Albemarle-Pamlico
National Estuary Partnership

FY24-25 Progress Report
&
Workplan Proposal for FY25-26

US EPA
Cooperative Agreements CE-03D20024 & CE-00D95519

www.apnep.org

Approved by the APNEP Leadership Council
15 April 2025

Mission

To understand, protect, and restore the significant resources of the Albemarle-Pamlico estuarine system.

Table of Contents

Executive Summary 4
Purpose 4
Cooperative Agreements 4
Principal Contacts 4
Albemarle-Pamlico National Estuary Partnership 5
Key Accomplishments 6
Focus Areas and Activities 6
Water Quality 6
Wetlands 7
Submerged Aquatic Vegetation (SAV) 7
Resilience 8
Engagement and Stewardship 9
Partnership-Building and Regional Coordination 10
Proposed CWA 320 Grant Budget for FY25-26 11
Partnership Activities & Projects (Ongoing & New) 12
Goals for FY25-26 12
Capacity Building / Programmatic 12
Water Quality 17
Wetlands 22
Oyster Habitats 24
Estuarine Submerged Aquatic Vegetation (SAV) 24
Resilience 26
Engagement and Stewardship 28
Partnership-Building and Regional Coordination 31
Core Partnership Entities 38
Host 38
Management Conference 38
Partnerships 39
Administration and Program Implementation 39
Travel 41
Non-Federal Cost-Share (Match) 44
Leveraged Funds 45

Appendix A: 2025 CCMP Goals & Outcomes 46
Appendix B: 2025 CCMP Objectives and Actions 47
A: Understand 47
B: Protect & Restore 47
C: Engage 49
D: Monitor 50
Appendix C: FY24-25 Approved Grant Budget 51

Executive Summary

Purpose

This document is a compilation of two distinct reports:

FY24-25 Progress Report

This report provides details on APNEP's completed and ongoing projects from October 2024 to April 2025 under cooperative agreements CE-00D95519 and CE-03D20024 with the U.S. Environmental Protection Agency. Projects completed before October 2024 can be found in previous reports, available at APNEP.org.

FY25-26 Workplan and Budget Proposal

This report outlines the proposed 2025-2026 workplan and budget for the fiscal year starting October 1, 2025. It represents a new request for an $850,000 funding under a new cooperative agreement per EPA (2/14/25).

Cooperative Agreements

This document outlines activities under EPA/NC-DEQ Cooperative Agreements CE-00D95519 and CE-03D20024 to support the implementation of APNEP's Comprehensive Conservation and Management Plan (CCMP), under the Leadership Council's direction, and to further APNEP's mission of understanding, protecting, and restoring the region's significant resources. The performance period for Cooperative Agreement CE-00D95519 is from October 1, 2019 to September 30, 2025. The performance period for Cooperative Agreement CE-03D20024 is from October 1, 2024, to September 30, 2029.

The Cooperative Agreements are provided to the Albemarle-Pamlico National Estuary Partnership to support the Clean Water Act Section 320, 40 CFR 35.9065, the Infrastructure Investment and Jobs Act (IIJA), 2 CFR 200.328, and Pillars 1 and 3 of EPA's 5-pillar initiative. The goal is to restore, protect, and maintain the chemical, physical, and biological integrity of the estuary and support its sustainable human uses through projects and activities, and the outputs & outcomes as outlined in the workplan.

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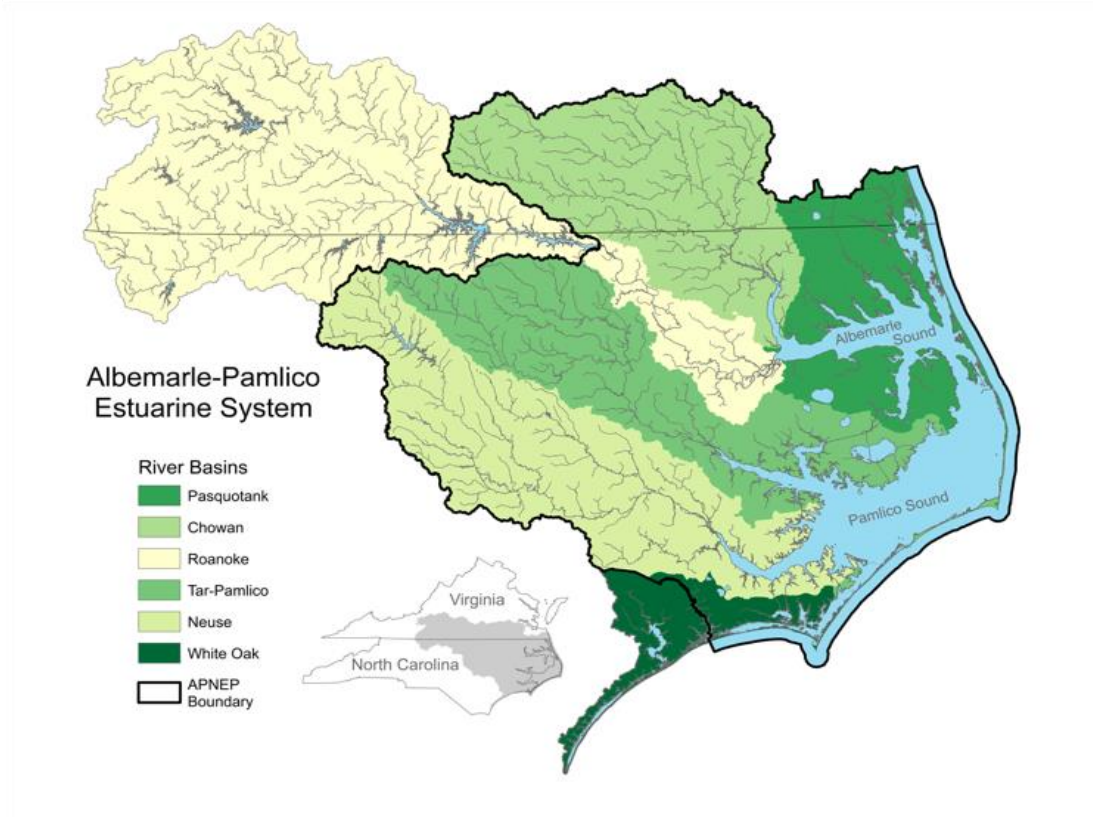
Albemarle-Pamlico National Estuary Partnership

The Albemarle-Pamlico National Estuary Partnership (APNEP), established in 1987 under the Clean Water Act amendments, is one of 28 National Estuary Programs (NEPs) overseen by the U.S. Environmental Protection Agency (EPA). APNEP's mission is to understand, protect, and restore the significant resources of the Albemarle-Pamlico region. The Partnership, hosted by the North Carolina Department of Environmental Quality (NC-DEQ) under an agreement with EPA, also works in collaboration with the Commonwealth of Virginia.

APNEP's initial Comprehensive Conservation and Management Plan (CCMP) was approved in 1994 by the North Carolina Governor and the EPA. The third CCMP, approved in January 2025, builds upon the stakeholder-driven, ecosystem-based approach established in the second (2012) CCMP. The APNEP Office receives guidance from a Management Conference, as authorized by North Carolina Governor's Executive Order #250 (2022).

The Albemarle and Pamlico Sounds form the largest semi-lagoonal estuarine system in the U.S., covering eight sounds and five major river basins across 30,000 square miles of North Carolina and Virginia watersheds. This system provides critical habitat for numerous species and supports activities such as residential development, food production, mining, forestry, business, research, industry, tourism, and recreation.



Key Accomplishments

Key accomplishments from October 2024 through April 2025 are highlighted below. Details about these and other projects can be found in the Partnership Activities and Projects Section below.

