February 2025

Middle Peninsula Planning District Commission

WORKING WATERFRONTS

RESILIENCE ASSESSMENT REPORT

This project, Task # 91.01 was funded by the Virginia Coastal Zone Management Program led by the Virginia Department of Environmental Quality through Grant # NA23NOS4190255 of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended.

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Executive Summary

The Virginia Working Waterfronts (WWF) Resilience Assessment Report evaluated waterfront sites across four (4) regions in Coastal Virginia: the Accomack-Northampton Planning District Commission (ANPDC), the Hampton Roads Planning District Commission (HRPDC), the Middle Peninsula Planning District Commission (MPPDC), and the Northern Neck Planning District Commission (NNPDC). A standardized methodology was used to ensure consistency across regions, which included site visits, interviews with harbormasters, desktop reviews of infrastructure, and data validation. This comprehensive approach ensured that each site's status and needs related to resilience were thoroughly documented. The findings of this report will inform the Virginia Coastal Resilience Master Plan (VCRMP) and may support the inclusion of resilience projects associated with each site assessed in the Projects and Initiatives tab within the Virginia Department of Conservation & Recreation (DCR)'s Virginia Coastal Resilience Web Explorer online mapping tool. For eligible projects, this step is helpful for securing funding through the Virginia Community Flood Preparedness Fund (CFPF), which may be used to address state, regional, and local-level resilience needs such as flood risks, shoreline stabilization, and protecting vulnerable infrastructure. By assessing WWF sites in particular, this report will provide important information to resilience planners at the state, region, and local levels regarding the vulnerability and needs of WWF infrastructure, a critical component of Virginia's blue economy.

Introduction

This report presents the findings from the Working Waterfronts (WWF) Assessment, conducted across four (4) regions in Coastal Virginia. The assessment was led by the Accomack-Northampton Planning District Commission (ANPDC), the Hampton Roads Planning District Commission (HRPDC), the Middle Peninsula Planning District Commission (MPPDC), and the Northern Neck Planning District Commission (NNPDC) each evaluating WWF sites in their respective regions from January 2024 to December 2024.

This assessment is the latest investment by the Virginia Coastal Zone Management Program (Virginia CZM) to address the issue of sustaining WWF infrastructure and the blue economy it supports. This project addresses significant threats to WWF across Coastal Virginia, particularly the challenges posed by recurrent flooding, storm surge, and inadequate infrastructure to manage these water-related risks. WWFs are critical for industries such as commercial and recreational fishing, seafood processing, and aquaculture, which rely on direct access to coastal waters. However, these waterfronts are facing increasing vulnerability, leading to a gradual loss of infrastructure, jobs, and local identities, as well as economic and tax revenue impacts on the regions.

The scope of the project, as detailed in the grant's narrative and deliverables, focuses on identifying approximately five (5) working waterfront sites in each PDC region that are experiencing flooding or other water management challenges. These sites were assessed for their specific water management needs, and detailed cost estimates were developed to facilitate future funding considerations. The findings of this report will inform the Virginia Coastal Resilience Master Plan (VCRMP) and may support the inclusion of resilience projects associated with each site assessed in the Projects & Initiatives list within the Virginia Department of Conservation & Recreation (DCR)'s Virginia Coastal Resilience Web Explorer online mapping tool. For eligible projects, this step is helpful for securing funding through the Virginia Community Flood Preparedness Fund (CFPF), which may be used to address state, regional, and local-level resilience needs such as flood risks, shoreline stabilization, and protecting vulnerable infrastructure. The findings and methodology presented in this report contribute to the ongoing effort to protect Virginia's coastal communities, ensuring they remain resilient in the face of increasing environmental and water-related challenges. The project's deliverables also aim to support the integration of the PDCs' resilience

plans into the larger framework of the VCRMP, facilitating broader funding opportunities and long-term solutions for these vulnerable sites. Finally, by testing resilience assessment methodologies on a handful of WWF sites, Virginia CZM – with the help of PDC, locality, and industry partners – may be able to pursue a much larger scale project – updating the 2016 Virginia Working Waterfront Master Plan by adding new sites or previously omitted sites while assessing all sites through a resilience lens. This process is vital for strengthening the resilience of Virginia's working waterfronts, securing the necessary resources for effective adaptation measures, and supporting the continued success of water-dependent industries.

