required VIMS can call the vendor up to 2 times a year</i> |                               |                |
| <b>Beyond the project</b>                                                                   |                               |                |
| Solar Components                                                                            | VIMS                          | Every 6 months |

|                                                                                             |      |                |
|---------------------------------------------------------------------------------------------|------|----------------|
| Battery                                                                                     | VIMS | Every 6 months |
| Data Communications                                                                         | VIMS | Every 6 months |
| Water Level Sensor                                                                          | VIMS | Every 6 months |
| <i>*if additional maintenance is required VIMS can call the vendor up to 2 times a year</i> |      |                |

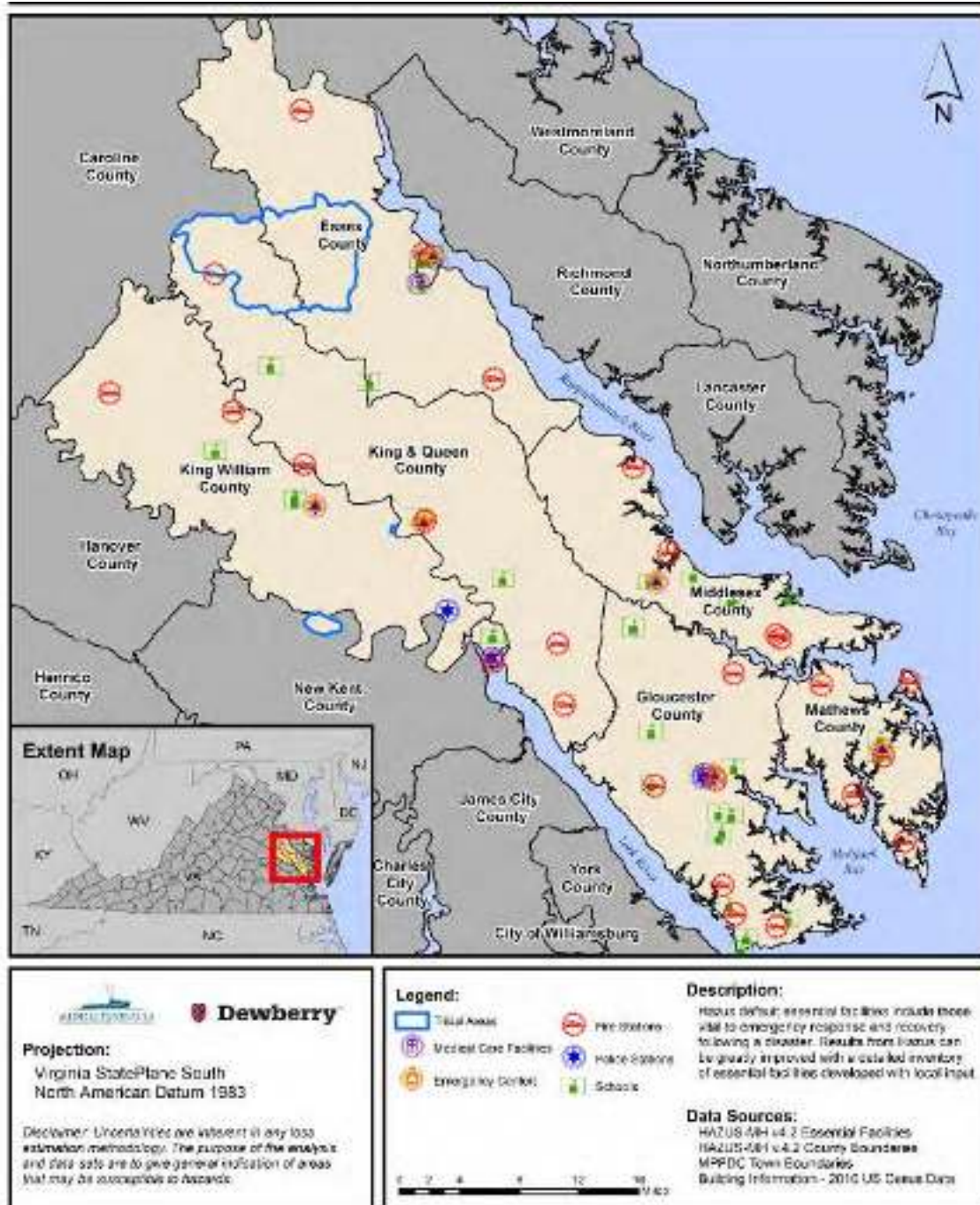
## **Benefit-cost analysis**

Not applicable as the request is below the \$2,000,000 threshold.

## Regional Critical Facilities/Infrastructure

According to the Middle Peninsula Regional All Hazards Mitigation Plan, there critical Facilities/infrastructure within each locality. **Figure 1** shows a map of the critical facilities within the region.

**Figure 1. Map of critical facilities within the Middle Peninsula (AHMP, 2021).**



**KING & QUEEN COUNTY** - The County's Courthouse Complex is located in the central portion of the county along the Route 14 ridgeline, which runs in a southeasterly/northwesterly direction. The Complex is the center of county government and contains all county offices. The law enforcement and public safety functions are located in the new courts/administration building, which has a generator that serves these areas of the building during a power outage. The complex is located outside of the 500-year floodplain.

Additional properties that the County owns include 4 solid waste facilities located at 4 different locations throughout the county and the property that the regional library is located on. All 5 of these properties lie outside of the 500-year floodplain.

There are 4 volunteer fire departments (VFD) and 2 volunteer rescue squads (VRS) located at scattered positions throughout the county. All these emergency response facilities are located outside the 500-year floodplain.

The County's 3 school sites are all located along the high and dry Route 14/721 corridor. Central High School, located in the King and Queen Courthouse area in the middle portion of the county, is the County's designated shelter due to flooding or any other type of natural disaster.

The Middle Peninsula Regional Airport is located in the southern portion of the county and is owned and operated by a regional authority. The Airport Authority is made up of 4 local governments including King and Queen, King William and Gloucester Counties as well as the Town of West Point. Life-Evac, a medical transport helicopter service, is located at the airport. The airport terminal and runway are located outside the 500-year floodplain.

There are no public water or sewer facilities anywhere in the County - all properties in the County are served by individual wells and septic systems.

**ESSEX COUNTY** - The County's Offices are located within the Town of Tappahannock, which is centrally located mid-county along the Route 17 corridor. The County Offices are in a handful of buildings in downtown Tappahannock in an area that is outside of the 500-year floodplain. There are emergency generators at the County Administration Building and at the Sheriff's Office/Dispatch Center.

Additional properties that the County owns include 2 solid waste facilities located at Center Cross and Bray's Fork, the county library, the elementary school/school board offices, and the middle school/high school complex. All properties are located outside of the 500-year floodplain. The new middle school has an emergency generator.

The county/town is served by one volunteer fire department that has 3 fire stations. One station is located in Tappahannock along Airport Road, another is located at the northern end of the county along Route 17 at Loretto and the third station is located at the southern end of the County near Center Cross. The Tappahannock Volunteer Rescue Squad is in downtown Tappahannock, and it serves town residents as well as all county residents. All emergency

response facilities are located outside of the 500-year floodplain. The fire department on Airport Road and the EMS facility downtown have emergency generators.

The Tappahannock-Essex County Community Airport is located off Route 360 at Paul's Crossroads. The airport is located on a high ridgeline, which is outside of the 500-year floodplain.

The new animal shelter that serves the town and county is located at the town's former maintenance facility along Airport Road, which does not flood.

**TOWN OF TAPPAHANNOCK** - The Town of Tappahannock provides public water and sewer services to its citizens. The water system does not sustain damage during floods. The wastewater treatment plant is located along Hoskins Creek on the west side of Route 17. The wastewater treatment plant does not suffer damage during severe flooding events. In the last plan there was mention that there was one sewerage pump station located along Newbill Drive that received flood damage during hurricane strength storms. During Hurricane Isabel in 2003, the electrical controls needed to be repaired since there was flood damage. However, since the last plan the Newbill Drive electrical controls have been raised to above the flood line of Hurricane Isabel in hopes to avoid future issues.

**KING WILLIAM COUNTY** - Public water and sewerage systems serve portions of the Route 360 growth corridor in Central Garage. A package wastewater treatment plant discharges sewer effluent into an unnamed tributary that leads into Moncuin Creek, which then flows into the Pamunkey River. Floodwaters do not adversely impact the wastewater treatment plant.

The public water system serves the relatively high and dry Central Garage area. Therefore, this Route 360/30 area water system does not sustain damage from flooding events.

**TOWN OF WEST POINT** - Located at the confluence of the Mattaponi and Pamunkey Rivers where they become the headwaters of the York River, there is public infrastructure, private residences and downtown businesses that are at risk of flooding during severe storms.

The town provides both public water and sewer service to its residents. The water system is owned and operated by the town and sustains little damage during flooding events. The ownership and operation of the town's sewerage system has been turned over to the Hampton Roads Sanitation District (HRSD). The wastewater treatment plant is located at the east end of 23rd Street. The facility did not flood during Hurricane Isabel in 2003 and the vital electrical and mechanical controls are on a slightly elevated portion of the site and therefore, the facility's location does not pose a risk of flooding.

A sewer pump station located on 2nd Street near the point does have a flooding problem. During Hurricane Isabel, the pump motors in the well house flooded and needed to be dried out. However, the electrical controls are mounted high enough in the pump house so that they did not sustain flood damage. There is a sewer pump station located on 13th street that did not flood during Hurricane Isabel, but the floodwaters did reach within 1-foot of the facility.

**GLOUCESTER COUNTY** - The county has a relatively extensive network of public water and sewer facilities in and around the Gloucester Courthouse area. The Beaverdam Reservoir, located just north of the courthouse area, serves as the drinking water source for the county's public water supply system. As discussed earlier in the Dam Impoundment Section of the plan, the dam is structurally well-built and remains fully certified by the DCR (Figure 3). Below the dam there are approximately 200 homes that would flood if the Reservoir structure failed. However, in 1999 the impoundment overflowed during Hurricane Floyd yet no flood damage to the home since the excess water flowed downstream using the emergency spillway.

The table below provides a list of dams from the Virginia Department of Conservation and Recreation's Certification List within Gloucester County that may be impacted by natural hazards as well.

| Dam Name             | Class | Height  | Capacity in Acre Feet | Water Body      |
|----------------------|-------|---------|-----------------------|-----------------|
| Woodberry Farm       | 3     | 8       | 158                   | Jones Creek     |
| Weaver Dam           | 3     | 6       | 81                    | Jones Creek     |
| Haynes               | 3     | 15      | 366                   | Carter Creek    |
| Robins Creek         | 3     | 16      | 219                   | Wilson          |
| Cow Creek            | 2     | 16      | 931                   | Cow             |
| Burke Stream         | 3     | 20      | 481                   | Burke Mill      |
| Cypress Shores River | 3     | 15      | 143                   | Piankatank      |
| Haines Pond          | 3     | 9       | 50                    | Carter Creek    |
| Beaverdam Reservoir  | 1     | 39      | 20,523                | Beaverdam Creek |
| Wood Duck Pond       | 4     | Unknown | Unknown               | Unknown         |
| Leigh Lake           | 4     | 12      | unknown               | Jones Creek     |

The water distribution system does not suffer damage during severe storm events since it is a closed underground system. The sewerage collection lines and pumps stations are owned and operated by Gloucester County. There are 2 pump stations in the Gloucester Courthouse area (Pump # 11 and Pump #13) that sustained damage during Hurricane Floyd in 1999. The damage was caused by floodwaters resulting from the overtopping of the Beaverdam Reservoir as previously mentioned. After the wastewater is collected, it is transported in a large force main that runs down Route 17, crosses under the York River and then flows into the York River Wastewater Treatment Plant in York County. The large force main and treatment plant are owned and operated by the Hampton Roads Sanitation District. The force main is a closed underground system that does not sustain damage during severe flooding events.