Focus Areas and Activities

The Partnership continued to focus on CCMP priorities as directed by the Leadership Council, concentrating on water quality, wetlands, estuarine submerged aquatic vegetation (SAV), oyster habitats, and resilience - aligning with both the 2025 CCMP and APNEP's mission. Implementation for all three CCMP goals (see Appendix A) were supported. APNEP worked to further public engagement and regional collaborations to support CCMP development and its implementation. Additional efforts included expanding upon the monitoring strategy and establishing a restoration strategy.

Water Quality

Development of Integrated Monitoring Strategy

APNEP staff and SAV Team monitoring leaders began development of an Integrated Monitoring Strategy with their initial focus in 2021 on estuarine SAV and that portion of water quality associated with clarity. This Leadership Council-approved strategy has guided SAV data acquisition, curation, and analysis. The APNEP monitoring and assessment teams (MATs) are using this plan as a model to develop monitoring strategies for other ecosystem components, with the highest priority being estuarine waters (water quality) and bed sediments. Several MATs, including Water Resources, Wetland Resources, and Terrestrial Resources were re-initiated in 2024.

NC Nutrient Criteria Development Plan Support

APNEP staff and select STAC members have been actively involved in the NC Nutrient Criteria Development Plan (NCDP) for the Albemarle Sound and Chowan River. They assisted the NC Division of Water Resources (NCDWR) in understanding the system and recommended experts in high- and low-salinity SAV, SAV impacts on fish productivity, and water quality for the NCDP's Scientific Advisory Council. NCDWR has selected SAV as a biological indicator for the health of these waters. In 2024, APNEP focused on reviewing final reports for several research studies. APNEP staff will continue to participate in nutrient criteria development until recommendations are accepted by NCDWR, approved by the NC Environmental Management Commission, and submitted to the EPA.

Interagency collaborative on harmful algal blooms in the Chowan River and Albemarle Sound

APNEP co-led the reconvening of a collaborative effort with the NC Office of Recovery and Resilience (NCORR), North Carolina Sea Grant, Albemarle Regional Health Services, and Chowan-Edenton Environmental Group. This effort formed a working group to host stakeholder and community

workshops, synthesize emerging research, identify knowledge gaps, and address community concerns. Bringing together various perspectives has helped identify next steps to improve conditions and mitigate the negative impacts of harmful algal bloom events on people, wildlife, and estuarine waters and support research that informs policy development including numeric nutrient criteria for Albemarle Sound. In 2024, APNEP continued to work with NCORR, Sea Grant, NC State University, and other partners to implement workshop recommendations. The project has been expanded in the IIJA/BIL FY22-27 Workplan, with most reporting now shifting to the IIJA/BIL annual report.

Wetlands

Regional Wetland Monitoring & Assessment

In October 2024, APNEP reactivated the Wetland Resources Monitoring and Assessment Team (MAT), expanding collaboration with partners to advance wetland monitoring and assessment. APNEP is developing a wetland monitoring strategy, along with a near-term monitoring plan, both following APNEP's three-tiered monitoring approach.

The Wetland Resources MAT is developing an initial assessment report focused on the priority metric "areal extent by wetland type," using historical C-CAP change data. To support among other indicator metrics this wetland metric," APNEP leveraged support to acquire high-resolution land cover data from NOAA's Coastal Change Analysis Program (C-CAP) Phase-2 mapping. With a spatial resolution 900 times greater than traditional C-CAP data, this will improve the ability to distinguish up to seven wetland types and create a more detailed baseline for future monitoring.

APNEP has also contracted with the NC Natural Heritage Program for a 2025 peatland field inventory within the APNEP region, providing valuable data for future assessments.

Submerged Aquatic Vegetation (SAV)

Estuarine SAV Monitoring and Assessment

APNEP continued to lead the monitoring of priority estuarine habitat indicator, SAV, via aerial imagery acquisition and boat-based surveys in collaboration with the SAV Team that APNEP has facilitated since 2004. Bi-seasonal surveys were conducted in the northern Pamlico Sound subregion during Spring and Fall 2024. Each seasonal survey has an aerial component (Tier 1) with support from the North Carolina Department of Transportation, and boat-based (Tier 2) component involving multiple partners from the SAV Team. Beginning with the Fall 2024 survey, the Tier-2 component was contracted by APNEP with the University of North Carolina at Wilmington for improved sampling efficiency and consistency. In 2025, bi-seasonal surveys will return to the first (Bogue and Back Sounds) of the four subregions. Additionally, an updated assessment report on high-salinity SAV areal extent by cover class will be released in 2025, along with updated maps for all four subregions based on the 2021-2024 survey efforts.

APNEP also anticipates advancing low-salinity SAV monitoring efforts in Currituck Sound in 2025 through regional partner collaboration.

Resilience

NC Executive Order 80 Implementation

APNEP staff continue to engage in activities related to 2020 NC Climate Risk and Resilience Plan (RARP), including participation in the Natural and Working Lands Stakeholder Team, Coastal Habitats and Pocosin Wetlands Subcommittees, Coastal Resilience Community of Practice, NC Office of Recovery and Resilience's (NCORR) RISE program, and the NC Resilience Exchange Committee. Staff contributed to the NWL 2024 Progress Report, released in October, which provides updates on activities supporting the NWL Action Plan and RARP implementation, such as CCMP progress and collaboration with the NC Division of Marine Fisheries on the NC CHPP. APNEP's facilitation of its SAV Team, including mapping, monitoring, metric development, and economic valuation studies, has significantly contributed to the protection of SAV, a key objective in the RARP and NWL Action Plan. APNEP's community resilience efforts focused on initiatives including the Tribal Coastal Resilience Project, Scuppernong Regional Water Management Study, Southern Rivers Roundtable, and MOU implementation.

Tribal Coastal Resilience Connections

In 2024, the Tribal Coastal Resilience Connections (TCRC) team focused on implementing the recommendations from its Phase I report (2023). These included strengthening Inter-Tribal coalitions, creating tools to help communities protect and restore their water, lands, public health, and natural resources, and developing Tribal-led solutions for adapting to environmental changes and extreme weather. The team is also updating historical research and community-directed mapping of Tribal communities linked to the Albemarle-Pamlico region.

The TCRC team engaged in outreach by hosting virtual webinars with the United Tribes of North Carolina, Duke University, and the Sierra Club, participating in community events, presenting at the NOAA Coastal Geotools Conference in January 2025, and hosting an interactive workshop at the 2025 United Tribes of North Carolina Conference. The TCRC team's efforts extend across state lines, supporting APNEP's MOU with Virginia. The team is partnering with the VA-DCR Natural Heritage Program on a project funded by NOAA Coastal Zone Management IIJA/BIL funds to acquire 1,900 acres of forest in the Chowan watershed for resilience, biodiversity conservation, and public access. The TCRC team will assist with historical research, mapping, and coordination with Tribal communities in both Virginia and North Carolina.

Engagement and Stewardship

Watershed Engagement Projects

In response to competitive request for proposals (RFP) in 2021, the Engagement and Stewardship Action Team selected the following four projects through a competitive evaluation and ranking process. All projects are under contract and in progress.

- ***Growing Wild Celery to SAVe Our Wetlands: A Grassroot Collaborative:*** The Back Bay Wildfowl Guild is working to restore wild celery, a crucial part of the native submerged aquatic vegetation (SAV) in Back Bay and Currituck Sound. As part of the project, the Atlantic Wildfowl Heritage Museum and its partners will provide curriculum, teacher training, and technical support to Virginia Beach and North Carolina public schools for an educational program focused on the restoration effort. An exhibit at the museum will emphasize the importance of preserving aquatic ecosystems.