Product #1: MOU Development Between Working Waterfront Executive Committee Members

MPPDC staff developed a draft methodology for consideration by the Working Waterfront Executive Committee (Executive Committee), originally established by Virginia CZM's FY2014, Task 92 grant *Policy Development for Virginia's Working Waterfronts Plan*, to ensure standardization of site assessment and cost estimates produced. The Executive Committee met on January 17, 2024, June 13, 2024, and September 11, 2024 and coordinated with the Virginia CZM project manager to ensure clarity and timelines associated with the assessments. Each participating PDC then applied the same methodology to the 20+/- WWFs identified. The MOU defined project needs, deliverables, administration, and reimbursement terms and conditions. Copies of the three (3) MOUs signed by ANPDC, HRPDC, and NNPDC are included in **Appendix A**.

Product #2: Working Waterfront Site Assessment Methodology

Virginia CZM and MPPDC staff provided guidance and coordination to the participating PDCs on how to organize and structure their assessments so that the resulting information would closely match the data fields for projects currently listed on DCR's Virginia Coastal Resilience Web Explorer's Projects and Initiatives tab (see **Figure 1** below), making future uploads to the DCR resilience project database more streamlined (also part of Product #4). Virginia CZM and the coastal PDCs had worked with DCR staff during the FY2020-2022 Resilience Focal Area to determine how to enter project criteria into the DCR database so that an application for funding can be made to the CFPF. Additional fields were then added by Virginia CZM and MPPDC staff to allow for more detailed information to be included for each WWF site. A copy of Virginia CZM's e-mail authorizing MPPDC to proceed with the template is included in **Appendix B**, as well as a copy of the second alternate template developed by HRPDC staff. Finally, ANPDC developed their own questionnaire to aid in gathering information from the site managers. The questionnaire is also included in **Appendix B**.

A	B	C	D	E	F	G	H	I	J	K	L	M	N
id	category	owner	county	pdc	mpr	name	description	purpose_and_need	future_condition_considerations	subtypes	subtypes_other	status	total_implementation_cost
1	project	Portsmouth	Portsmouth	Hampton Roads	Hampton Roads	Old Towne Stormwater Pump Station	The Olde Towne Stormwater Pump Station project includes the installation of a stormwater pump station to reduce the flooding impact in the Olde Towne neighborhood of Portsmouth, at the intersection of Washington Street and Crawford Parkway.	Storm Surge Flooding, Stormwater Flooding,Tidal Flooding	CRMP Scenarios,Local Higher Scenarios,Rainfall Scenarios	Pump Stations		Final Design /Permitting	$12,000,000

Figure 1. VCRMP Resilience Project Database Criteria Table

To ensure consistency and reliability in the data collected across all regions, the following methodology was applied by each participating PDC, using either template form:

- *Site Selection and Evaluation*: Each PDC identified and evaluated multiple working waterfront sites within their service areas, ensuring a diverse representation of different waterfront types and conditions.
- *Site Visits and Interviews*: PDC staff conducted physical or desktop review of sites between in 2024, during which they assessed the infrastructure, operations, and potential vulnerabilities of each site. Interviews with harbormasters and site managers were conducted on-site or via questionnaires.
- *Data Validation*: Existing assessments, reports (e.g., 2013 WWF Inventory), and online resources were referenced to cross-check and supplement the data collected during site visits.
- *Documentation*: Each site assessment includes detailed site conditions, maps, photos, and supporting reference materials to provide a comprehensive understanding of each site's status.

Product #3: Assessment of 20+/- Working Waterfront Sites Subject to Flooding

From January to December of 2024 (12 Months), each of the participating PDCs conducted site assessments for +/- 5 WWF sites using a variety of the approved methods listed above. Please note that an in-person site visit with photo documentation of conditions was credited as the equivalent of two (2) desktop site reviews, as authorized by the Virginia CZM project manager. Summaries of each site assessment by PDC region are provided below with the completed assessment forms being included in **Appendix C**.