The Achilles Elementary School site, located in the southeastern section of the county, is adversely affected by flood waters from storms surges associated with a Category 1 hurricane.

**MATHEWS COUNTY** - New Point Comfort Lighthouse, located at the southern tip of Mathews County, has undergone significant flood damage resulting from the lighthouse being separated from the mainland due to severe erosion.

Mathews County owns the lighthouse facility. In 2016 the Waterfront Development Corporation installed a new pier at the lighthouse that allowed contractors to access the site for restoring the stone tower.

Restoration of the tower started in 2020 and concluded on October 12, 2021, when a ceremony was held to relight the lighthouse.

**MIDDLESEX COUNTY** - The county does not currently operate any public water systems. However, there are community water systems operated by private companies serving the Village of Saluda and some of the larger residential subdivisions in the lower portion of the county in the Hartfield and Deltaville areas. These water systems do not sustain flood damages from severe hurricanes and nor'easters.

The County does have a public sewerage system in the planning stages that will serve the Village of Saluda and properties east along the Route 33 corridor towards the Cook's Corner area. The wastewater treatment plant and outfall for this proposed system will be built along a tributary of Urbanna Creek, located between Saluda and Cook's Corner.

Since this project is in the permitting/design stage, it is assumed that the facility will be designed and constructed in a manner to avoid any future adverse impacts from floodwaters.

**TOWN OF URBANNA** - The Town of Urbanna provides public water and sewer service to its residents. The town operates the public water system which serves town residents as well as some nearby customers in surrounding Middlesex County.

The sewerage collection and treatment system is operated by the HRSD. When flood waters are anticipated, the staff at HRSD turn off the pumps at the sewerage pump stations to prevent pumping floodwaters into the wastewater treatment plant. The wastewater treatment plant is located on high land next to the town's water tower, which is an area that does not flood.

The town operates the Urbanna Town Marina that includes a boat/fishing dock, a small beach area, a small park, and a small operations building - all located at Upton's Point along the Rappahannock River. This facility suffered significant damage in 2003 from Hurricane Isabel and has been completely rebuilt since then at an approximate cost of \$850,000.

## FIRMETTE of Project Area



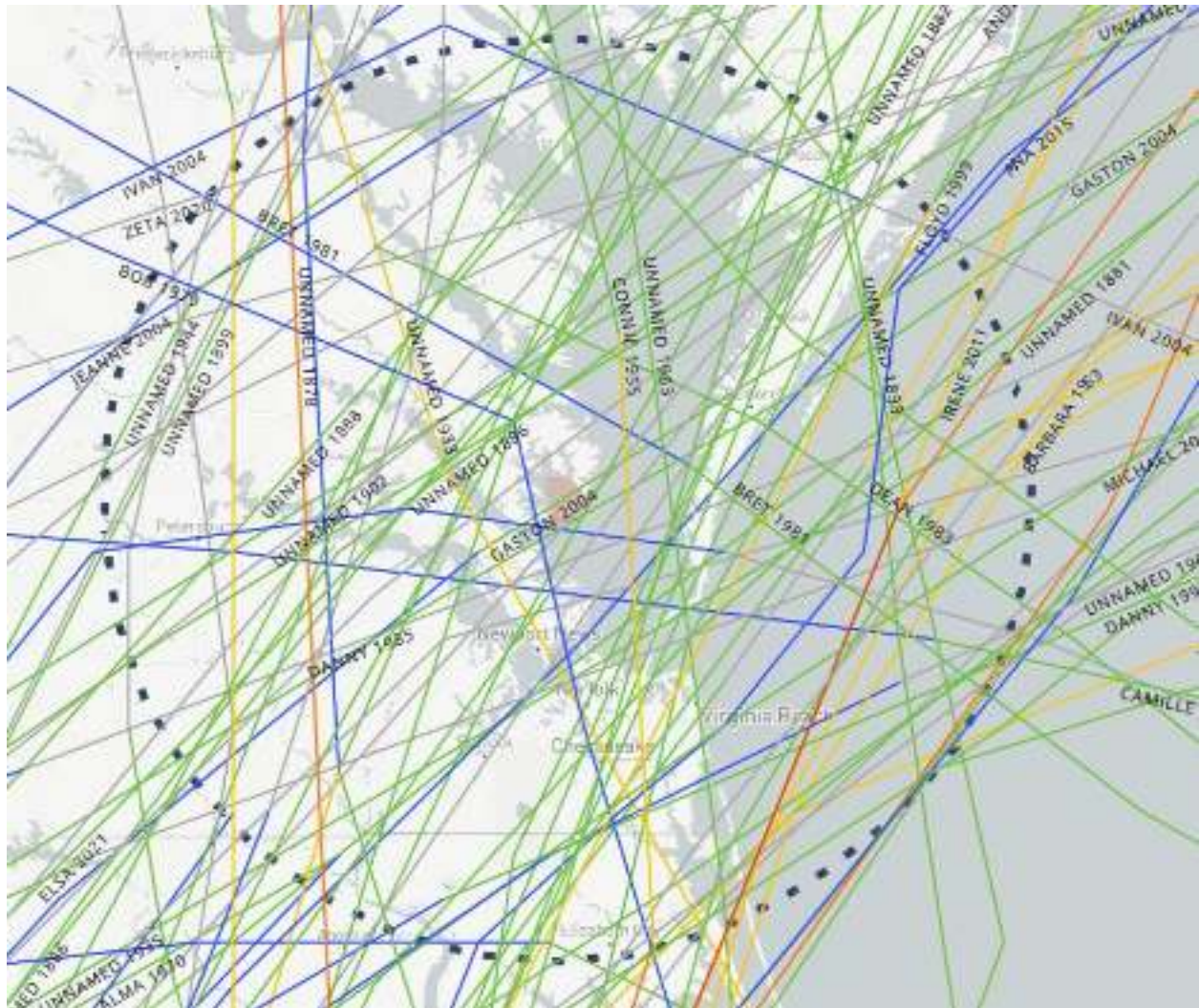
## **Flood Ordinances for Gloucester and Mathews County**

**Gloucester County** – [Chapter 8.5 - FLOODPLAIN MANAGEMENT | Code of Ordinances | Gloucester County, VA | Municode Library](#)

**Mathews County** – [http://mathewsco-va.elaws.us/code/coor\\_ch63](http://mathewsco-va.elaws.us/code/coor_ch63)

## Historic Flooding data and Hydrologic Studies

According to the NOAA Historical Hurricane Tracker, the Mobjack Bay has experienced 88 storms. The below map shows the tracks of the storms over the Mobjack Bay (highlighted in red).



Some of the largest storms causing the most flooding include:

Storm of '33 - Two hurricanes, one on August 23 and one on September 16, struck the North Carolina and Virginia coasts and caused much devastation on the Middle Peninsula. The August storm brought winds in excess of 80 mph and a storm surge that forced the tide nearly 10 feet above normal. The September storm struck the area 24 days later and had sustained winds as high as 88 mph (measured at the Naval Air Station in Norfolk) and the tide reached 8.3 feet above Mean Lower Low Water (Roth and Cobb, 2001). Much of the land around the Mobjack Bay was inundated.

The "Ash Wednesday Storm" hit Virginia during "Spring Tide" (sun and moon phase to produce a higher than-normal tide) on March 5-9, 1962. The storm moved north off the coast past Virginia Beach and then reversed its course moving again to the south and bringing with it higher tides and

higher waves which battered the coast for several days. Houses on the Middle Peninsula also saw extensive tidal flooding and wave damage. The beaches and shorefront had severe erosion

Hurricane Irene was hit the coast of North Carolina and had impacts on the Virginia coastal on August 26- 27, 2011. Heavy rain, including some totals more than 10 inches, fell on eastern sections of Virginia. Irene lashed the eastern third of Virginia with tropical storm and isolated hurricane force gusts.

Gusts of wind associated with all of these storms increase storm surge and coastal flooding throughout the Mobjack Bay.

Below is the entire list of storms that hit the Mobjack Bay area:

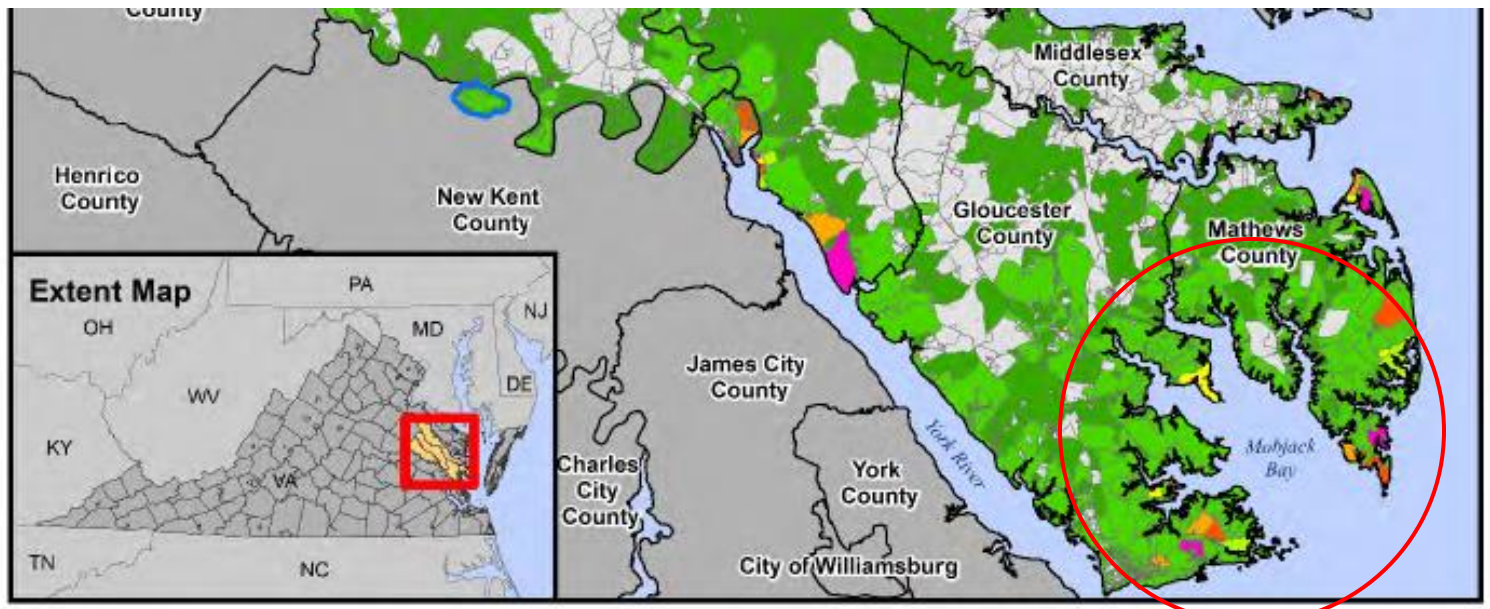
| <b>STORM NAME</b> | <b>DATE RANGE</b>               | <b>MAX WIND SPEED</b> | <b>MIN PRESSURE</b> | <b>MAX CATEGORY</b> |
|-------------------|---------------------------------|-----------------------|---------------------|---------------------|
| OPHELIA 2023      | Sep 21, 2023 to<br>Sep 24, 2023 | 60                    | 981                 | TS                  |
| ELSA 2021         | Jun 30, 2021 to Jul<br>10, 2021 | 75                    | 991                 | H1                  |
| ZETA 2020         | Oct 24, 2020 to Oct<br>30, 2020 | 100                   | 970                 | H3                  |
| ISAIAS 2020       | Jul 28, 2020 to Aug<br>05, 2020 | 80                    | 986                 | H1                  |
| NESTOR 2019       | Oct 17, 2019 to Oct<br>21, 2019 | 50                    | 996                 | TS                  |
| MICHAEL 2018      | Oct 06, 2018 to Oct<br>15, 2018 | 140                   | 919                 | H5                  |
| ANA 2015          | May 06, 2015 to<br>May 12, 2015 | 50                    | 998                 | TS                  |
| ANDREA 2013       | Jun 05, 2013 to Jun<br>08, 2013 | 55                    | 992                 | TS                  |
| IRENE 2011        | Aug 21, 2011 to<br>Aug 30, 2011 | 105                   | 942                 | H3                  |