- ***Experiencing the Albemarle-Pamlico Estuary: Fostering Watershed Stewardship:*** This North Carolina Wildlife Federation (NCWF) led project will engage community members in stewardship efforts to restore key watershed habitats and educate adults and youth about their value to wildlife and people. The project will lead to creating three native pollinator gardens, restoring a wetland meadow, and installing bilingual (English and Spanish) educational signage. NCWF will also offer Habitat Stewards Training for adult volunteers and nature outings for youth in Tyrrell, Gates, and Chowan counties

- ***Down East Resilience Network Communications Strategy:*** The Core Sound Waterfowl Museum and Heritage Center hosts the Down East Resilience Network (DERN), a group of stakeholders—including residents, researchers, educators, and government officials, focused on enhancing the area's long-term resilience. This project will increase staff capacity, develop a comprehensive outreach strategy, and create an online presence for DERN through a dedicated website. Following the website launch, DERN will develop and pilot outreach materials that connect local stories and research to actionable information for community support and education.

- ***Shad in the Classroom***: This North Carolina Museum of Natural Sciences (NCMNS) led project will build on the 2021 Watershed Engagement Project, focusing on science careers and hands-on learning about American Shad and North Carolina's River Basins. In spring 2025, 25-35 classrooms across 15 counties (4 Tier 1, 5 Tier 2, and 6 Tier 3) will raise shad from egg to fry. Teachers will be invited to attend a training at NCMNS to learn about American Shad's natural history, the process of raising and releasing fish, and related classroom activities. Additionally, an Educator Trek in the APNEP region will give educators hands-on field experience with the region's natural history. Educators will receive resources to incorporate these topics into their classrooms.

Partnership-Building and Regional Coordination

2025 Comprehensive Conservation and Management Plan

APNEP completed the multi-year process of updating its CCMP in December 2024 and after an additional 30-day public comment period the Leadership Council approved the strategic plan on January 17, 2025. The plan was subsequently approved by EPA Region IV with concurrence from EPA Headquarters.

NC Aquatic Nuisance Species Management Plan Committee Coordination

Staff continued to co-facilitate the NC Aquatic Nuisance Species Management Plan (NC-ANSMP) Steering Committee, which focused on revising the state's plan for federal approval and identifying next steps for implementation. The Committee plans to seek the support of the Governor's Office to submit the plan to the federal Aquatic Nuisance Species Task Force (ANSTF) in 2026. Once finalized and federally approved, the plan will make North Carolina eligible for federal funding to support its implementation. The plan aims to improve coordination and collaboration across state agencies, optimizing limited resources for invasive species management. APNEP and NCDWR have secured funding from both NCDEQ and the Mid-Atlantic Panel on Aquatic Invasive Species to support this work throughout 2025. Learn more.

Scuppernong Regional Water Management Study

APNEP continued to facilitate implementation of the Scuppernong Regional Water Management Study in collaboration with multiple local, state, and federal entities through a NCDEQ Water Resources Development Grant awarded to the Albemarle Commission and Community Engagement Strategy funded through NOAA Digital Coasts and the National Estuarine Research Reserve Association (NERRA). APNEP serves as a neutral, science-based facilitator, bringing together stakeholders and local communities to address flooding and water management issues on the northern Albemarle-Pamlico peninsula, which includes Pettigrew State Park (Lake Phelps), Pocosin Lakes National Wildlife Refuge, and Buckridge Coastal Reserve.

Phase I of the Scuppernong Water Management Study, led by Kris Bass Engineering and completed in spring 2024, focused on partner and community engagement and collecting and generating data necessary to complete robust hydraulic and hydrologic modeling. Phase II involved finalizing watershed-scale models, creating a water budget of the Scuppernong basin, and developing small scale, localized hydraulic models in priority areas of concern identified by the community. The Phase II Interim Report was submitted January 2025 and the draft final report containing results and recommended actionable recommendations was submitted March 2025. Planning for workshops and outreach with the Steering Committee, partners, and local communities is underway. APNEP has budgeted funding to support project implementation discussed in more detail in the IIJA/BIL workplan and report.

Proposed CWA 320 Grant Budget for FY25-26

For the period from October 1, 2025, to September 30, 2026, APNEP requests a CWA Section 320 grant of $850,000 to support the implementation of its CCMP and mission under the current Cooperative Agreement, CE-03D20024. Proposed uses for this funding are summarized below, with detailed information provided in the workplan. The FY24-25 grant budget is included in Appendix C for reference.

Activity	Grant Budget Proposal
Water Quality Projects	$ 30,000
SAV Projects	$ 30,000
Wetland Projects	$ 30,000
Oyster Habitat Projects	$ 30,000
Resilience Projects	$ 30,000
Engagement & Stewardship Projects	$ 30,000
Management Conference Support	$ 3,000
APNEP-NCSG Joint Fellowships	$ 6,000
Events & Sponsorships	$ 1,800
Program Administration*	$607,273
Travel	$ 10,000
Subtotal	$808,073
Indirect Cost (*10%*)**	$ 41,927
Total Grant Funds	$ **850,000**

**Includes personnel, supplies, equipment, and fringe benefits that are based on Social Security (7.65 %), Retirement (24.04 %) of position's annual salary and Medical Insurance Plan rate of $8,095 per year per person (as of 14 Feb 2025, NC DEQ).*
***Indirect Costs are based on NCDEQ - EPA federal de minimis rate of 10%.*

Partnership Activities & Projects (Ongoing & New)

The following summarizes the status of APNEP's projects and activities under Cooperative Agreements CE-0D20614 and CE-03D20024, highlighting progress since the 2024 year-end report. It covers ongoing projects that began before or during the last fiscal year and are expected to continue into the current fiscal year, along with new projects for 2025-2026. In accordance with section 320(b)(4)(B) of the Clean Water Act (where applicable), the workplan outlines how efforts to build resilience against the impacts of recurring extreme weather events are incorporated into actions aligned with the CCMP.

A separate report on completed and ongoing projects under Cooperative Agreement 4T-02D41823 for the FY22-FY27 Workplan & Budget under the Infrastructure Investment and Jobs Act (Bipartisan Infrastructure Law) was submitted to EPA Region IV on December 18, 2024.

Goals for FY25-26

Actions supporting implementation of all three 2025 CCMP goals will continue in FY25-26. The Partnership will prioritize water quality, wetlands, submerged aquatic vegetation (SAV), oyster habitats, and resilience actions, as directed by the Leadership Council. APNEP efforts will also focus on enhancing public engagement, strengthening regional collaborations, and refining the monitoring strategy to support CCMP implementation. Through implementation of this proposed workplan, APNEP is working to the EPA's Pillar 1: Clean air, land, and water for every American; and Pillar 3: Permitting reform, cooperative federalism, and cross-agency partnership of Administrator Zeldin's 5-pillar initiative.

Capacity Building / Programmatic

2025 CCMP Update

Objectives: To update the CCMP to reflect current priorities of the Management Conference and resource issues in the region, and Section 320 of the Clean Water Act, including amendments under the Protect and Restore America's Estuaries (PRAE) Act of 2021.

Description/ Status: APNEP completed the process of updating its CCMP on January 17, 2025, with approval from EPA Region VI and concurrence from EPA Headquarters. Staff will be working with the Management Conference to develop any additionally required supplement material in the next few years. The 2025 CCMP has five focus areas: Water Quality, Submerged Aquatic Vegetation, Wetlands, Oyster Habitats, and Resilience. APNEP emphases are on projects that integrate multiple focus areas and link both ecosystem and community resilience.

FY25-26 Plans:

- Staff will be working with the Management Conference and partners to align projects and activities to support CCMP implementation.