ANPDC Site Assessments Summary (5 total sites)

Methodology Overview: The five (5) Eastern Shore WWF sites where each physically inspected and assessed by Accomack-Northampton Planning District Commission (ANPDC) staff from September 30 to October 11, 2024. Prior to site visits harbormasters and management were contacted throughout the region to confirm availability. A questionnaire (see **Appendix B**) was drafted based on the Working Waterfront Assessment provided by Virginia CZM staff to streamline inquiry requests. Depending on availability site management were interviewed onsite or left with the questionnaire to be filled and picked up at a later date. Prior assessments such as the 2013 Eastern Shore WWF Inventory and current online resources were used to cross check questionnaire responses. Site Environmental Information and Coastal Flood Vulnerability Mapping sections were checked, verified, enhanced, and amended for detail and accuracy-if needed, with related online sources and citations. ANPDC staff provided maps, on-site photos, and accompanying reference information.

1. *Cape Charles Town Harbor*
Condition: Fair to Good
Key Findings:

- The harbor is critical to local businesses, supporting large-scale marine operations.
- A capital repair plan is in place, with structures expected to last 20-50 years with proper maintenance.
- Rehabilitation efforts, including the replacement of 35 deteriorated piles, are currently underway.

- Planned improvements include enhanced connectivity to the Cape Charles multi-use trail and the Eastern Shore Bike & Hike Trail.

2. *Davis Wharf Working Waterfront*
Condition: Fair
Key Findings:
- The site is located in an Estuarine Intertidal Unconsolidated Shore and is at a high risk due to potential sea-level rise.
- There is limited shoreline stabilization, and a comprehensive capital repair and stabilization plan is needed.

3. *Onancock Marina*
Condition: Fair to Good
Key Findings:
- Hurricane Sandy caused significant damage, including the loss of the harbormaster building.
- Improvements include boat slip reconfiguration and improved pedestrian access to downtown.
- Coastal flooding is a regular issue, especially from September to November, and an updated flood abatement plan is necessary.

4. *Curtis Merritt Harbor of Refuge*
Condition: Fair to Good
Key Findings:
- The harbor has undergone major improvements with funding from the Virginia Saltwater Recreational Fishing Development Fund.
- Intense water surge and erosion have created long-term challenges for harbor infrastructure.
- A flood risk management project is in the planning stages in partnership with the U.S. Army Corps of Engineers.

5. *Saxis Harbor*
Condition: Fair to Good
Key Findings:
- Saxis Harbor is frequently affected by high tides and heavy storms.
- A landscape-scale restoration strategy has been prioritized by The Nature Conservancy to help mitigate climate change impacts and protect surrounding marshlands.

HRPDC Site Assessments Summary (6 total sites)
1. *Lynnhaven Boat Ramp*
Condition: Good
Key Findings:
- The facility serves both commercial and recreational users, providing amenities such as boat trailer parking, restrooms, and temporary mooring areas.
- The City of Virginia Beach has included improvements to the facility in its Capital Improvement Program.
- Retrofit improvements are planned to address issues related to sea level rise and increased flooding, ensuring continued functionality and accessibility of the ramp.
2. *Lynnhaven Municipal Marina*
Condition: Good

Key Findings:

- The marina serves both commercial and recreational boaters, offering 50 boat slips, freshwater and electrical hookups, and a pumpout station.
- Retrofits and improvements will likely be needed to address sea level rise, including more frequent flooding.
- The facility is currently in the proposed phase, identified as a need through formal planning to address flood resilience.

3. *Menchville Marina Improvements*
Condition: Undergoing significant repairs
Key Findings:

- The marina primarily serves commercial seafood offloading, including oysters, and is managed by James River Holdings.
- Improvements include lighting upgrades, dock repairs, shoreline enhancements, and the installation of new docks.
- The marina is currently in the site assessment and preliminary design phase, with grant funding secured for initial work.
- The facility is located in a flood-prone area, with tidal flooding and land degradation as primary coastal hazards.
- Future phases will address flooding risks and infrastructure improvements as part of the full design and implementation process.

4. *Owl Creek Boat Ramp*
Condition: Good
Key Findings:

- The Owl Creek Boat Ramp is located in Rudee Inlet, Virginia Beach, providing access to the Atlantic Ocean. It serves both commercial and recreational users.
- The facility includes four concrete boat launches, unloading areas, and parking for approximately 65 vehicle/trailer spaces and 20 passenger vehicles.
- The boat ramp is adjacent to the Virginia Aquarium and Marine Science Center and features a bulkheaded shoreline.
- A city easement runs through the property, and stormwater management infrastructure is present.
- This project addresses tidal flooding, storm surge flooding, and land degradation, with future flood resilience considerations.
- It is currently in the proposed phase, with funding and planning underway, but it has not been formally initiated or budgeted yet.