| STORM NAME    | DATE RANGE                   | MAX WIND SPEED | MIN PRESSURE | MAX CATEGORY |
|---------------|------------------------------|----------------|--------------|--------------|
| HANNA 2008    | Aug 28, 2008 to Sep 08, 2008 | 75             | 977          | H1           |
| ERNESTO 2006  | Aug 24, 2006 to Sep 04, 2006 | 65             | 985          | 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           |
| BONNIE 2004   | Aug 03, 2004 to Aug 14, 2004 | 55             | 1001         | TS           |
| ALLISON 2001  | Jun 05, 2001 to Jun 19, 2001 | 50             | 1000         | TS           |
| HELENE 2000   | Sep 15, 2000 to Sep 25, 2000 | 60             | 986          | 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           |
| DORIA 1971    | Aug 20, 1971 to Aug 29, 1971 | 55             | 989          | TS           |
| ALMA 1970     | May 17, 1970 to May 27, 1970 | 65             | 993          | H1           |
| CAMILLE 1969  | Aug 14, 1969 to Aug 22, 1969 | 150            | 900          | H5           |
| DORIA 1967    | Sep 04, 1967 to Sep 21, 1967 | 85             | 973          | H2           |
| UNNAMED 1967  | Jun 15, 1967 to Jun 22, 1967 | 35             | 1006         | TS           |
| CLEO 1964     | Aug 20, 1964 to Sep 11, 1964 | 130            | 938          | H4           |
| UNNAMED 1963  | Jun 01, 1963 to Jun 04, 1963 | 50             | 1000         | TS           |
| UNNAMED 1961  | Sep 12, 1961 to Sep 15, 1961 | 55             | 995          | TS           |
| DONNA 1960    | Aug 29, 1960 to Sep 14, 1960 | 125            | 930          | H4           |
| BRENDA 1960   | Jul 27, 1960 to Aug 07, 1960 | 60             | 976          | TS           |
| CINDY 1959    | Jul 04, 1959 to Jul 12, 1959 | 65             | 995          | H1           |
| UNNAMED 1956  | Oct 14, 1956 to Oct 19, 1956 | 55             | 996          | TS           |

| STORM NAME   | DATE RANGE                   | MAX WIND SPEED | MIN PRESSURE | MAX CATEGORY |
|--------------|------------------------------|----------------|--------------|--------------|
| IONE 1955    | Sep 10, 1955 to Sep 27, 1955 | 120            | 938          | H4           |
| 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 1949 | Sep 11, 1949 to Sep 14, 1949 | 45             | -1           | TS           |
| 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 | Sep 04, 1916 to Sep 07, 1916 | 45             | -1           | 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 1897 | Oct 23, 1897 to Oct 31, 1897 | 55             | -1           | TS           |
| 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 1893 | Jun 12, 1893 to Jun 20, 1893 | 65             | -1           | H1           |
| UNNAMED 1889 | Sep 12, 1889 to Sep 26, 1889 | 95             | -1           | H2           |
| UNNAMED 1888 | Oct 08, 1888 to Oct 12, 1888 | 95             | 970          | H2           |
| UNNAMED 1888 | Sep 06, 1888 to Sep 13, 1888 | 50             | 999          | TS           |
| UNNAMED 1887 | Oct 09, 1887 to Oct 22, 1887 | 75             | -1           | H1           |
| UNNAMED 1886 | Jun 27, 1886 to Jul 02, 1886 | 85             | -1           | H2           |
| UNNAMED 1886 | Jun 17, 1886 to Jun 24, 1886 | 85             | -1           | H2           |

| STORM NAME   | DATE RANGE                   | MAX WIND SPEED | MIN PRESSURE | MAX CATEGORY |
|--------------|------------------------------|----------------|--------------|--------------|
| 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 1863 | Sep 16, 1863 to Sep 19, 1863 | 60             | -1           | 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 1856 | Aug 19, 1856 to Aug 21, 1856 | 50             | -1           | TS           |
| UNNAMED 1854 | Sep 07, 1854 to Sep 12, 1854 | 110            | 938          | H3           |
| UNNAMED 1851 | Aug 16, 1851 to Aug 27, 1851 | 100            | -1           | H3           |

According to the 2021 Middle Peninsula Regional All Hazards Mitigation Plan (AHMP), the Mobjack Bay has some of the greatest annualized losses due to flooding. The map below shows the project area (circled in red) at the areas that are ranked the highest for annualized loss. This means that they are the areas most impacted by floods.



**Dewberry**

#### Projection:

Virginia StatePlane South  
North American Datum 1983

*Disclaimer: Uncertainties are inherent in any loss estimation methodology. The purpose of the analysis and data sets are to give general indication of areas that may be susceptible to hazards.*

#### Legend:

- Tribal Areas
- Ranked Annualized Loss**
  - Rank 1 and 2
  - Rank 3 and 4
  - Rank 5 and 6
  - Rank 7 and 8
  - Rank 9 and 10
  - Unranked Annualized Losses
  - Annualized Loss is Zero
  - No Annualized Losses

0 2 4 8 12 16 Miles

#### Description:

The greatest annualized losses were ranked by census block for each county. The top ten were given a 'rank' of one to ten, then mapped in groups of two. The remaining census blocks were either unranked, possessed no annualized losses, or were not included in the calculation due to the use of dasymetric data.

#### Data Sources:

HAZUS-MH v4.2 Flood Model  
HAZUS-MH v4.2 County Boundaries  
Building Information - 2010 US Census Data

**LINKS TO COMPREHENSIVE PLAN FROM MIDDLE PENINSULA LOCALITIES (IE. PROJECT AREA):**

**Mathews County-** <https://mathewscountyva.gov/DocumentCenter/View/213/2030-Comprehensive-Plan-PDF>

**Gloucester County –** [https://pub.glocositedocs.com/PZ/Comp\\_Plan/2016\\_Gloucester\\_County\\_Comprehensive\\_Plan\\_and\\_Appendix\\_J.pdf](https://pub.glocositedocs.com/PZ/Comp_Plan/2016_Gloucester_County_Comprehensive_Plan_and_Appendix_J.pdf)

**King & William County -** <https://www.kwc.gov/DocumentCenter/View/1548/Comprehensive-Plan-FINAL-Adopted-2022-05-23-With-Maps>

**King & Queen County –** <https://p63d74.p3cdn1.secureserver.net/wp-content/uploads/2023/08/Full-KQ-Comp-Plan-2030-Adopted-03.11.2019.pdf>

**Middlesex County -** <https://www.co.middlesex.va.us/DocumentCenter/View/1275>

**Essex County –** <https://www.essexva.gov/media/4406>

**Town of Urbanna -** <https://urbannava.gov/PDFs/ComprehensivePlan.pdf>

**Town of West Point -** <https://west-point.va.us/Documents/Government/Boards%20And%20Commissions/Planning%20Commission/8657-Comprehensive-Plan-Adopted-11262019.pdf>

**Town of Tappahannock -** [https://www.tappahannock-va.gov/FINAL%20Tappahannock%20Comprehensive%20Plan%204.9.24%20PRINT%20\(1\).pdf](https://www.tappahannock-va.gov/FINAL%20Tappahannock%20Comprehensive%20Plan%204.9.24%20PRINT%20(1).pdf)

## Maintenance Plan

Virginia institute of Marine Science (VIMS) will be in charge of the maintenance of the StormSense sensors. The maintenance contracts for StormSense sensors deployed by municipal governments involve the company installing them to address:

- **Solar Components:** Revisit the site twice per year (every 6 months) to clean the solar panel and recalibrate the solar controller as necessary,
- **Battery:** Clean the battery terminals and contacts to remove any corrosive buildup,
- **Data Communications:** Ensure data communications are functioning correctly and diagnose any data communication latency issues in cellular broadband or satellite uplink,
- **Water Level Sensor:** Remove any obstructions between the remote sensor (ultrasonic sonar or Ka-Band Radar) and the water beneath it. Schedule maintenance to cut back foliage if needed.

These things are typically built into the contract with a specific sensor vendor for the first year for new sensors along with data communications and up to 2 periodic maintenance requests per year to deal with damaged sensor component replacement or initial communication errors. Then, the maintenance and data communications fees are paid separately beyond that point and can be adjusted by the site and as specific needs arise, as some sensor sites are likely to need much less maintenance than others. VIMS will take over the expense of maintenance and data communications fees beyond the project.