Community Engagement and Communication Efforts

Objectives: Actively engage a broad array of regional experts, communities, and stakeholders within APNEP region to guide decision-making and CCMP implementation. Enhance awareness and accessibility of APNEP and partner resources, improve knowledge of Albemarle-Pamlico region issues, and promote environmental stewardship. Develop and highlight targeted communications strategies and materials for specific APNEP initiatives.

Description: In 2020, APNEP committed to engaging individuals, communities, and populations in its decision-making processes and to diversifying perspectives within its management conference and advisory groups. APNEP creates various print and digital communications materials to effectively reach diverse audiences, including partner organizations, local government, tribal communities, the public, and scientists. These materials include the website, social media platforms, blog, e-newsletter, and printed fact sheets and brochures.

FY25-26 Plans:

- Continually seek opportunities to assist communities that lack the capacity and resources to deal with environmental issues, particularly in rural areas in eastern NC.
- Seek collaborations that are actively focused on work with communities in the region where APNEP can support and connect community partners with additional resources and support.
- Developing targeted strategies for social media consistent with the outreach and engagement strategy.
- Continue to partner with representatives from Tribal coastal plain communities, universities, and agencies through the Tribal Coastal Resilience Connections project described elsewhere.
- APNEP and partners received funding from NOAA and NERRA to conduct community engagement in communities that are vulnerable to extreme weather events, inundation, and flooding.

Monitoring and Assessment Teams Facilitation

Objectives: Facilitate communication among partners on priority issues in the Albemarle-Pamlico region, foster cooperation, and develop collaborative initiatives to achieve shared goals and support APNEP's monitoring plans and assessment deliverables.

Description: APNEP's initiatives are guided by regional partners and stakeholders. In 2017, APNEP reconvened seven monitoring and assessment Teams (MATs) to develop (1) integrated monitoring strategies for tracking CCMP ecosystem outcomes, and (2) assessment deliverables, including metric reports, indicator reports, and ecosystem assessments. MATs that align with the 2020 focus areas (SAV, Water Quality, Wetlands, Oysters, and Resilience) will continue to receive staff facilitation priority, as directed by the Leadership Council. Efforts will also be made to reactivate inactive MATs for the further

development of integrated monitoring strategies. In 2024, Water Quality, Wetlands, and Terrestrial MATs were re-initiated.

FY25-26 Plans:

- Continue working with MAT members on developing metric assessment reports targeted to technically oriented managers, along with a companion deliverable (e.g., report card, story map) targeted to policy makers and/or public.
- Once metric reports are approved by a MAT, work with members to develop an initial MAT-specific synthesis assessment.
- Seek and compile feedback from Management Conference on MAT deliverables.

Integrated Monitoring Strategy & Ecosystem Indicator Development

Objectives: Facilitate the creation and implementation of an integrated monitoring network with guidance from monitoring and assessment teams, and to assess the value of information for measuring ecosystem and CCMP outcomes.

Description: APNEP is developing an integrated monitoring strategy to detect, measure, and track ecosystem changes. The APNEP Monitoring and Assessment teams (MATs) have already completed much of the preparatory work, and their ongoing contributions will be crucial. The strategy will offer resource managers and partners cost-effective, high-quality monitoring options to help select protocols for implementation. Each MAT has identified a prioritized list of indicators and metrics. APNEP staff consolidated these priorities into a list of "high priority/Tier 1" indicators for monitoring. With input from the STAC, staff and SAV Team leaders, APNEP developed an initial Integrated Monitoring Strategy, focused on estuarine SAV and the water quality. The Leadership Council approved the strategy in March 2021, and it continues to be implemented by the APNEP SAV Team. Using this model, other MATs are developing additional ecosystem components.

FY25-26 Plans:

- Continue working with MAT members to develop initial monitoring strategies for the remaining ecosystem components: Air Resources, Aquatic Fauna, Human Dimensions, Terrestrial Resources, Water Resources, and Wetland Resources.
- Work with MAT members to refine initial monitoring strategies for the SAV ecosystem component.
- Work with MAT members to develop monitoring plans for the integrated monitoring pilot areas.

Focus Teams (Non-IIJA Priorities)

Objectives: Enhance facilitation and support for forming focus teams by recruiting graduate or post-doctoral contractors. The main objective is to accelerate the implementation of select CCMP actions, particularly for those actions requiring substantial technical guidance during the early stages. A secondary goal is to provide Management Conference members with an appealing short-term (six to

nine months) advisory role, complementing members longer-term contributions (e.g., STAC members serving on APNEP MATs.

Description: The idea of creating focus teams arose from the realization that the approach of individual CCMP Action Teams addressing multiple actions had significant implementation challenges, primarily due to limited facilitation capacity. As a result, Management Conference members had limited opportunity to contribute. To address this, facilitation support—modeled after a successful Chesapeake Bay Program initiative—will ensure more effective CCMP action implementation from the start.

Funding for focus teams will be split between IIJA and non-IIJA priorities. This funding will cover IIJA priorities, while non-IIJA priorities will be funded through the annual workplan. Specifically, CWA Section 320 funds will support STAC's further assessment of CCMP Action C3.2.

FY25-26 Plans:

- Seek access to graduate or post-doctoral contractors through APNEP academic partners.
- For each of five CCMP actions, complete focus team recruitment then develop near-term implementation plans and initial progress reports.

Events and Sponsorships

Objectives: To support regional partners in reaching shared goals, to leverage resources and transfer knowledge/skills within the Albemarle-Pamlico region.

Description: APNEP supports regional outreach, networking, and knowledge/skill transfer events via sponsorship. Sponsorship funding generally falls between $500-$2500 and helps to leverage resources to reach shared goals and promote collaborative opportunities. APNEP may participate in sponsored or non-sponsored events via tabling, environmental education activities, or logistical support.

Progress to Date:

- Down East Resilience Network community gathering hosted by the Core Sound Waterfowl Museum and Heritage Center on Harkers Island, NC.
- September 2024 National Estuaries Week (social media)
- APNEP hosted a table at the 2024 Sea Grant Coastal Conference and assisted with judging the student poster competition.
- February 2025 I Heart Estuaries (social media)
- Team members were invited to speak during a panel discussion at the 2025 NOAA Geotools Conference and the Rising Voices Center for Indigenous and Earth Sciences 2024 Conference.
- APNEP served as a sponsor for the 2025 WRRI conference and hosted a booth. Staff participated in the plenary panel featuring the Scuppernong Study and a panel session focused on cross-DEQ collaborations.
- APNEP is supporting the convening of the Virginia Southern Rivers Roundtable led by Crater Planning District Commission with IIJA funds

- Staff were invited to present with Crater PDC during a session on the Southern Rivers Roundtable at the April 2025 North Landing River & Albemarle Sound Estuarine Symposium held by the City of Virginia Beach

Joint Graduate Fellowship in Estuarine Research

Objectives: To foster interest in research related to CCMP goals; obtain research that can be used to inform APNEP and regional partner efforts to protect and restore ecosystem processes.

Description: APNEP and the NC Sea Grant (NCSG) College Program have supported a Joint Graduate Fellowship since 2015 (first awarded project began in 2016). The fellowship provides funding for a graduate student based in NC to conduct applied research within the North Carolina portion of the APNEP programmatic area. Fellows must conduct research that addresses focus areas identified in the CCMP and the NCSG Strategic Plan. More detail on the fellowships may be found at https://apnep.nc.gov/our-work/identification-and-research/apnep-sea-grant-joint-graduate-fellowship.