5. *Newport News Seafood Industrial Park*
Condition: Proposed
Key Findings:

- City-owned facility providing services to the seafood industry, including utilities and repair.
- Located in Newport News Creek, adjacent to Hampton Roads channel.
- Improvements needed for sea level rise, tidal flooding, and storm surge impacts.
- Facility's existing infrastructure is under review for retrofits.
- The project is in the proposed phase, with no confirmed funding or start date.

6. *Johnson & Sons Seafood**

Condition: Fair

Key Findings: This assessment was completed using a hybrid approach of desktop review conducted by Virginia CZM staff coupled with two (2) site visits jointly made by Virginia CZM staff and local shoreline erosion experts – staff from the James River Association (JRA) and DCR's Shoreline Erosion Advisory Service (DCR-SEAS), respectively. Extensive photographic documentation of site conditions and conversations with the owner of the facility led to the following assessment highlights and the conclusion that a living shoreline would be appropriate if desired:

- The seafood facility has been in operation since the early 2000's, but building and hardened shoreline stabilization structures (e.g. bulkheads, pilings, piers) are still in fairly good shape.
- Large fetch from the north (mouth of Chuckatuck Creek) has led to significant erosion of the marsh and sandy shoreline along the north side of the property, to the east of the main facility and associated hardened structures. Marsh peat has been exposed and an upland embankment is actively eroding, exposing tree roots.
- Lower wave energy along the marsh on the western side of the property has not resulted in erosion as significant as on the north shoreline, but stabilization measures could still be utilized.
- Oyster castles coupled with marsh plantings landward of the castles on the north shore would be sufficient to slow the wave energy and stem the erosion without having to install more costly rock sills. Potential impacts to the Resource Protection Area (RPA) would preclude grading the embankment back or removing trees to create a more gradual slope. As such, stabilizing the marsh toe in place is likely the easiest permitted and lowest cost option.
- On the south shoreline, lower wave energy would allow for the placement of oyster shell bags at the toe of the marsh with supplementary plantings landward as needed. Marsh peat is not currently exposed like along the north shoreline.
- JRA and DCR-SEAS are both in position to offer free shoreline assessments and assistance with funding and permitting applications.
    - JRA offers a free site visit (if follow up is needed), project design, assistance with the permitting process, and maintenance/ monitoring of installed living shorelines for a period of three (3) years. JRA can also fund up to 75% of construction costs, with additional assistance being available based on demonstrated financial need.
    - DCR-SEAS offers free site investigations, technical assistance, written reports, plan reviews, construction inspections, and information on financial assistance, including the Virginia Conservation Assistance Program (VCAP).

*Note: this site assessment effort was undertaken by only Virginia CZM, JRA, and DCR-SEAS staff at the request of the Virginia CZM project manager. No PDC staff were involved, and the Virginia CZM staff time was covered by FY23 and FY24 Task 1.01 Program Management funds. The reason for this supplementary effort was to allow HRPDC staff to retain the ability to select which WWF sites in their region to assess while ensuring that the Johnson & Sons Seafood facility was also assessed for resilience needs. Earlier presentations (prior to the grant start date) given by Virginia CZM about its programmatic goals and network of partners to local citizens associated with the Crittendon, Eclipse, & Hobson (CEH) Civic League led to Virginia CZM staff being invited to assess the property with JRA and DCR-SEAS and include their collective findings in this report as listed above and in **Appendix C**.

NNPDC Site Assessments Summary (2 total sites)

Methodology Overview: NNPDC staff visited the Tides Inn in October, took photos of existing conditions along the shoreline and marina, and met with the site manager to discuss planning site improvement projects. For Westmoreland State Part, NNPDC attended the Potomac Watershed Roundtable meeting in October hosted by the Park, received a tour of the completed stabilization project and eroding cliffs (project pending), and took photos (see **Appendix B**).