### Maintenance Schedule

| What will be maintained?                                                                    | Who will conduct maintenance? | When?          |
|---------------------------------------------------------------------------------------------|-------------------------------|----------------|
| <b>YEAR 1</b>                                                                               |                               |                |
| Solar Components                                                                            | Sensory Vendor                | Every 6 months |
| Battery                                                                                     | Sensory Vendor                | Every 6 months |
| Data Communications                                                                         | Sensory Vendor                | Every 6 months |
| Water Level Sensor                                                                          | Sensory Vendor                | Every 6 months |
| <i>*if additional maintenance is required VIMS can call the vendor up to 2 times a year</i> |                               |                |
| <b>YEAR 2</b>                                                                               |                               |                |
| Solar Components                                                                            | VIMS                          | Every 6 months |
| Battery                                                                                     | VIMS                          | Every 6 months |
| Data Communications                                                                         | VIMS                          | Every 6 months |
| Water Level Sensor                                                                          | VIMS                          | Every 6 months |
| <i>*if additional maintenance is required VIMS can call the vendor up to 2 times a year</i> |                               |                |
| <b>YEAR 3</b>                                                                               |                               |                |
| Solar Components                                                                            | VIMS                          | Every 6 months |
| Battery                                                                                     | VIMS                          | Every 6 months |
| Data Communications                                                                         | VIMS                          | Every 6 months |
| Water Level Sensor                                                                          | VIMS                          | Every 6 months |
| <i>*if additional maintenance is required VIMS can call the vendor up to 2 times a year</i> |                               |                |
| <b>Beyond the project</b>                                                                   |                               |                |
| Solar Components                                                                            | VIMS                          | Every 6 months |

|                                                                                             |      |                |
|---------------------------------------------------------------------------------------------|------|----------------|
| Battery                                                                                     | VIMS | Every 6 months |
| Data Communications                                                                         | VIMS | Every 6 months |
| Water Level Sensor                                                                          | VIMS | Every 6 months |
| <i>*if additional maintenance is required VIMS can call the vendor up to 2 times a year</i> |      |                |

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|---------------------------------------------------------------------------------------------|-------------------------------|----------------|
| <b>YEAR 1</b>                                                                               |                               |                |
| Solar Components                                                                            | Sensory Vendor                | Every 6 months |
| Battery                                                                                     | Sensory Vendor                | Every 6 months |
| Data Communications                                                                         | Sensory Vendor                | Every 6 months |
| Water Level Sensor                                                                          | Sensory Vendor                | Every 6 months |
| <i>*if additional maintenance is required VIMS can call the vendor up to 2 times a year</i> |                               |                |
| <b>YEAR 2</b>                                                                               |                               |                |
| Solar Components                                                                            | VIMS                          | Every 6 months |
| Battery                                                                                     | VIMS                          | Every 6 months |
| Data Communications                                                                         | VIMS                          | Every 6 months |
| Water Level Sensor                                                                          | VIMS                          | Every 6 months |
| <i>*if additional maintenance is required VIMS can call the vendor up to 2 times a year</i> |                               |                |
| <b>YEAR 3</b>                                                                               |                               |                |
| Solar Components                                                                            | VIMS                          | Every 6 months |
| Battery                                                                                     | VIMS                          | Every 6 months |
| Data Communications                                                                         | VIMS                          | Every 6 months |
| Water Level Sensor                                                                          | VIMS                          | Every 6 months |
| <i>*if additional maintenance is required VIMS can call the vendor up to 2 times a year</i> |                               |                |
| <b>Beyond the project</b>                                                                   |                               |                |
| Solar Components                                                                            | VIMS                          | Every 6 months |

|                                                                                             |      |                |
|---------------------------------------------------------------------------------------------|------|----------------|
| Battery                                                                                     | VIMS | Every 6 months |
| Data Communications                                                                         | VIMS | Every 6 months |
| Water Level Sensor                                                                          | VIMS | Every 6 months |
| <i>*if additional maintenance is required VIMS can call the vendor up to 2 times a year</i> |      |                |





## COMMISSIONERS

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Hon. John C. Magruder  
Ms. Sarah Pope

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Ms. Kendall Webre

### Town of Urbanna

Hon. Dr. William T. Goldsmith

### Secretary/Director

Mr. Lewis L. Lawrence, III

November 4, 2024

Mr. Jake Shaw

Virginia Department of Conservation and Recreation  
Community Flood Preparedness Fund  
600 East Main Street, 24<sup>th</sup> floor  
Richmond, VA 23219-2094

Dear Mr. Jake Shaw,

This is authorization for MPPDC staff to request funding through Virginia Department of Conservation and Recreation's Community Flood Preparedness Fund Round 5. The Middle Peninsula and in particular the Mobjack Bay suffer from one of the highest rates of relative sea-level rise in the Nation. With this ongoing and accelerating threat, many assets in the region and throughout the Commonwealth are not currently insurable by FEMA Flood Insurance or Homeowners Insurance. This represents one of the greatest weaknesses in Virginia's Coastal Resilience Master Planning effort and bringing new and affordable parametric insurance products and strengthening flood insurance outreach and education in Virginia represent one of the greatest opportunities to strengthen both the Middle Peninsula and the Commonwealth's overall resilience to coastal flooding and erosion driven by accelerating sea-level rise.

A match waiver is being requested for this project; however, the MPPDC is willing to commit \$155,853 of Resilient VA Revolving Loan Funds (RVRF) as match if the match waiver request is not accepted. MPPDC staff has been awarded a RVRF loan, but more than a year has lapsed, and MPPDC staff still do not have a signed contract for the RVRF. MPPDC staff anticipate this level of matching funds to be made available from the RVRF request submitted to DCR during November 2023. When the contract shows, until then, those funds remain unencumbered and are not dedicated as match for any other project or project proposal.

If you have any questions about the proposal application, please feel free to reach out to me by email at [llawrence@mppdc.com](mailto:llawrence@mppdc.com) or by phone at 804-758-2311.

Sincerely,

Lewis Lawrence  
Executive Director



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November 4, 2024

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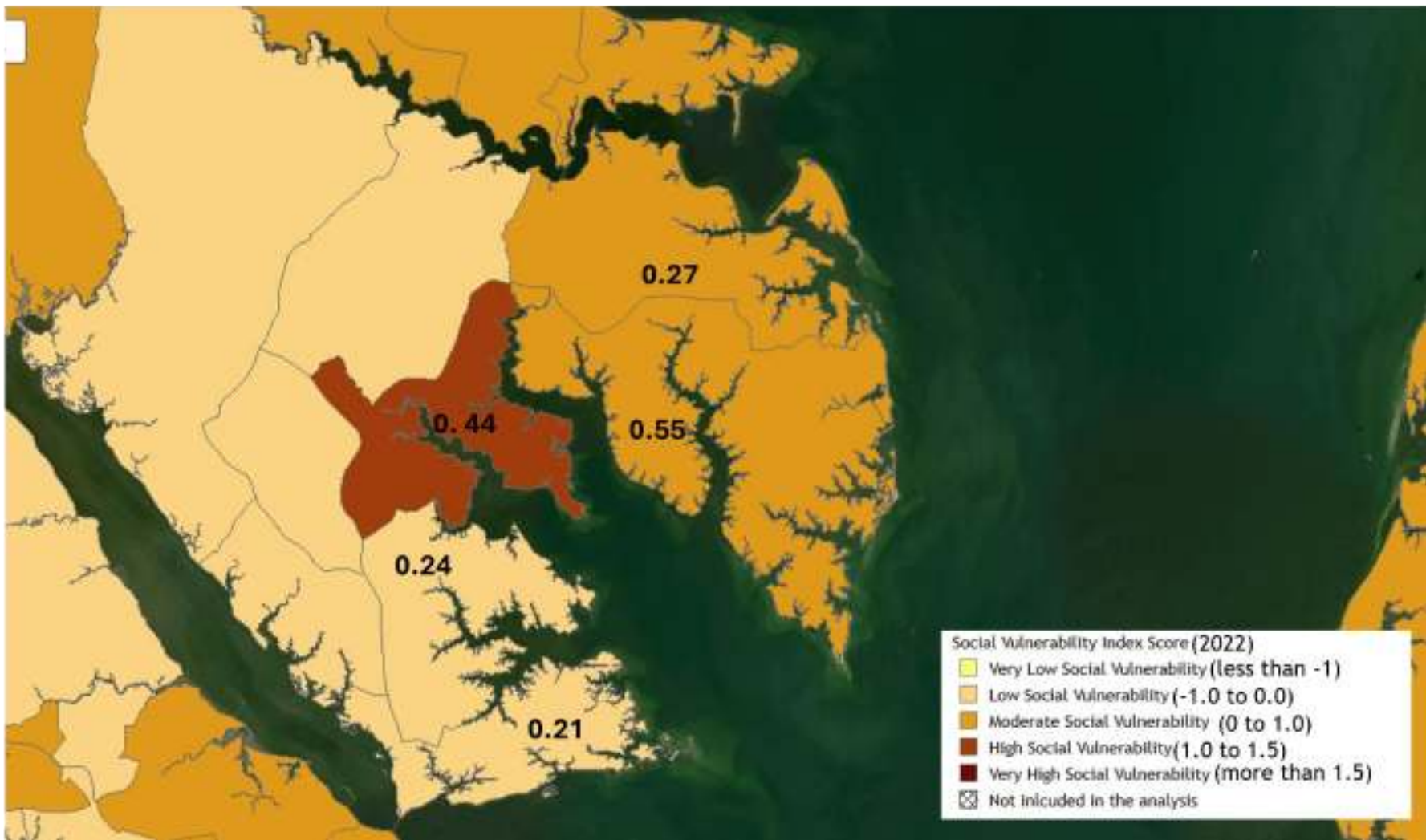
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Sincerely,

Lewis Lawrence  
Executive Director

## Social Vulnerability Index Scores within the Mobjack Watershed



Median SVI Score is 0.27.



**GLOUCESTER COUNTY**  
**County Administrator's Office**

6489 Main Street  
Gloucester, VA 23061  
(804) 693-4042  
[www.gloucesterva.gov](http://www.gloucesterva.gov)



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

RE: Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund  
ROUND 5

Dear Lewie:

Gloucester County supports the Middle Peninsula Planning District Commission's (MPPDC) application requesting funding under the Department of Conservation and Recreation (DCR)'s Community Flood Preparedness Fund (CFPF). The proposals submitted by MPPDC staff enhance and build upon regional and local resilience efforts within the Middle Peninsula. 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 Incentive Program design and the MPPDC FTF Program design provide the operational and administrative oversight for resiliency planning, coordination, and implementation. These programs, especially MPPDC FTF program, recognize the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

As a partnering locality applying for grant funds, we appreciate the ability to work with the MPPDC to preserve the Gloucester Point Beach Park through the construction of a living shoreline. The project will ensure public access to the County's only public beach and the adjacent recreational area. Gloucester County does not have the financial means to implement the project on our own. Utilizing the CFRF for Gloucester's site and similar locations will impact tens of thousands of Virginia residents and visitors.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached by email at [csteele@gloucesterva.info](mailto:csteele@gloucesterva.info) or phone at 804-693-4042.

Sincerely,

Carol E. Steele  
County Administrator



# KING AND QUEEN COUNTY VIRGINIA

*Founded 1691*

Vivian R. Seay  
County Administrator | County Attorney  
Direct Telephone 434-607-0717  
vseay@kingandqueenco.net

242 Allen's Circle, Suite 211  
Post Office Box 177  
King and Queen Court House, Virginia 23085  
Office Telephone 804-785-5975

October 21, 2024

Lewis L. Lawrence, Executive Director  
Middle Peninsula Planning District Commission  
Post Office Box 286  
Saluda, Virginia 23149

Re: Middle Peninsula Planning District Commission (MPPDC) Application  
Virginia Community Flood Preparedness Fund - ROUND 5

Dear Lewie,

King and Queen County supports all MPPDC applications requesting funding under the Department of Conservation and Recreation (DCR)'s Community Flood Preparedness Fund (CFPF). The proposals submitted by MPPDC staff enhance and build upon regional and local resilience efforts within the Middle Peninsula. 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 Incentive Program design and the MPPDC FTF Program design provide the operational and administrative oversight critical for resiliency planning, coordination, and implementation. These programs, especially the MPPDC FTF program, recognize the inherent risk coastal flooding poses to the delivery of essential governmental services, like public safety services, the need for which arises due to coastal storms and recurrent flooding of all types; and resiliency services to protect at-risk waterfront real estate values upon which the funding of essential governmental services is based. In basic terms, we must in every way possible counter coastal flooding to ensure the safety of our citizens and the longevity of our boundaries.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at vseay@kingandqueenco.net.