Status:	Ongoing
Partners:	NC Sea Grant (Lead)
Outputs/Deliverables:	Final report, presentations, maps, data
Outcomes:	Increased capacity to address CCMP implementation actions
FY24-25 CWA 320 Cost:	Staff time, $5,000
FY25-26 CWA 320 Cost:	Staff time, $5,000
Estimated Leverage:	$5,000 per cycle
CCMP Actions:	B1.5, C1.2
CCMP Outcomes:	2a, 2b, 2c, 3d
CWA Core Programs Addressed:	(4) addressing diffuse, nonpoint sources of pollution, (6) protecting coastal waters through the National Estuary Program
EPA Element(s):	Direct Assistance

Progress to Date:

Since 2019, APNEP and NC Sea Grant have supported five fellows with research focused on SAV, coastal wetlands, and water quality. The 2025 fellow's research is focused on SAV and water quality. In 2026, ANPEP anticipates hosting another fellow with research associated with one of the CCMP focus areas.

FY25-26 Plans: An announcement / call for applications for the 2026 fellowship opportunity will be released in Fall 2025.

CCMP Implementation Projects: Undesignated

(An ongoing undesignated category with new projects approved by Management Conference in line with CCMP focus areas)

Objectives: Targeted CCMP Implementation Projects.

Description: APNEP staff will work with the Management Conference, associated Teams, and partners to identify projects that need financial support or administrative support for CCMP implementation. A group composed of the Leadership Council, CAC, and STAC will evaluate requests and administer the funding for priority projects and activities that exceed $10,000. Project examples may include but are not limited to projects such as Ecological Flows Phase III, SAV Monitoring, Wetland Mapping, Living Shorelines, or other projects that align with APNEP priorities and CCMP implementation. As CCMP implementation refocuses with a renewed 2022 Executive Order #250, 2025 CCMP Update, 2020 Interstate MOU with Virginia, and FY2022-2027 IIJA/BIL Workplan, APNEP will continue to develop and implement collaborative solutions that address regional needs and inform project development.

Status:	New
Partners:	To be determined by project or activity
Outputs/Deliverables:	Partnership building, CCMP implementation
Outcomes:	CCMP implementation
FY24-25 CWA 320 Cost:	Staff time, $ 30,000 per focus area, total $180,000
Estimated Leverage:	$ 100,000
CCMP Actions:	TBD
CCMP Outcomes:	TBD
CWA Core Programs Addressed:	TBD
EPA Element(s):	TBD

Water Quality

NC Nutrient Criteria Development Plan Support

APNEP staff and select Scientific and Technical (STAC) members who are experts in high- and low-salinity SAV, and water quality issues are active in the NC Nutrient Criteria Development Plan (NCDP) process. NCDWR has selected SAV as a biological indicator for the health of the Albemarle Sound and Chowan River. The NCDP Scientific Advisory Council (SAC) utilized the projects below to support development of proposed water quality standards. The SAC drafted a proposed clarity standard for SAV protection and a support document to detail the scientific basis for the proposed standard. This standard includes criteria for low- and high-salinity SAV waterbodies, defines the growing season, and outlines the historic SAV extent. The proposed standard is currently under consideration by NCDWR and the NC Environmental Management Commission and will be submitted to EPA. If adopted and implemented, the clarity standard for SAV will satisfy the Recommended Action 4.7 of the North Carolina Coastal Habitat Protection Plan (CHPP) 2021 Amendment (NCDEQ 2021).

To further APNEP indicators, metrics, and monitoring and assessment activities, along with supporting NC's NCDP, APNEP's STAC and SAV Team helped develop the following projects to support the NCDP process. Ongoing projects are discussed in more detail under their own section below. In 2024, APNEP focused on reviewing final reports for several research studies described in more detail below. A complete list of projects is provided for a comprehensive overview.

- Clean Waters and SAV: Making the Connection" 2020 Technical Workshop (completed)
- Development of Chlorophyll-a Standards for SAV Protection (completed)
- Working to development water clarity standards for the Albemarle Sound and Chowan River
- Calibration of a bio-optical model for low-salinity SAV (final report available in 2025)
- Fill Data Gaps on Optical Water Quality Constituents in Currituck Sound (final report available in 2025)
- Research study to support water clarity metrics for SAV protection (completed), report (complete): 2022 Evaluation of Water Clarity and SAV in the Albemarle-Pamlico Estuary
- Water Quality Data Reporting Tool (completed)

Calibration of a bio-optical model for low-salinity SAV

Objectives: Calibrate a bio-optical model to establish quantitative linkages between chlorophyll-*a* concentrations and SAV light requirements to support development of scientifically defensible chlorophyll-*a* standards for protection of low-salinity SAV.

Description: To establish SAV protection and restoration goals for estuarine systems and link them to nutrient and sediment load reductions, quantitative relationships between chlorophyll-a concentrations and SAV light requirements are needed. Building upon previously contracted with UNC-IMS to conduct an analysis for both high- and low-salinity SAV. While the bio-optical model performed well for high-salinity waters where it was originally developed, further calibration was needed for low-salinity SAV. A comprehensive review of available water quality data revealed limited measurements of critical parameters, CDOM and PAR, in low-salinity waters necessary for further calibration. These findings, along with those for high-salinity SAV, will help guide the development of water quality management strategies for SAV protection, particularly through CHPP and NCDP.

Status:	Complete
Partners:	NC-DWR, UNC IMS, APNEP SAV Team
Outputs/Deliverables:	A final report that provides 1) a description of chlorophyll-*a* thresholds protective of low-salinity SAV habitats including quantification of uncertainty in those thresholds; 2) documentation of the data sets and data analyses to validate the bio-optical model or similarly functioning empirical models for determining thresholds; and 3) identification of data gaps that could improve threshold estimates. An oral presentation of project findings to the APNEP management conference, the NC NCDP-SAC and other groups decided by APNEP.
Outcomes:	Scientifically defensible chlorophyll-*a* and turbidity standards that are protective of SAV within low-salinity zones.
FY2021-24 CWA 320 Cost:	Staff time, $ 24,000
Estimated Leverage:	$ 12,000
CCMP Actions:	A1.1, B1.1., B2.1., B2.2, D1.1

CCMP Outcomes: 2b, 3b
CWA Core Programs Addressed: (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program
EPA Element(s): Habitats, Water Quality

Fill Data Gaps on Optical Water Quality Constituents in Currituck Sound

Objectives:

1. Post-calibrate continuously monitored CDOM and chlorophyll *a* fluorescence dataset collected by the U.S. Army Corps of Engineers Field Research Facility (USACE-FRF) and East Carolina University Coastal Studies Institute (ECU-CSI) to produce a high temporal resolution and spatially expansive dataset of the optically active constituents in the appropriate units necessary for modeling K_{dPAR} in Currituck Sound.
2. Measure the absorbance and scattering spectra of the dissolved and particulate fractions of Currituck Sound waters to contribute data for recalibration of the bio-optical model for low-salinity SAV habitats.
3. Data products from accomplishment of Objectives 1 and 2 will be utilized for the ongoing project funded by APNEP to recalibrate the bio-optical model and develop scientifically defensible thresholds for both chlorophyll *a* and turbidity in low-salinity SAV habitats.

Description: Currituck Sound historically hosted expansive low-salinity SAV that provided critical habitats for fish and forage for migratory waterfowl. Since the 1960's, reductions in water clarity have caused significant declines in SAV coverage, however the remaining SAV of Currituck Sound still constitute an important fraction of NC's low-salinity SAV habitats. Understanding the causes of light attenuation for SAV in Currituck Sound is important for developing strategies to restore SAV coverage but this goal is hampered by a general lack of useable data on the optical water quality constituents that drive light attenuation. Additionally, the bio-optical model that is being used to develop water quality thresholds for protecting SAV within APES does not currently perform well in low-salinity SAV waters like Currituck Sound and requires recalibration for low-salinity estuarine waters (see previous project). The USACE-FRF in Duck, NC and the ECU-CSI deployed continuous monitoring instrumentation to produce an extensive dataset of these water quality parameters with turbidity as NTU but both CDOM and chlorophyll *a* were measured in arbitrary fluorescent units (AFU) and are currently unusable for quantifying light attenuation and defining thresholds for protecting SAV. USACE-FRF collected high temporal resolution (15-minute), turbidity (NTU), CDOM (AFU), chlorophyll *a* (AFU), and diffuse attenuation of photosynthetically active radiation (K_{dPAR}) datasets at five research platforms in Currituck Sound from 2016 to 2018. Additionally, from 2018 to 2019, ECU-CSI and USACE-FRF partnered to deploy two instrumented benthic landers that measured these parameters in the same units.