1. *Westmoreland State Park - Shoreline Stabilization*
Condition: Fair
Key Findings:

- The project aimed to stabilize the highly eroded shoreline along the Potomac River at Westmoreland State Park.
- It involved constructing a headland breakwater system, adding sand fill, and planting marsh vegetation.
- The project utilized approximately 23,000 tons of sand and 20,000 tons of rock to reduce wave energy and stabilize the shoreline.
- It is now completed, with ongoing monitoring to track the project's effectiveness.
- The project addresses land degradation due to erosion, providing long-term shoreline protection.

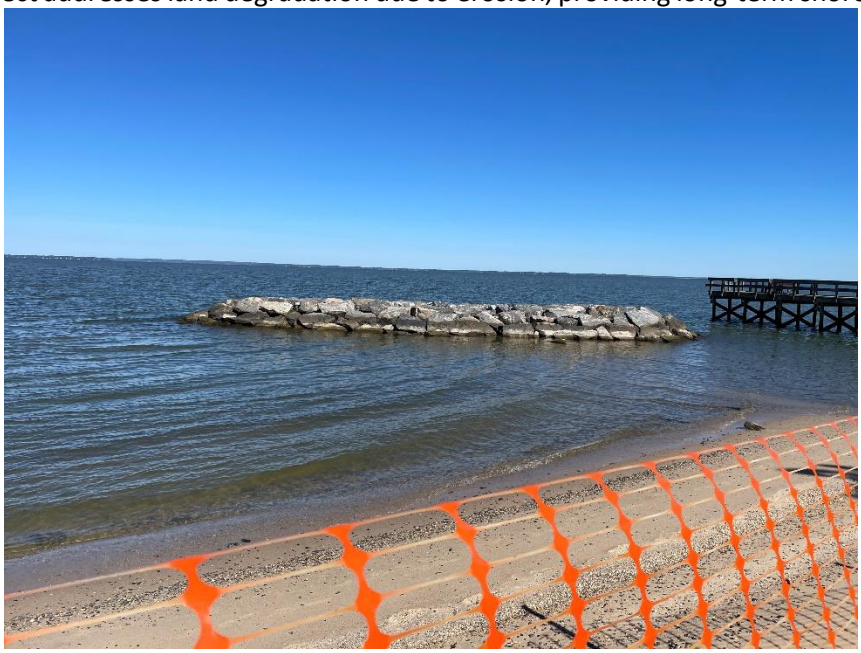

Figure 2. Westmoreland State Park breakwater.

2. *Westmoreland State Park - Horsehead Cliff Stabilization*
Condition: Programmed
Key Findings:

- The project aims to address slope failure along the Potomac River shoreline at Westmoreland State Park, caused by groundwater buildup atop clay layers.
- It will stabilize approximately 5.31 acres of shoreline, with a focus on controlling groundwater erosion and implementing drainage improvements, including the installation of two French drains.
- The project has been budgeted for near-term progression but has not yet begun construction.

- This initiative aims to mitigate land degradation and groundwater impacts to preserve the shoreline.
- The project aligns with climate standards and incorporates meteorological data from NOAA for storm events to improve resilience.

Figure 3. Danger sign for cliff slides at Westmoreland State Park.

3. *Tides Inn - Living Shoreline*
Condition: Proposed
Key Findings:

- The project aims to stabilize the shoreline along Carter Creek in Lancaster County, Virginia, with a combination of breakwaters, beach nourishment, a vinyl sill, bulkhead, elevated boardwalk, and marsh planting.
- It is designed to restore the historic shoreline and incorporate an elevated boardwalk/wharf, benefiting the surrounding sub-watershed.
- The project has been identified through a formal planning process, with the goal of addressing land degradation, sea level rise, and tidal flooding impacts.
- The project is currently in the proposed phase, with no confirmed funding or construction start date. The permit for the project was received in February 2021, and the estimated end date for completion is January 2024.

Figure 4. Shoreline along Tides Inn property that could be converted to a living shoreline.

Figure 5. Existing living shoreline installed at the Tides Inn – a potential model for the rest of the property's shoreline.

4. *Tides Inn - Bank Stabilization*
Condition: Proposed
Key Findings:

- The project focuses on stabilizing the eroding bank along Carter Creek in Lancaster County, Virginia, near the site of a former restaurant (The Binnacle), which is now demolished.
- It aims to prevent shoreline and tree loss, following a similar approach to bank stabilization on the opposite side of Carter Creek.