Sincerely,

Vivian R. Seay  
County Administrator | County Attorney

**From:** [Lewis Lawrence](#)  
**To:** [Jackie Rickards](#)  
**Subject:** KW Support of Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund ROUND 5  
**Date:** Tuesday, October 22, 2024 11:35:39 AM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[Outlook-jezwi3dg.png](#)

---

KW below



Lewis L Lawrence  
Executive Director  
Middle Peninsula Planning District Commission  
P.O.Box 286  
Saluda, Va 23149  
804-758-2311  
[www.mppdc.com](http://www.mppdc.com)

---

**From:** Stacey Davenport <stacey.davenport@kwc.gov>  
**Sent:** Tuesday, October 22, 2024 11:13 AM  
**To:** Lewis Lawrence <llawrence@mppdc.com>  
**Subject:** Support of Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund ROUND 5

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

RE: Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund ROUND 5

Dear Lewie,

King William County supports the Middle Peninsula Planning District Commission's (MPPDC) application requesting funding under the Department of Conservation and Recreation (DCR)'s Community Flood Preparedness Fund (CFPF). The proposals submitted by MPPDC staff enhance and build upon regional and local resilience efforts within the Middle Peninsula. 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 Incentive Program design and the MPPDC FTF Program design provide the operational and administrative oversight for resiliency planning, coordination, and implementation. These programs, especially MPPDC FTF program, recognize the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at 804-769-4927.

Sincerely,

Stacey Davenport

*Stacey T. Davenport*

County Administrator  
King William County  
180 Horse Landing Road, #4  
King William, VA 23086  
(804) 769-4926  
[stacey.davenport@kwc.gov](mailto:stacey.davenport@kwc.gov)



County of Mathews Administration Office

[mathewscountyva.gov](http://mathewscountyva.gov)



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

RE: Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund  
ROUND 5

Dear Lewie,

Mathews County supports the Middle Peninsula Planning District Commission's (MPPDC) application requesting funding under the Department of Conservation and Recreation (DCR)'s Community Flood Preparedness Fund (CFPF). The proposals submitted by MPPDC staff enhance and build upon regional and local resilience efforts within the Middle Peninsula. 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 Incentive Program design and the MPPDC FTF Program design provide the operational and administrative oversight for resiliency planning, coordination, and implementation. These programs, especially MPPDC FTF program, recognize the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at (804) 725-7172 or via email [rwilson@mathewscountyva.gov](mailto:rwilson@mathewscountyva.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read "Ramona Wilson".

Ramona Wilson, P.E., MPA  
Mathews County Administrator

Matthew L. Walker  
County Administrator



Ann Marie Ricardi  
Assistant County Administrator

County of Middlesex  
Office of the County Administrator

October 9, 2024

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

RE: Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund ROUND 5

Dear Lewie,

Middlesex County supports the Middle Peninsula Planning District Commission's (MPPDC) application requesting funding under the Department of Conservation and Recreation (DCR)'s Community Flood Preparedness Fund (CFPF). The proposals submitted by MPPDC staff enhance and build upon regional and local resilience efforts within the Middle Peninsula. 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 Incentive Program design and the MPPDC FTF Program design provide the operational and administrative oversight for resiliency planning, coordination, and implementation. These programs, especially the MPPDC FTF program, recognize the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

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

Sincerely,

A handwritten signature in blue ink, appearing to be 'Matt Walker', with a long horizontal flourish extending to the right.

Matt Walker, County Administrator



Institute for Coastal Adaptation and Resilience

Old Dominion University

800 W. 46<sup>th</sup> St.

Norfolk, VA 23508

1 November 2024

Re: Letter of Support for Proposal to Provide Free Parametric Insurance to Low-Income Households

To the DCR CFPF Review Panel:

I am writing to express my strong support for the Middle Peninsula PDC and VIMS CFPF proposal to develop a Parametric Insurance Accelerator Pilot Program for the Mobjack Bay area. This initiative addresses a critical gap in disaster preparedness by offering a potentially sustainable, adaptable alternative to the current National Flood Insurance Program (NFIP). Unlike traditional infrastructure improvements, which often lack flexibility to respond to evolving climate risks, this parametric approach can evolve alongside changing climate conditions and community needs.

The NFIP excludes coverage for damages to assets like septic systems or living shorelines, which are key elements of rural properties. Many rural property owners' wealth is in the value of the land (which may be inherited), and as we are seeing after the remnants of Hurricane Helene in southwest Virginia and North Carolina, many rural owners lack the liquid income either to purchase NFIP policies or to repair damage to these uninsurable rural assets after floods. Unabated damage to private living shorelines or septic systems puts neighboring ecosystems at risk from subsequent erosion and contaminant transport. If state or USDA post-disaster recovery programs are deployed at all to mitigate these damages on private lands, they take significant time to complete repairs and restorations.

Parametric insurance has the potential to make rural flood coverage more accessible by offering fair, affordable premiums rather than leaving households unprotected due to high costs. This parametric approach allows policyholders to select risk levels and aligns premiums with actual risk enabling fairer, more accurately priced premiums. However, while parametric coverage is already available as private sector products in rural areas of nations in Central and South America, Africa, and Asia, it has not yet been deployed extensively in rural areas of the United States. Consequently, we lack sufficient data on how parametric insurance will perform in the U.S. This proposal provides a timely opportunity to test its effectiveness as a more tailored, efficient insurance model that could reduce inefficiencies, encourage broader coverage, and ultimately protect more vulnerable communities in Virginia and across the nation.



Dr. Wai Yan Siu, assistant research professor for resilience economics in ICAR, will support the MPPDC, VIMS, and New Paradigm Underwriters by providing technical assistance to develop the methodology for the Fight the Flood Low-Income Area Parametric Insurance Accelerator Program under ICAR's Commonwealth appropriation for its collaborations with the Chesapeake Bay Foundation. This free policy trial will offer Virginia invaluable firsthand data on the program's effectiveness while protecting vulnerable populations and strengthening the state's disaster preparedness. By providing more accurate risk monitoring and a flexible insurance model, this approach can make the insurance process significantly more predictable and cost-effective for both insureds and insurers. Low-income households, often excluded from traditional insurance due to high costs, will especially benefit from this program, which presents a timely, scalable solution to protect Virginians, enhance community welfare, and build a more resilient future for the state.

Thank you for considering this proposal.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jessica C. Whitehead".

Jessica C. Whitehead, Ph.D.

Joan P. Brock Endowed Executive Director  
Institute for Coastal Adaptation and Resilience

**April L. Rounds**  
**County Administrator**  
202 South Church Lane  
Post Office Box 1079  
Tappahannock, Virginia 22560  
(804) 443-4331  
www.essex-virginia.org



Established 1692

**Essex County**  
**Virginia**

**Board of Supervisors**

Rob Akers, Chairman  
Greater Tappahannock Election District

Ronnie Gill, Vice-Chairman  
South Election District

Sidney N. Johnson  
North Election District

John C. Magruder  
Central Election District

Edwin E. "Bud" Smith Jr.  
At Large Election District

October 8, 2024

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

RE: Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund ROUND 5

Dear Lewie,

Essex County supports the Middle Peninsula Planning District Commission's (MPPDC) application requesting funding under the Department of Conservation and Recreation (DCR)'s Community Flood Preparedness Fund (CFPF). The proposals submitted by MPPDC staff enhance and build upon regional and local resilience efforts within the Middle Peninsula. 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 Incentive Program design and the MPPDC FTF Program design provide the operational and administrative oversight for resiliency planning, coordination, and implementation. These programs, especially MPPDC FTF program, recognize the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

Should you have any questions concerning Essex County's support for the work of the MPPDC, I can be reached at 804-443-4331.

Respectfully,

April L. Rounds  
Administrator



COMMONWEALTH OF VIRGINIA  
VIRGINIA DEPARTMENT OF HEALTH  
THREE RIVERS HEALTH DISTRICT

SERVING ESSEX, GLOUCESTER, KING & QUEEN, KING WILLIAM, LANCASTER, MATHEWS, MIDDLESEX, NORTHUMBERLAND, RICHMOND, & WESTMORELAND COUNTIES

BRENDEN RIVENBARK  
DISTRICT HEALTH DIRECTOR

P.O. BOX 415  
SALUDA, VIRGINIA 23149  
TELEPHONE: (804) 758-2381

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

RE: Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund ROUND 5

Dear Lewie,

The Three Rivers Health District supports the Middle Peninsula Planning District Commission's (MPPDC) application requesting funding under the Department of Conservation and Recreation (DCR)'s Community Flood Preparedness Fund (CFPF). The proposals submitted by MPPDC staff enhance and build upon regional and local resilience efforts within the Middle Peninsula. 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 Incentive Program design and the MPPDC FTF Program design provide the operational and administrative oversight for resiliency planning, coordination, and implementation. These programs, especially MPPDC FTF program, recognize the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.



We feel strongly that this work will further strengthen the drinking and wastewater infrastructure in the Middle Peninsula. Should you have any questions concerning our support for the work of the MPPDC, I can be reached at [Brenden.rivenbark@vdh.virginia.gov](mailto:Brenden.rivenbark@vdh.virginia.gov) and (804) 382-9391.

Sincerely,

A handwritten signature in black ink that reads "Brenden Rivenbark". The signature is written in a cursive, flowing style.

Brenden Rivenbark  
District Health Director





*Town Manager*

Eric S. Pollitt

*Town Treasurer*

Tina F. Brock

*Town Clerk*

Patsy K. Scates

*Chief of Police*

Thomas D. Carter

*Town Attorney*

M. Tolley Gwinn

*Mayor*

Roy M. Gladding

*Town Council*

Troy L. Balderson

Katherine B. Carlton

A. Fleet Dillard III

Kenneth A. Gillis

Carolyn Barrett

Anita Latane

## TOWN OF TAPPAHANNOCK

*P. O. Box 266*

*Tappahannock, Virginia 22560*

*(804) 443-3336 Fax (804) 443-1051*

[www.tappahannock-va.gov](http://www.tappahannock-va.gov)

October 8, 2024

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

### **RE: Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund ROUND 5**

Dear Lewie,

The Town of Tappahannock supports the Middle Peninsula Planning District Commission's (MPPDC) application requesting funding under the Department of Conservation and Recreation (DCR)'s Community Flood Preparedness Fund (CFPF). The proposals submitted by MPPDC staff enhance and build upon regional and local resilience efforts within the Middle Peninsula. 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 Incentive Program design and the MPPDC FTF Program design provide the operational and administrative oversight for resiliency planning, coordination, and implementation. These programs, especially MPPDC FTF program, recognize the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

Should you have any questions concerning our support for the work of MPPDC, I can be reached at 804-443-3336.

Sincerely,

Eric S. Pollitt  
Town Manager  
Town of Tappahannock





## TOWN OF URBANNA

390 VIRGINIA ST. SUITE B, PO BOX 179, URBANNA, VA 23175  
PHONE: 804-758-2613, FAX: 804-758-0389

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October 8, 2024

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

RE: Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund  
ROUND 5

Dear Mr. Lewis:

The Town of Urbanna supports the Middle Peninsula Planning District Commission's (MPPDC) application requesting funding under the Department of Conservation and Recreation (DCR)'s Community Flood Preparedness Fund (CFPF). The proposals submitted by MPPDC staff enhance and build upon regional and local resilience efforts within the Middle Peninsula. 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 Incentive Program design and the MPPDC FTF Program design provide the operational and administrative oversight for resiliency planning, coordination, and implementation. These programs, especially MPPDC FTF program, recognize the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

Should reviewing entities have any questions concerning our support for the work of the MPPDC, they can reach me at 804-758-2613 or [t.costin@urbannava.gov](mailto:t.costin@urbannava.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "P. S. T. Costin", with a long, sweeping flourish extending to the right.