Status: Complete
Partners: UNC IMS, ECU CSI, USACE, APNEP SAV Team, APNEP Water Quality MAT

Outputs/Deliverables: The final report for the larger bio-optical model recalibration project (see above) will incorporate the results funded by this supplement.

Outcomes: Scientifically defensible chlorophyll-*a* and turbidity standards that are protective of SAV within low-salinity zones.

FY2021-23 CWA 320 Cost: Staff time, $ 4,993

Estimated Leverage: $ 2,000

CCMP Actions: A1.1, B1.1, B2.1, B2.2, D1.1

CCMP Outcomes: 2b, 3b

CWA Core Programs Addressed: (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program

EPA Element(s): Habitats, Water Quality

Water Quality Data Reporting Tool

This project expanded and refined an interactive tool (wqReport) to automate the download, preparation, and summary of water quality data from actively maintained databases (e.g., National Water Quality Monitoring Council data portal) in support of reporting needs for both the U.S. Fish and Wildlife Service (USFWS) and APNEP. The tool provides options for regional (refuge, HUC-10, or HUC-8 scale) reporting for national and state water quality data relevant to National Wildlife Refuge (NWR) management and APNEP ecosystem assessment and CCMP implementation. We anticipate this tool will significantly improve the capability of APNEP staff and partners to accurately and consistently assess and report on the status and trends of water quality indicators of ecosystem health for the Albemarle-Pamlico estuarine system. Furthermore, this tool was developed with the flexibility needed to permit future modifications (e.g., new parameters, benchmarks, or data sources) as necessary to support APNEP's monitoring and assessment initiatives over the long-term.

This project was primarily funded by USFWS through an interagency agreement with the U.S. Geological Survey (USGS), who expanded and streamlined the R coding. In collaboration with USFWS, APNEP supported the work of Dr. Nathan Hall (UNC-CH Institute of Marine Sciences) to significantly expand the tool's parameter list, incorporating benchmarks approved by the APNEP STAC for monitoring and assessing water resources in the Albemarle-Pamlico estuarine system. Dr. Hall also worked with USGS coders to refine the tool's data analysis and improve its graphical and textual displays. More information about the wqReport R package can be found here.

Status : Complete

Partners: USFWS, UNC-Institute of Marine Sciences, USGS

Outputs/Deliverables: A tool to create water quality reports for user-specified Hydrologic Unit Code (HUC) boundaries (8- or 10-digit HUC services are available).

Outcomes: We anticipate that automated reporting can reduce data management tasks to allow more time to strengthen analysis and

planning, increase field testing and monitoring, or act upon the identified water resources concerns.

FY24-25 CWA 320 Cost: $0
Estimated Leverage: $ 30,000
CCMP Actions: D1.1, D1.3
CCMP Outcomes: 1a, 1b, 1c, 2b, 2c, 3a, 3b, 3c, 3d
CWA Core Programs: (4) addressing diffuse, nonpoint sources of pollution, (6) protecting coastal waters through the National Estuary Program
EPA Element(s): Habitats, Water Quality, Healthy Communities

Recreational Water Quality Monitoring (Estuarine Swimming Beaches)

Objectives: Monitor and test bacterial concentrations in coastal recreational waters, inform the public about any dangers to public health.

Description: APNEP continues to provide funding to the NC-DMF Recreational Water Quality Monitoring Program for the continuation of water quality monitoring near recreational areas. The program tests bacterial concentrations in coastal recreational waters to protect public health. The program is responsible for notifying the public when bacteriological standards for safe bodily contact have been exceeded. The program also has an educational component that accompanies the testing, which informs the public about how bacteria enter coastal waters and what actions can help prevent it.

Status: Ongoing
Partners: NC-DMF
Outputs/Deliverables: *Enterococci* bacteria data for approximately 30 recreational water quality testing sites.
Outcomes: CCMP Implementation, integrated monitoring strategy.
FY2021-25 CWA 320 Cost: $ 14,280 (extended and renewed for another year), total $21,671
FY25-26 CWA 320 Cost: $0
Estimated Leverage: $ 283,000
CCMP Actions: C2.2, D1.1, D1.3, E2.2
CCMP Outcomes: 1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
CWA Core Programs Addressed: (4) addressing diffuse, nonpoint sources of pollution, (6) protecting coastal waters through the National Estuary Program
EPA Element(s): Water Quality, Healthy Communities

Progress to Date: This is a continuation of recent surveys where 29 APNEP swimming sites are sampled 19 times throughout the year totaling 551 samples with bacteriological results posted immediately to the NC Recreational Water Quality website.

- Two APNEP sites are sampled 40 times throughout the year totaling 80 samples with bacteriological results posted immediately to the website.

- More than 3,500 samples have been analyzed to inform the citizens of North Carolina about *Enterococci* levels throughout the Albemarle-Pamlico Watershed.
- NC-DMF continued routine water quality monitoring within APES though the summer season. APNEP will work with NC-DEQ and others to find funds to continue support of NC-DMF's Recreational Water Quality Monitoring Program. Samples are pulled weekly during the swimming season, April – October, no advisories are posted during the non-swimming season November through March.
- DMF issued a total of 64 advisories during the 2024 –2025 sampling period.

FY25-26 Plans:

- NC-DMF will continue routine water quality monitoring though the summer season. APNEP will work with NC-DEQ and others to find funds to continue support of NC-DMF's Recreational Water Quality Monitoring Program. Staff anticipates that continued support for this program will be evaluated during MAT deliberations for the upcoming APNEP monitoring strategy for estuarine waters.

Wetlands

Regional Wetland Monitoring & Assessment

APNEP is currently working with numerous partners to identify needs and potential funding sources for updated mapping of wetlands in the region. The acquisition of higher quality wetlands data will ensure improved future wetland monitoring and assessment. As a near-term APNEP Tier-1 wetland monitoring strategy, there is a need to acquire regional wetland data with improved spatial resolution. This wetland benefit among monitoring benefits for other ecosystem components is the rationale that APNEP, using staff time and funding budgeted through the APNEP Infrastructure Investment and Jobs Act (IIJA) / Bipartisan Infrastructure Law (BIL) FY22-27 Workplan along with partner contributions, will acquire 2020 NOAA C-CAP regional land cover data for the APNEP region.

On behalf of multiple DEQ divisions including the including the Divisions of Marine Fisheries (DMF) and Coastal Management (DCM), the Division of Water Resources (DWR), and the State Energy Office, APNEP is facilitating the acquisition of high-resolution land cover data from NOAA's Coastal Change Analysis Program (C-CAP) Phase 2 mapping for all of North Carolina watersheds not draining into South Carolina. The deliverables will feature maps with a regional land cover classification scheme of approximately 22 land cover types to produce a Level 2 interpretation of the State of North Carolina at one-meter resolution. This data will provide a foundation and decision support tool for multiple actions within the CHPP, NWL Action Plan, and EO 305.