- This project is designed to address land degradation and will contribute to ecosystem restoration in the area, supporting marsh and oyster recruitment efforts.
- The project is still in the proposed phase, with no finalized scope or permits in place. The project is in the early stages of planning and is expected to align with environmental initiatives already undertaken at the Tides Inn property.

Figure 6. Eroding bank on opposite side of Carters Creek from the main Tides Inn property.

MPPDC Site Assessments Summary (5 total sites)

Methodology Overview: MPPDC staff evaluated the five (5) WWF sites using a combination of three (3) methods: 1) completion of the standard WWF Assessment form, agreed upon by all participating PDCs; 2) a more detailed report for each site based on work contracted out to VHB, an environmental consultant; and 3) in-person site visits to all locations. MPPDC staff also exceeded the minimum assessment methodology standards by leveraging existing relationships with site owners to gain further understanding of site conditions and needs. These relationships were developed during the staff's previous roles at the Virginia Marine Resource Commission (VMRC), where they frequently interacted with site owners, providing them with valuable insights into the unique challenges and opportunities of working waterfronts. Additionally, MPPDC staff has extensive experience working at working waterfronts, having previously visited such sites daily in their prior role with VMRC.

1. *Brown's Bay State Dock*
Condition: Proposed
Key Findings:

- The site is a heavily used commercial waterfront located in Gloucester, Virginia, consisting of a public dock used for seafood offloading and commercial vessel parking.
- The dock is situated in Brown's Bay, adjacent to Mobjack Bay, surrounded by private commercial operations and marshland.
- The project aims to address issues of tidal flooding, storm surge, riverine flooding, and land degradation at the site.

- Improvements may include stormwater drainage enhancements, green infrastructure, and potentially a living shoreline to help mitigate coastal hazards.
- The project is still in the proposed phase, with no confirmed funding or construction start date.

2. *Davis Creek*
Condition: Proposed
Key Findings:

- Davis Creek Landing is an existing commercial waterman dock located in Mathews, Virginia, with limited upland area for expansion.
- The site provides access to Mobjack Bay and the Chesapeake Bay, used primarily for offloading oysters and crabs, as well as recreational activities in the summer.
- The project aims to address tidal flooding, storm surge, riverine flooding, and land degradation issues at the site.
- Improvements may include stormwater drainage enhancements, green infrastructure, and potentially a living shoreline to mitigate coastal hazards.
- The dock is aging, with piles nearing the end of their useful life. A structural inspection is needed before making any major improvements.
- The project is still in the proposed phase, with no confirmed funding or construction start date.

3. *Locklies Creek Landing*
Condition: Proposed
Key Findings:

- Locklies Creek Landing is a commercial waterman dock located on Locklies Creek Road, primarily used for waterman purposes and adjacent to several other commercial waterman facilities.
- The site is highly accessible and has potential for improvements to better serve its commercial users.
- The project aims to address tidal flooding, storm surge, riverine flooding, and land degradation at the site.
- Proposed improvements may include stormwater drainage enhancements, green infrastructure, and potentially a living shoreline to mitigate coastal hazards.
- The pier is showing signs of age, with minor issues, including some corrosion and the need for cross-bracing repairs and erosion control at the entrance.
- The project is still in the proposed phase, with no confirmed funding or construction start date.

4. *Williams Landing*
Condition: Fair
Key Findings:

- Williams Landing is a public landing located on Timberneck Creek in Gloucester, Virginia, providing quick access to the York River.
- The site has a history of commercial waterman use for mooring and offloading, with some local recreational use.
- The fixed timber pier is Y-shaped, with a raised access area for loading and unloading, though it is not ADA-compliant and requires a 1-foot step-up for truck access.

- The dock is in fair condition, with moderately weathered deck boards and stringers, and severely deteriorated piles. Mooring at the site is by sidetie dockage.
- The project aims to address tidal flooding, storm surge, riverine flooding, and land degradation at the site.
- Proposed improvements may include stormwater drainage enhancements, green infrastructure, and potentially a living shoreline to mitigate coastal hazards.
- The dock's aging infrastructure requires a structural inspection to assess the remaining life of the pier and identify any imminent safety hazards.
- The project is still in the proposed phase, with no confirmed funding or construction start date.