P. S. T. (Ted) Costin  
Town Administrator

Council Members:  
JOSEPH "BART" BARTOS  
ROBERT J. LAWRENCE  
JOHN R. "JOHNNY" NEIN, Jr.  
JAMES "JAMIE" PRUETT  
JOHN G. RAGSDALE, II



JOSHUA T. "JACK" LAWSON  
Mayor  
DEBORAH T. BALL  
Vice Mayor  
JOHN B. EDWARDS, JR.  
Town Manager

## TOWN OF WEST POINT

October 7, 2024

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

RE: Applications Submitted by MPPDC to Virginia Community Flood Preparedness Fund ROUND 5

Dear Lewie,

The Town of West supports the Middle Peninsula Planning District Commission's (MPPDC) application requesting funding under the Department of Conservation and Recreation (DCR)'s Community Flood Preparedness Fund (CFPF). The proposals submitted by MPPDC staff enhance and build upon regional and local resilience efforts within the Middle Peninsula. 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 Incentive Program design and the MPPDC FTF Program design provide the operational and administrative oversight for resiliency planning, coordination, and implementation. These programs, especially MPPDC FTF program, recognize the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types and the relationship between at-risk waterfront real estate values and funding of essential governmental services.

Should you have any questions concerning our support for the work of the MPPDC, I can be reached at (804) 843-3330.

Sincerely,

A handwritten signature in blue ink, appearing to read "John B. Edwards, Jr.", is positioned above the printed name.

John B. Edwards, Jr.  
Town Manager

329 6<sup>th</sup> Street  
P.O. Box 152, West Point, Virginia 23181  
(804) 843-3330 / Fax (804) 843-4364  
[www.west-point.va.us](http://www.west-point.va.us)

Matthew J. Strickler  
*Secretary of Natural and Historic  
Resources and Chief Resilience  
Officer*

Clyde E. Cristman  
*Director*



**COMMONWEALTH of VIRGINIA**  
**DEPARTMENT OF CONSERVATION AND RECREATION**

Rochelle Altholz  
*Deputy Director of  
Administration and Finance*

Nathan Burrell  
*Deputy Director of  
Government and Community Relations*

Darryl M. Glover  
*Deputy Director of  
Dam Safety & Floodplain  
Management and Soil & Water  
Conservation*

Thomas L. Smith  
*Deputy Director of  
Operations*

August 19, 2021

Mr. Lewis L. Lawrence, Executive Director  
Middle Peninsula Planning District Commission  
Saluda Professional Center  
125 Bowden Street  
PO Box 286  
Saluda, Virginia 23149

Re: MPPDC Resilience Plan Second Submission - CFPF

Dear Mr. Lawrence:

Thank you for the resubmission of the Middle Peninsula Planning District Commission's (MPPDC) Regional Flood Resiliency Plan. After careful review and consideration, the Virginia Department of Conservation and Recreation has deemed the Plan meets the criteria outlined in the June 2021 Community Flood Preparedness Grant Manual. This approval will remain in effect for a period of three years, ending on August 20, 2024.

1. **Element 1: It is project-based with projects focused on flood control and resilience. VA-DCR RESPONSE:**
  - a. Meets criteria as written.
2. **Element 2: It incorporates nature-based infrastructure to the maximum extent possible. VA-DCR RESPONSE:**
  - a. Meets criteria as written.
3. **Element 3: It includes considerations of all parts of the local government regardless of socioeconomics or race. VA-DCR RESPONSE:**
  - a. Meets criteria as written.
    - i. The provided plan meets the requirements of Element 3 in Appendix G of the Grant Manual. However, flood data referenced in the MPPDC portrays the majority of flooding as coastal. As we discussed during our meeting with you on August 4, 2021, there are additional types of flooding in MPPDC localities. DCR recommends the commission develop a more comprehensive planning document(s) addressing the MPPDC's overarching approach to furthering flood resilience beyond shoreline protection in all nine member localities.

**4. Element 4: It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation. VA-DCR RESPONSE:**

a. Meets criteria as written.

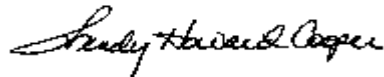
- i. DCR recognizes that both program designs make participation available to residents of all MPPDC member localities who have the ability to qualify, and that the individual program designs offer detailed breakdowns of the timeline and terms for loans disbursed pursuant to individual projects once accepted. This does not constitute a project-based timeline or phasing plan for addressing flooding resilience at the regional, locality, or community level. DCR recommends additional consideration be given to how all flooding, regardless of ability to pay, will be addressed in the MPPDC.

**5. Element 5: Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps. VA-DCR RESPONSE:**

a. Meets criteria as written.

VA DCR looks forward to working with the MPPDC in its efforts to develop a resilience plan that addresses flooding for its nine member communities.

Sincerely,



Wendy Howard Cooper, Director  
Dam Safety and Floodplain Management

cc: Darryl M. Glover, DCR

## **Middle Peninsula Regional Flood Resiliency Plan**

Resubmittal #3 8/6/21

**Approved DCR 8/19/21 until 8/20/24**

The Middle Peninsula is located on the western shore of the Chesapeake Bay, bound to the north by the Rappahannock River and to the south by the York River. As the region is in the Virginia coastal plain, it has a relatively flat topography with approximately 4,000 National Flood Insurance policies, approximately 415 repetitive loss and 30 severe repetitive loss structures, all of which are located along or near 1,000 miles of privately-owned shorelines generating necessary tax revenue to fund essential local governmental services. The southeastern portions of the region are located at or close to sea level, while elevation rises to approximately 200 feet above sea level moving in a northwesterly direction. Flooding is the most frequent and costly natural hazard in the United States as well as the Middle Peninsula. Since 1978 more than \$60,000,000 in Federal Flood Insurance losses have been paid due to all forms of flooding in the region.

Flooding impacts all socioeconomic groups (regardless of race, gender, age, ethnicity, diversity, or income). All land uses are subject to the destructive forces of water including, but not limited to residential, commercial, industrial, retail, agricultural, silvicultural, recreational, and publicly owned assets. All of the Middle Peninsula is subject to all types of flooding including but not limited to coastal, riverine, storm surge, inland, stormwater, flash flooding, groundwater, areal, ponding (pluvial), or urban.

The Middle Peninsula Planning District Commission (MPPDC) recognizes the need to better secure the tax base of coastal localities against the risk of flooding and the expectation to deliver essential governmental services, including public safety. All of which are more frequently challenged by coastal storms and recurrent flooding of all types. There is an unfortunate and eroding relationship between at-risk real estate values and funding of essential governmental services. Without proactive flood mitigation for coastal lands and structures, the rural coastal tax base will literally and figuratively erode into the Chesapeake Bay. Revenue will continue to decline with flood insurance claims, agricultural claims and uninsured costs will continue to increase.

In response to emerging flood challenges, the MPPDC Commission has authorized staff to develop the **Middle Peninsula Fight the Flood (FTF) Program** 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 Middle Peninsula **Living Shoreline Resiliency Incentive Funding Program** has been the only structured program in the Commonwealth offering loan and grants to all qualified waterfront citizens and waterfront businesses since its establishment in 2015.

The Middle Peninsula **FTF** program helps property owners gain access to programs and services to better manage challenges posed by flood water.

The Middle Peninsula's Regional Flood Resiliency Plan is comprised of two primary 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. These documents contain the elements described in the DCR Virginia Community Flood Preparedness Fund to qualify as the region's Resiliency Plan.

### **Long Term Planning**

- **Middle Peninsula All Hazard Mitigation Plan, FEMA and Middle Peninsula locality approved 2016 (MPPDC Website)**
- **Middle Peninsula Comprehensive Economic Development Strategy, MPPDC Approved March 2021 (MPPDC Website)**
- **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 (Attached) 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 (Attached)**

These five documents contain the required elements described in the 2021 Grant manual for the Virginia Community Flood Preparedness Fund.

For applications made under the Virginia Community Flood Preparedness Fund and if grants and loans are made available, it is the policy of the MPPDC to provide such to qualified participants based on the terms and conditions associated with flood risk, as well as providing various grant and loan funds available to support the public purpose(s) for which the funds have been allocated. The program utilizes income guidelines for residential participation based on household income and ability to pay. Businesses will provide documentation such as profit and loss statement and/or other documentation of adequate business equity to collateralize the public investment). Grant/Loan awards, if available will be based on the program requirements of the source of the funds, if any. Unless otherwise dictated by the source of the grant funds, MPPDC will distribute grant funds on a sliding scale according to FEMA Flood insurance zones for any qualified resiliency project that meets the definition of a living shoreline found in § 28.2-104.1 of

the Code of Virginia and is designed to attenuate the impinging wave climate across the sill and marsh system during significant storm events. FEMA flood zone determination is based on the best available science recognized by FEMA. Unless prohibited by the funding source or type of project, at a minimum, project designs shall be designed to and based on site conditions identified within the locality FEMA Flood Insurance Study (FIS) which use statistical water levels, wave heights and fetch exposure.

**FEMA FIS:** A compilation and presentation of flood risk data for specific watercourses, lakes, and coastal flood hazard areas within a community. When a flood study is completed for the NFIP, the information and maps are assembled into an FIS. The FIS report contains detailed flood elevation data in flood profiles and data tables.

Projects funded must have a primary purpose of prevention or protection to reduce coastal, riverine or inland flooding and focus on:

**Nature-based solutions:** including but not limited to: wetland restoration, floodplain restoration, swales and settling ponds, living shorelines and vegetated buffers.

**Additional flood control solutions:** including, but not limited to: floodwalls, levees, berms, flood gates, structural conveyances and storm water systems.

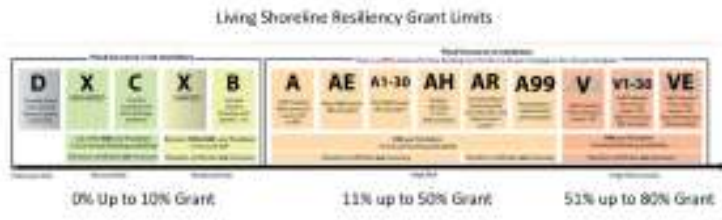
**Preservation and creation of open space:** including property acquisition and relocation and the permanent conservation of lands identified as having flood resilience value by the Conserve Virginia Floodplain and Flooding Resilience layer or a similar data driven analytic tool.

Designs will be recognized and considered that are sourced to other qualified metrics which include:

- Appropriate company certification illustrating and documentation of
  - nature based solution and
  - flood control solutions including documentation of BMP approval for erosion control, water quality or flood protection.
- Designed and certified by a licensed professional who routinely designs projects for the flood mitigation space.

Designs shall take into consideration any additional requirements, such as required sea-level rise rates.

Unless prohibited or directed by the funding program, MPPDC has established grant funding thresholds based on flood risk established by FEMA.