Additionally, APNEP is coordinating with Virginia agencies so the same protocol can be applied to the Upper Roanoke, thus allowing the entire Albemarle-Pamlico Basin to have the same Level 2 high-resolution C-CAP interpretation. APNEP is also coordinating with other NC Coastal Habitat Protection

Plan (CHPP) partners and the Statewide Mapping Advisory Committee (SMAC), a statutory committee of the N.C. Geographic Information Coordinating Council (GICC).

APNEP funding for this project is budgeted in the IIJA/ BIL FY22-27 Workplan so more detail is included in the IIJA/BIL annual report.

Peatlands Inventory

North Carolina's Natural Heritage Program was contracted to conduct biological field surveys of peatlands and pocosins within the APNEP region.

North Carolina's Natural Heritage Program maintains the statewide inventory of animals, plants, and natural communities, and uses the information to prioritize natural areas for conservation, to help North Carolina establish a network of nature preserves that will protect our natural heritage for future generations. Natural heritage information is used by regulatory agencies to avoid and minimize impacts to protected species in permitting projects. Natural heritage data is used extensively by planners and data modelers as they identify and predict adverse impacts and prioritize areas for restoration that will promote ecological function and resilience.

Biological surveys will focus on identifying and mapping:

- Peatland natural communities and describing their current condition, extent, and composition;
- Associated rare species populations, noting threats, and management recommendations;
- Areas identified through partners' modeling and prioritization methods, to help ground-truth modeled data and provide real-world information that can be used to support peatland restoration and resilience planning. Some examples of such modeling efforts that could be better informed from field data include TNC Resilient Coastal Sites and Natural and Working Lands analysis of ecosystem services by Duke Nicholas School;
- Resources found within peatlands identified by coastal partners as conservation opportunities, to provide survey data to help decisionmakers make informed decisions about the relative benefits of each potential project with respect to biodiversity conservation and resilience.

Year(s):	2024-2025
Partners:	NC-DNCR, Natural Heritage Program
Outputs/Deliverables:	Report, Maps
Outcomes:	Information for targeted habitat protection and restoration
FY2021-25 CWA 320 Cost:	$ 80,000
FY25-26 CWA 320 Cost:	$ 0
Estimated Leverage:	$ TBD
CCMP Actions:	A1.1, B1.2, B1.3
CCMP Outcomes:	2a, 2b
CWA Core Programs Addressed:	(5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program
EPA Element(s):	Habitats, Water Quality, Healthy Communities

Currituck Sound Coalition

This Audubon North Carolina lead initiative is a coalition of many APNEP partner organizations, which aims to enhance collaboration and coordination on strategies that offer multiple benefits, such as flood risk reduction, storm protection, improved water quality, habitat, recreational opportunities, and cultural heritage for communities and wildlife in the Currituck Sound watershed. By working together, the coalition can effectively inform planning, advance policy, and lead projects to tackle coastal challenges in northeastern North Carolina. APNEP staff participated in the Coalition's Wetlands Working Group which released a Marsh Conservation Plan in 2021. APNEP continues to seek opportunities to support plan implementation and co-develop outreach strategies with Virginia partners. An implementation opportunity anticipated is the Coalition being a major partner in the APNEP integrated monitoring strategy if Currituck Sound and Back Bay is a subregional pilot. Funding to support implementation is budgeted in the IILA/BIL FY22-27 Workplan.

South Atlantic Salt Marsh Initiative's (SASMI)

SASMI is a voluntary, collaborative, non-regulatory initiative that unites partners from North Carolina, South Carolina, Georgia, Florida, and beyond to conserve large salt marsh areas in the Southeast. The effort aims to enhance ongoing conservation work and create a framework for cross-agency collaboration, supported by state and local implementation through a regional conservation plan. Staff will continue tracking this initiative to identify collaboration opportunities with the CCMP wetlands actions.

Oyster Habitats

Oyster Steering Committee (co-lead with NC Coastal Federation)

The Oyster Action Team/ Steering Committee is externally facilitated by the NC Coastal Federation, which has been actively involved in oyster restoration efforts since the late 1990's. This action team consists of scientists, fishermen, agency personnel and NGOs working together to restore, protect and enhance the oyster populations within northeastern North Carolina. Members participating with this team pursue initiatives aligned with both the NC Oyster Blueprint and APNEP's related CCMP actions.

Estuarine Submerged Aquatic Vegetation (SAV)

Estuarine Submerged Aquatic Vegetation Monitoring and Mapping

Objectives: Monitor and map the extent, spatial cover class, and percent cover of SAV in the Albemarle-Pamlico region's estuarine waters.

Description: In coastal waters of the APNEP region, SAV is widely recognized as serving many important ecological functions. Other than APNEP's efforts, there are no long-term SAV monitoring programs

established in the region that can provide reliable quantitative data on the status and trends of this resource. Thus, APNEP continues to lead and support estuarine SAV monitoring via various platforms, including remote sensing and boat-based protocols.

Status(s):	Ongoing under IIJA/ BIL
Partners:	East Carolina University, NOAA, NC-DMF, NC-NERR, NC Department of Transportation, NC-DWR, UNC-Wilmington, UNC-Chapel Hill, NRCS
Outputs/Deliverables:	Maps of estuarine SAV metrics; metric reports whose target readership are technically inclined environmental managers
Outcomes:	New information for decision-makers
FY2021-23 CWA 320 Cost:	$ 16,000
FY2024-23 CWA 320 Cost:	$ 85,000 non-320 funds
FY25-26 CWA 320 Cost:	$ TBD
Estimated Leverage:	$27,000
CCMP Actions:	A1.1, D1.1
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
CWA Core Programs Addressed:	(5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program
EPA Element(s):	Living Resources, Direct Assistance

Progress to Date:

Since 2004, APNEP has participated in and often led the facilitation of a statewide SAV partnership that has collaborated to achieve the long-term goal of determining the location of the region's SAV and trends in overall extent and spatial cover classes. Monitoring estuarine SAV is important because among other benefits it can serve as an indicator of estuarine habitat condition. The SAV Partnership has taken steps towards assessing the extent of underwater grasses. APNEP's SAV Team published a baseline SAV map in 2011 using data from aerial surveys from 2006 through 2007, a second map in 2019 based on high-salinity SAV survey data in 2013, and a third map in 2022 of high-salinity SAV map based on 2019-2020 aerial surveys.

To address challenges in tracking "hidden" SAV in turbid lower-salinity waters and to detect significant trends more quickly (including changes in species composition), APNEP began coordinating a SAV Sentinel Network in 2014. The sentinel network combines boat-based sonar and video technology with in-water observations to track SAV at stations dispersed throughout the sounds. The boat-based protocols were tested on Albemarle Sound in 2014 and the first installment of sentinel stations occurred there in 2015. Subsequent stations have been established throughout the Pamlico River and Neuse River Estuaries. A report on low-salinity sentinel site monitoring in Albemarle Sound and Neuse River Estuary (associated with National Fish & Wildlife Federation funding) was submitted in March 2020.

A significant milestone was achieved in 2021 with the completion of an APNEP SAV monitoring strategy, which supports (1) the acquisition of four boat-based metrics to complement the traditional metric "extent by spatial cover class": maximum depth distribution, species presence, relative abundance, macroalgae presence and absence; (2) conducting annual surveys on a portion of the region (sub-region)

rather than surveying the entire region every five-to-seven years; (3) bi-seasonal (spring and fall) surveys for high-salinity SAV; (4) single-season (summer) surveys for low-salinity SAV.

- APNEP continued to make progress on implementing the 2021 SAV high-salinity monitoring strategy by conducting bi-seasonal surveys Pamlico Sound North during Spring and Fall 2024. Bogue and Back Sounds were last surveyed by APNEP during Spring and Fall 2021 and will be surveyed again in Spring and Fall 2025, per the monitoring strategy. Each seasonal survey has an aerial component (Tier 1) with support from the NC Department of Transportation, and boat-based (Tier 2) component involving multiple partners from the APNEP SAV Team.