5. *Perrin Wharf*
Condition: Fair
Key Findings:

- Perrin Wharf, owned by the Middle Peninsula Public Access Authority (MPPAA), is located in Gloucester, Virginia, and serves as a WWF providing side-tie dockage and 8 Mediterranean mooring slips.
- The dock is approximately 320 feet long and 8 feet wide, constructed of timber, but has deteriorating infrastructure due to weathering, marine growth, and erosion.
- The surrounding ground around the access to the dock has eroded, and the steps leading to the dock are unsafe. High tides restrict vehicle access for loading and unloading, and parts of the dock, such as finger piers and stringers, are in disrepair.
- Several derelict boats are occupying the mooring slips, impacting the functionality of the site.
- The project aims to address tidal flooding, storm surge, riverine flooding, and land degradation, and is aligned with the VCRMP by focusing on sustainable coastal management and improving public access.
- Recommended improvements include replacing the dock's girders, stringers, and decking, raising the dock's elevation to account for sea level rise over the next 30 years, and conducting a tier 2 inspection on the waterward piles. Consideration of a floating dock may aid waterman vessels in loading and offloading.
- The project is in the proposed phase, with no confirmed funding, start date, or construction timeline.

Product #4: Project Entry into the Resiliency Project Database Methodology

As previously noted in the Product #2 summary above, MPPDC staff worked with Virginia CZM, ANPDC, HRPDC, and NNPDC staff to determine the best method of completing the site assessments in order to streamline the process of any future uploads to the DCR resilience project database. In addition to ensuring that the basic data fields match, this process also includes the development for specific PDC Resiliency Plan(s) according to the criteria established by DCR. Each PDC must have a DCR-approved Resiliency Plan in place as a requirement to make application to DCR for funding of the resiliency project. However, to date only MPPDC has a DCR-approved plan in place and the other PDCs were unable to develop Resiliency Plans due to other pressing priorities as well as staff turnover. The development of a PDC Resiliency Plan was also not a required grant deliverable; Virginia CZM had hoped that the effort would be potentially undertaken concurrently by the PDCs using non-Virginia CZM funding and resources. After discussion with the PDCs about CFPF funding eligibility and a thorough review of the existing criteria for projects listed on the Virginia Coastal Resilience Web Explorer's Projects and Initiatives tab, Virginia

CZM staff determined that the best path forward was for each of the PDCs included in this grant to gather as much information as possible from the WWF site owners and/or using the other methodologies described in the Product #2 summary above to a) populate the existing basic data fields for the DCR project list (see **Figure 1** above) and b) allow for more detailed information to be included for each WWF site. Email correspondence between Virginia CZM staff and MPPDC staff to confirm the WWF site assessment criteria matches the DCR Web Explorer project data fields is included in **Appendix B**. Ultimately, due to that fact that none of the WWF sites assessed yielded projects that were completely ready to be submitted to the DCR resilience project database (nor were required to be submitted by this grant's scope of work), the information remains in the current form of completed assessment forms in **Appendix C** and summarized in the Product #3 narrative above. However, Virginia CZM will coordinate with DCR staff to provide an overview of this report's findings and determine the most appropriate path forward for project submittal and/or identification of alternative funding resources (e.g. JRA's living shoreline funding for the Johnson & Sons Seafood facility). Virginia CZM may also utilize the assessment methods for future updates to the 2016 Virginia Working Waterfront Master Plan.

Conclusion

The Virginia Working Waterfronts Assessment reveals that working waterfronts across ANPDC, HRPDC, NNPDC, and MMPDC are not only aging, but also face significant challenges from coastal hazards such as rising sea levels, shoreline erosion, and coastal flooding. Each region has identified key vulnerabilities and specific needs, including shoreline stabilization, flood risk management, and infrastructure repairs. The findings presented in this report will contribute to the VCRMP and will assist DCR in developing strategies to enhance the resilience of working waterfronts as a sub-category of critical commercial infrastructure throughout the Coastal Zone. The pilot assessment of a handful of WWF sites will also allow Virginia CZM to be more strategic in an overall approach to update the 2016 Virginia Working Waterfront Master Plan, as resources and partnerships allow.