The DCR guidelines require that an approved plan shall meet the following criteria:

- It is project-based with projects focused on flood control and resilience. MPPDC YES
- It incorporates nature-based infrastructure in specific projects. MPPDC YES
- It includes considerations of all parts of a locality regardless of socioeconomics or race. MPPDC YES
- It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation. MPPDC YES
- Is based on the best available science, and incorporates climate change, sea-level rise, and storm-surge (where appropriate), and current flood map MPPDC YES

The following MPPDC program designs for the Middle Peninsula Planning District Commission **Fight the Flood Program** and the **Living Shoreline Resiliency Incentive Funding Program** are the implementation structure for administering the expenditure of funding provided by the Virginia Community Flood Preparedness Fund

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**Middle Peninsula Planning District Commission**  
**Fight the Flood Program**  
**Program Design**  
**MPPDC Commission Approved**  
**6/24/20**  
**Amended Per PDC Chairman 8/6/21**  
**OVERVIEW**

The Program Design for the Middle Peninsula Fight the Flood Program (FTF) outlines marketing strategies, loan application, review process, funds management, administration, and loan agreements with property and business owners. This document can be administratively reviewed with minor programmatic amendments subject to MPPDC Chairman approval. Significant programmatic changes require Commission approval.

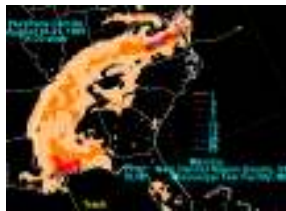
**Fight the Flood: Public Purpose Statement**

*The MPPDC Fight the Flood (FTF) program recognizes the need to better secure the tax base of coastal localities; the inherent risk to the delivery of essential governmental services, including public safety, posed by coastal storms and recurrent flooding of all types; and the relationship between at-risk waterfront real estate values and funding of*

*essential governmental services. The FTF program exists to help flood-prone property owners access programs and services to better manage challenges posed by flood water. When grants and loans are available, it is the policy of the MPPDC to provide such to qualified participants based on the terms and conditions associated with flood risk, as well as providing various grant and loan funds available to support the public purpose(s) for which the funds have been allocated.*

The Fight the Flood program goals are to generate and facilitate community resiliency by addressing all types of flooding which impact all socioeconomic groups (regardless of race, gender, age, ethnicity, diversity, or income). All land uses are subject to the destructive forces of water including, but not limited to residential, commercial, industrial, retail, agricultural, silvicultural, recreational, and publicly owned assets. All of the Middle Peninsula is subject to all types of flooding including but not limited to coastal, riverine, storm surge, inland, stormwater, flash flooding, groundwater, areal, ponding (pluvial), or urban.

Water impacts the Middle Peninsula from a variety of sources and conditions including velocity, duration, frequency, and volume.



**Fast Moving:** Hurricane Camille was a fast-moving storm with massive rainfall over a quick time period. This type of event has major and widespread flooding impacts across the entire Middle Peninsula.



**Slow Moving:** According to the USGS, all of the Middle Peninsula experiences stormwater runoff between the 10-75% range causing water to move over the landscape with the ability to cause erosion.



**Storm Surge:** Land uses along the riverfront, Chesapeake Bay front and streams subject to tidal influence will experience surge that encompasses all land area, including the built and natural environment for the duration of the surge.



Sea-Level Rise: Land uses along the riverfront, Chesapeake Bay front and streams are subject to increasing sunny day flooding events and more frequent flooding due to sea-level rise and subsidence. By 2040, the estimates 16,567 Middle Peninsula parcels will be impacted by sea level rise [Commonwealth Center for Recurrent Flooding Resiliency](#)

The Fight the Flood program looks to help mitigate flooding issues which impact all socioeconomic groups while also enhancing water quality, and to encourage economic growth by targeting and attracting businesses to provide flood mitigation products and services for flood-prone properties, including shorelines and buildings. When appropriate, projects should be designed not only for today's flooding challenges, but also designed for future flooding challenges by extrapolating FEMA flood risk using FEMA Insurance Studies or other appropriate methodologies.

To accomplish its stated goal, the Fight the Flood program identified three core **Objectives** that develop the program's policy framework:

### **Objectives**

1. Provide financial products to influence consumer behavior for managing and mitigating flood risk
  - a. Offer a suite of financial products (i.e. loans, grants, insurance) with a correlation to lower interest rates and grants for shorelines under greater risk; higher rates and less grant funding for lower risk shorelines using FEMA flood zones
  - b. **When possible, leverage General Assembly legislation such as § 58.1-3228.1. Partial exemption from real property taxes for flood mitigation efforts for grant matching funds.**
2. Provide consumer to professional services connections through the Fight the Flood program
  - a. Registered consumers with a flood mitigation issue will have direct access to a pool of established resiliency professionals.
  - b. Participating companies are evaluated on a regular basis
  - c. Resiliency professional registered under Fight the Flood may provide discounted professional services to consumers in need.

3. Utilize reach-based Shoreline Implementation “Battle Plans” to facilitate multi parcel mitigation projects for economy of scale. These plans will be prepared and or reviewed by qualified professionals in the field of coastal flooding, such as Virginia Institute of Marine Science Shoreline Studies Program or plans funded under the Virginia Coastal Zone Management Program
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## **I. Marketing Strategy**

- A. Geographic Area of Program:** The Program shall be available to homeowners located in the Middle Peninsula Planning District Commission (“MPPDC”). The MPPDC comprises of the following member-localities: counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex; and the towns of Tappahannock, Urbanna, and West Point.
- B. Solicitation of Fight the Flood/Marketing:**
  1. Referrals from private sector contractors, design professionals, flood mitigations companies and engineers
  2. Referrals from local governments, including local wetland boards and/or other State agencies
  3. Social Media Channels, Websites, News releases, Public Information Notices, i.e. newspapers, fliers at public locations, educational displays
- C. Outcomes from FTF Participation:**
  1. Encourage homeowners to purchase flood insurance;
  2. Encourage homeowners with existing flood insurance to evaluate cost effectiveness for premium relief;
  3. Encourage homeowners to practice coastal resilience to manage flood risk and reduce damage
- D. Available FTF financial & insurance products:**

*Current existing products are included in the FTF program*

  1. MPPDC Revolving Loan Program Funding
    - Living Shorelines Resiliency Incentive Funding Program
      - a. Nature-based shoreline BMP construction
      - b. Coastal stormwater BMP construction
    - Septic Repair Program
    - Energy Efficiency Revolving Loan Program
    - Small Business Financing, Training, loan and grants
    - Other loans programs as available
  2. MPPDC Grants

- Grants shall be leveraged and utilized to provide protection for hazard and flood prone areas with an enhanced focus on socioeconomically vulnerable property owners.
  - a. Nature-based shoreline BMP construction
  - b. Coastal stormwater BMP construction
  - c. Residential infrastructure resiliency improvements (i.e. structures, septic systems, utilities, etc.)
- Loan Forgiveness options when available
- VCAP Grants (offered by the Soil Water and Conservation District) when available
- Other grants and grant programs as available

**3. MPPDC Insurance**

- Parametric insurance for living shorelines and septic systems
- MPPDC Living Shoreline Plant Insurance Program
- Other insurance products as available

**E. Income Guideline:** Residential participation will be based on the household income and ability to pay. Businesses shall provide documentation such as profit-and-loss statements and/or other documentation of adequate business equity to collateralize the public investment. Grant/loan awards, if available will be based on the program requirements of the source of the funds, if any.

**F. Terms of Loan:**

*Homeowners who are eligible to receive a revolving loan from the existing MPPDC Living Shoreline Loan program (see MPPDC program design for specific requirement) shall be subject to the following terms:*

1. All loans over \$3,000 shall be secured with a Deed of Trust granted to the Middle Peninsula Planning District Commissioner. Businesses may use a deed of trust, security agreement, UCC liens, etc.
2. The owner of the property must agree that, if the property is sold, transferred, or otherwise conveyed voluntarily, when the owner is living, or if the real estate ceases for any reason to be the owner's principal place of residence, any outstanding balance must be paid back to the Middle Peninsula Planning District Commission.
3. If a business is sold and the Living Shoreline Loan program debt is to be assumed, a business may carry forward the loan debt as part of the business sale, assuming approval is granted by the MPPDC prior to the sale.
  - If not, any outstanding principal (and grant) amount must be paid back to the Middle Peninsula Planning District Commission.

**G. All beneficiaries must make monthly loan payments by automated clearing house debit from a valid checking or savings account.**

## **II. Vendors: Qualifications & Expectations**

- A.** The MPPDC has a fiduciary responsibility to protect the expenditure of loans/grants. Thus, it sets forth the following qualifying criteria and expectations for vendors to comply.
- B.** Qualifying businesses need not be located within the Middle Peninsula region, although we encourage and invite businesses with physical footprints within the Middle Peninsula to join.
- C.** Prospective vendors to be listed on the FTF website must match at least one of the qualifying criteria below to participate in the Fight the Flood business marketplace and have taken and completed appropriate professional training(s), from the Virginia Institute of Marine Science or other universities, colleges, government or other professional programs offering certifications or credentials related to professional trade or profession directly related to the services to be provided.
  - 1.** Class A Contractors License
    - Automatically accepted upon proof of successful project completion (project completion statement, closed permit, release of performance bond, etc.)
  - 2.** Class B or C licenses
    - Proof of permitted and completed similar jobs, at least 3 jobs within the last 24 months in a Tidewater locality.
  - 3.** Other applicable methods presented and accepted by Fight the Flood program manager.
- D.** To be listed on the FTF website, qualifying vendors shall complete the “Fight the Flood Business Survey” as provided by the MPPDC.
  - 1.** The MPPDC shall maintain a database of qualifying vendors and made available to FTF registered property owners who request financial assistance. Property owners are not required to use qualified FTF vendors but are encouraged to.
  - 2.** It is mutually understood by all parties that the homeowners select the vendor
- E.** Participating FTF qualified vendors are encouraged to:
  - 1.** Support the FTF program by offering services on discount (5%–15%+) to only those homeowners who are registered in the FTF program;
  - 2.** Carry necessary insurance such commercial general liability. Homeowners using any contractor are encourage to ask for proof of insurance: For example, Class A Contractors \$1,000,000 Class B and C \$500,000-\$250,000.

3. Acknowledgement that all financial payments from the MPPDC are released to the homeowner when approval is granted from the appropriate permitting agency denoting the completion of the work.
    - Loan proceeds can be released upon recordation of loan documents
    - Grant proceeds can be released upon satisfactory completion of the job, with proof of acceptance by the permitting agency
    - Some cost can be pre-paid under the program upon issuance of required permits or cost necessary to apply for permits such as design and engineering, etc.
  4. Commit to prompt communication with the homeowners
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**Middle Peninsula Planning District Commission  
Living Shoreline Resiliency Incentive Funding Program**

**Virginia Revolving Loan Fund Program Design**

**And Guidelines – December, 2015**

**Amended 6/24/2020**

**OVERVIEW**

The Program Design and Guidelines for the Middle Peninsula Living Shoreline Resiliency Incentive Funding Program (LSIP) will delineate marketing strategies, loan application and review process, environmental review, funds management and administration, and loan agreements with property (residential and business) owners.

This program will provide incentives in the form of funding and insurance for homeowners to install living shorelines in lieu of shore hardening approaches for shoreline stabilization on private property.

**I. Marketing Strategy**

- Geographic Area of Program: The Program will be available to homeowners of property located in the Middle Peninsula Planning District of Virginia. The localities of the Middle Peninsula are the counties of Essex, Gloucester, King and

Queen, King William, Mathews, and Middlesex; and the towns of Tappahannock, Urbanna, and West Point.

- Solicitation of Applications: Loan applications will be sought through the following means:
  - Referrals from private sector contractors and engineers.
  - Referrals from Local Governments or other agencies.
  - News releases, Public Information Notices-Newspapers, fliers at public locations, educational displays at Captain Sinclair Landing
- Income Guideline –Residential participation will be based on the household income and ability to pay. Businesses will provide documentation such as profit and loss statement and/or other documentation of adequate business equity to collateralize the public investment). Grant/Loan awards, if available will be based on the program requirements of the source of the funds, if any.

Unless otherwise dictated by the source of the grant funds, MPPDC will distribute grant funds on a sliding scale according to FEMA Flood insurance zones for any qualified resiliency project that meets the definition of a living shoreline found in § 28.2-104.1 of the Code of Virginia and is designed to attenuate the impinging wave climate across the sill and marsh system during significant storm events. A design will use statistical water levels and wave heights per FEMA flood zones and the fetch exposure referenced in FEMA flood insurance rate study or other qualified study.



- Terms of Loan:

All loans over \$3,000 will be secured with a deed of trust granted to the Middle Peninsula Planning District Commission. Businesses may use a deed of trust, security agreement, UCC Liens etc . The owner of the property must agree that, if the property is sold, transferred, or otherwise conveyed voluntarily, when the owner is living, or if the real estate ceases for any reason to be the owner's principal place of residence, any outstanding principal amount must be paid back to the Middle Peninsula Planning District Commission. If a business is sold and the living shoreline debt is to be assumed, a business may carry forward loan debt as part of the business

sale, assuming approval is granted by the MPPDC prior to sale. If not, any outstanding principal (and grant) amount must be paid back to the Middle Peninsula Planning District Commission

- All beneficiaries must make monthly loan payments by automated clearing house debit from a valid checking or savings account.
- 1. Interest and principal payments will commence as soon as funds are released. Final payment to owner or contractor will not be released until review by VMRC or local wetlands board staff to ensure the project has been completed consistent with the terms and conditions of the VMRC or wetlands permit.
  2. Loan interest rates will be at the WSJ Prime Rate as published at <http://www.bankrate.com/rates/interest-rates/wall-street-prime-rate.aspx>
  3. Alternatively, if the applicant has a banking relationship with a lending institution with a physical foot print within the Middle Peninsula, the program will match a verified HELOC rate to a floor of 2% rate. An additional ¼% rate reduction below a verified HELOC rate can be included for any project located in a FEMA A, AE, AH, AR, A99, VorVE flood zone designed to attenuate wave energy and storm surge.
  4. In order to close out lending on an existing MPPDC-DEQ-VRA loan, the applicant may negotiate an interest rate to facilitate the closure of any outstanding loan balance to assist the Commission with refunding of the program. A rate floor of 1.5% is established.
  5. Low income homeowners may be offered grants and lower interest rates based on household income.
- Loan Process
  - Applicant shall complete application provided by MPPDC
  - MPPDC staff can assist with application as needed
  - Loan terms and payments options will be discussed with client. Loans shall be amortized by monthly installment payments.
  - Completed application will be provided to MPPDC Closing Agent for loan processing and loan closing
  - Applicant and MPPDC will close loan. Loan Closing will take place at the office of the Middle Peninsula Planning District Commission, loan closing agents office or other agreed to location.
- Loan term:
  - Loans of \$10,000 or less will be financed for up to 60 months.

- Loans over \$10,000 to \$35,000 will have the option of financing for up to 120 months.
  - Loans over \$35,000 will have the option of financing for up to 180 months, with approval from VRA.
  - For eligible applicants receiving VRA loan forgiveness, terms of forgiveness will be included within the promissory note. If the applicant pays off the note before maturity, any outstanding loan forgiveness must be repaid and included as part of the payoff calculations. VRA funding for reach based, multi parcel projects will be handled on a case by case basis with terms included in the promissory note(s)
- Property transfer criteria: Balance of the principal of the loan shall be due and payable to The Middle Peninsula Planning District Commission upon sale or transfer of the property.
- Identification of Prior Existing Debt:
  - No subordination of loan shall be done for equity mortgage requests by beneficiary.
  - Applications found to carry a delinquent or defaulted first mortgage shall be ineligible for assistance. Applicants whose property is financed must carry a current first mortgage in good standing. This mortgage must have been current for at least the 12-month period prior to application or since inception of mortgage if in existence less than 12 months.
- Size of Loan: Loans shall not be less than \$1,000.
- Fees and Service Charges:
  - Application Fee-\$40 required at time of application.
  - Administrative Fee – To be determined based on cost of necessary documentation and closing costs. May be amortized with loan funds.
  - Late Fee-5% charged on unpaid payment due applies when 7 days past due date of payment.
- Security: Individual property owners receiving loans will sign a promissory note for the term of the loan. Loans over \$3,000 are to be secured by a Deed of Trust.

- Financing, Permits, Inspections, Contractor Selection and Certification, Disbursement of Funds

The Middle Peninsula Planning District Commission Living Shoreline Incentive and Funding Program will authorize VRA financing of any project not prohibited by any local ordinance and approved by VMRC or the applicable local wetlands board that satisfies the definition of a living shoreline consistent with § 28.2-104.1 of the Code of Virginia.

If required by either the permitting agency or terms of a grant award, monitoring of the site, absent other requirements will be required for 3 years after installation following protocol elements outlined in Milligan et al 2019. Monitoring cost can be financed as part of the project.

Applicants are encouraged to review the MPPDC Fight the Flood Program Design for access to information related to contractor services

Contractor may request partial reimbursement payment for ordering of materials necessary for the job. Pre-draws will collect interest at the rate agreed to in the promissory note. Accrued interest for pre-draws will be added to the final note payment. Principal and interest payments will commence when the project has been completed.

Final funds will be disbursed to homeowners/contractor only after acknowledgement by local wetlands board and/or VMRC of satisfactory completion of projects.

Homeowner/Contractor shall provide to MPPDC a statement of final project completion

- Insurance Program: Dependent on securing the necessary funding, the Middle Peninsula Planning District Commission Living Shoreline Incentive and Funding Program will “insure” the plants of eligible living shoreline installations for up to two (2) years following initial construction dependent on funds available in the insurance pool program at the time of claim. In the event the plants die, the reason must be explained for the need to be replaced. If applicable, the program will provide grant funds necessary to purchase and replant the same or similar plants in any installation that was previously funded by the program. This insurance can be utilized up to 2 times per project as long as insurance funds remain in the program. All claims must be certified by program partners (VIMS/VMRC)
- Parametric Living Shoreline Insurance policies can be financed as part of the loan package. The applicant may choose how many years of insurance to finance.

## **II. Loan Application and Review**

- Application Guidelines:

- Income Eligibility: An applicant shall complete an Income Eligibility worksheet to determine income qualification for determination of ability to repay loan.
  - Application Fee: A \$40 application fee shall be charged at the time of application. The fee shall be nonrefundable.
  - Place and Time of Application: Applications are available at the offices of the Middle Peninsula Planning District Commission,  
Saluda Professional Center, 125 Bowden Street,  
Saluda, Virginia between the hours of 8:30 a.m. to 4:30 p.m.,  
Monday through Friday, except holidays, by mail request at PO Box 286, Saluda VA 23149, and by phone at (804) 758-2311. A downloadable application is also available at [www.mppdc.com](http://www.mppdc.com)
- Review and Approval of Applications:
1. Staff Review- The staff of the Middle Peninsula Planning District Commission will review each application for Completeness and to verify income eligibility.
  2. Project Management Committee- The Middle Peninsula Planning District Commission will designate a committee to review and approve each application. If grant funds are available the Committee will determine eligibility for grant funding following the criteria required by the funder or the program design. The Committee shall consider the following in determining project priorities:
    - Need for shoreline management at the project site (in consultation with VMRC staff)
    - FEMA Flood zone
    - Number of projects funded in a jurisdiction - Localities that have never received funding for a project will be given priority
    - Ability to pay – the ability of the homeowner to repay the loan
  3. The MPPDC Board may authorize the Executive Director to complete all loan agreements and notes pursuant to approved loans.

### **III. Administration of VRA Financing Funds**

- Security: The Living Shoreline Incentive Funding Program will secure the loan with the Virginia Revolving Loan Fund through the revenues generated through loan payments made by individual property owners and through investment of capital funds.

1. Interest Security- The Program will offer loans at interest rates of WSJ Prime as published at [www.bankrate.com](http://www.bankrate.com)

B. Alternatively, if the applicant has a banking relationship with a lending institution with a physical foot print within the Middle Peninsula, the program will match a verified HELOC rate to a floor of 2% rate. An additional ¼% rate reduction below a verified HELOC rate can be included for any project located in a FEMA A,AE,AH,AR,A99,VorVE flood zone designed to attenuate wave energy and storm surge

C. In order to close out lending on an existing MPPDC-DEQ-VRA loan, the applicant may negotiate an interest rate to facilitate the closure of any outstanding loan balance to assist the Commission with refunding of the program. A rate floor of 1.5% is established.

2. Principal Security- The MPPDC Program will borrow funds from the Virginia Resource Authority under terms and conditions agreeable to each party. Historically, VRA has loaned the Commission \$250,000 for a period of 15 years at a 0% interest rate, but terms and conditions will vary as the Commission recapitalizes its program over time.
3. Total Annual Security/Annual Debt Payments- At program start up, annual debt payments will be \$16,667, to be paid in semi-annual payments of \$8,333. Future annual debt payments will vary based on recapitalization of the fund and terms offered by VRA. MPPDC will manage the loan fund and portfolio to ensure repayment of indebtedness.
4. MPPDC will establish a Loan Loss Reserve in the amount of \$16,667 or an amount equal to one (1) year debt service payments. These funds will be designated as "Restricted Cash – MPPDC Series 2017 Reserve Fund" on the MPPDC balance sheet until such time as the loan is repaid in full.

**B. Administration:**

1. The Middle Peninsula Planning District Commission will dedicate staff personnel to administer the Program. The Executive Director will provide supervisory guidance to the program.
2. The MPPDC will work closely with the State agencies involved in the protection of water quality. The Department of Environmental Quality and the Virginia Marine Resources Council will provide project guidance and assist through the permitting process.

3. The MPPDC Board will designate a Project Management Committee to provide input into the loan review and financial management aspects of the Program. The Board will also be involved in oversight of the entire program.
4. Fund Administration-The Program will invest any undisbursed portion of the loan proceeds with banks operating in the region or the Commonwealth of Virginia Department of the Treasury Local Government Investment Pool. Revenues from loan payments will be invested in said accounts providing liquidity to coincide with debt payments to the VRLF. Interest earnings from the Program will be available for administration costs and loan security. All revenues available after debt payments and administration costs may be utilized to provide additional assistance through the form of additional loans and/or grants to qualified applicants.

#### **IV. Notification of Changes to the Local Program**

The MPPDC will notify the Department of Environmental Quality and the Virginia Resources Authority of any anticipated changes to the Program Design at least 60 days prior to the effective date of such changes.