FY25-26 Plans:

- An update to the APNEP high-salinity SAV metric report that incorporates the 2019-2020 SAV high-salinity extent by cover class map will be published in 2025, along with the associated updated maps for surveys conducted in 2021-2024. APNEP and its partners will use this information to develop protection and restoration strategies for SAV in the region and support the CHPP update.
- Planned refinement of the SAV monitoring strategy based on knowledge gained during the 2021-2024 field seasons.
- Building on the SAV monitoring strategy, establish an expanded survey effort in low-salinity waters, beginning with Currituck Sound.

Resilience

NC Executive Order 80 Implementation

APNEP staff continue to participate in activities stemming from implementation of the 2020 NC Climate Risk and Resilience Plan (RARP), including the Natural and Working Lands (NWL) Stakeholder Team, Coastal Habitats and Pocosin Wetlands Subcommittees, Coastal Resilience Community of Practice, NC Office of Recovery and Resilience's (NCORR) Regions Innovating for Strong Economies & Environment (RISE) program, and NC Resilience Exchange (formerly Statewide Resilience Clearinghouse) Committee. Staff report annually on contributions to support implementation of NC-DEQ's Strategic Plan and State Agency Resilience Strategy report which summarize activities that further implementation of all these plans. Staff focus efforts around integrating resilience activities with existing programs and initiatives that help build both ecosystem resilience and community resilience.

Staff worked on the NWL 2024 Progress Report released October 2024, providing updates on numerous activities which help further NWL Action Plan and RARP implementation. These include overall CCMP implementation and working closely with NC Division of Marine Fisheries staff on NC CHPP implementation. APNEP's facilitation of its SAV Team and resulting mapping, monitoring, metric development, and economic valuation studies have all contributed significantly towards protection of SAV, which is included as an ecosystem and coastal habitat objectives in the RARP and NWL Action Plan. APNEP's community resilience engagement included focused effort on APNEP led initiatives including Tribal Coastal Resilience Project, Scuppernong Regional Water Management Study, and MOU

Implementation summarized below. Staff continued to work closely with NCORR and USFWS staff to support regional resilience planning and strengthen interagency collaboration and federal/state/local resilience planning efforts through RISE and AP Federal Partnership described elsewhere. APNEP has budgeted funding in the IIJA/BIL FY22-27 Workplan and will include more information in the IIJA/BIL annual reports.

Building Resilience Capacity in Tribal Communities

Objectives: Support tribal communities in the Albemarle-Pamlico region with considering risk and resilience into tribal planning and community engagement processes.

Description: APNEP continues to work with Tribal partners in the Albemarle-Pamlico region and the coastal plain of Virginia and NC to implement a co-developed strategy for incorporating resilience into tribal planning and community engagement processes. The proposal seeks to build capacity for tribal communities to actively engage in federal, state, regional, and local planning efforts that impact Indigenous people, recognizing considerations and perspectives that are unique to tribal communities. APNEP continued support for the project using 320 funds and has expanded future phases using IIJA/BIL funds.

The team's overarching goal is to increase awareness among Tribal communities around the risks and threats associated with a changing climate, and foster discussions about adapting to these changes. The project concentrates efforts in the APNEP program area in southeast Virginia and northeastern North Carolina but aims to learn from, lift, and highlight great work that Tribal communities are already doing throughout Virginia, North Carolina, and the southeast coastal plain. A major component also includes educating resilience practitioners from agencies, universities, and other organizations on best practices for engaging with Tribes, and ensuring all communities, regardless of recognition status, are included in resilience and adaptation planning processes.

Progress to Date:
The Tribal Coastal Resilience Connections (TCRC) team released its Phase I report in 2023, which documents the launch of the work, research on Tribal adaptation and resilience plans, experimentation with social media engagement, field work, partnership, and network development, conducting outreach at conferences and events, and building the groundwork for a sustainable program. Recommendations include educating resilience practitioners from agencies, universities, and other organizations on best practices for engaging with Tribes, and ensuring all communities, regardless of recognition status, are included in resilience and adaptation planning processes. A major recommendation involves the need to update outdated or inaccurate information that currently exists on Tribal communities in the Southeast, including those commonly used in environmental planning methods, and other popular tools used by non-Indigenous people and organizations to identify Tribal territories for purposes ranging from grant writing, distribution of funds and resources, to developing land acknowledgements. Most readily available sources are not inclusive and do not factor in the complicated landscape of history, displacement from ancestral homelands, recognition status, and other considerations unique to our region.

Phase II narrows the scope to focus on expansion of efforts and tools identified in Phase 1 through targeted work in the Chowan Watershed in the shared waterways of the Albemarle-Pamlico region between Virginia and North Carolina (also supporting APNEP MOU implementation), as well as deepening relationships between communities, agencies, and academia. The team will utilize these efforts to build towards creating a Tribal Coastal Resilience toolbox, utilizing community directed mapping to develop the basis for a regional adaptation framework to assist with future resilience planning. The information will also provide a platform that can be utilized to educate agency staff on considerations, perspectives, and traditional ecological knowledge unique to native communities.

APNEP continues to serve as an active member of the TCRC team, supervising temporary solutions staff in close partnership with Beth Roach who has leveraged support through her role as Sierra Club National Water Conservation Manager and through volunteer work as Tribal Councilwoman with the Nottoway Indian Tribe of Virginia. Giancarlo Richardson currently serves as the team Cartographer leading mapping efforts.

APNEP continued support for the project using 320 funds in FY2-25 and is expanding future phases using II/JA BIL funds. More detail is included in the IIJA/BIL FY22-27 Workplan and annual reports.

FY25-26 Plans:

Current focused projects include historical research and updating mapping of Tribal communities with ancestral and present-day ties to the Albemarle-Pamlico region and southeast coastal plain, inter-Tribal coalition building, and community engagement. The TCRC team will also build upon the findings and recommendations developed by the Sierra Club, with an emphasis on wetland protection. Beyond this, the team will work to ensure that products like the Tribal Resilience toolbox will be utilized in both statewide and regional conservation and restoration planning, while also continuing to seek opportunities for Indigenous Tribes to meaningfully engage in policy development.

Efforts extend across state lines, supporting APNEP's MOU with Virginia and emerging efforts through the Southern Rivers Roundtable and multi-state CPRG Atlantic Conservation Coalition. The TCRC team is included as a partner on VA-DNCR Natural Heritage Program led project funded through NOAA Coastal Zone Management Habitat Protection and Restoration IIJA funds in Suffolk County, Virginia. The TCRC team will act in an advisory capacity, assisting with historical research, mapping, and coordination with Tribal communities in both VA and NC for a project to acquire 1,900 acres of contiguous forest in the Chowan watershed for biodiversity conservation, and public access. A contract with VA-DNCR is pending.

Engagement and Stewardship

Desired impacts from outreach and educational activities are generally geared towards improving awareness and understanding of environmental issues facing the Albemarle-Pamlico region, as well as encouraging individual and collective stewardship of the region's resources, including support for the planning, policies, and actions required to sustain the Albemarle-Pamlico estuarine system and its

human communities. Results anticipated from CCMP actions include increased awareness and engagement, and implementation of the CCMP, and increase in voluntary citizen action to protect and restore the estuarine system.

At the direction of the Leadership Council APNEP has spent considerable time over the past few years evaluating its long-term funding of environmental education projects. Staff worked with its Engagement and Stewardship Team to develop standardized evaluation criteria for project selection, and to measure success, outcomes, and effectiveness of projects, including developing guidelines and a list of output and outcome metrics for use in preparing engagement and stewardship applications and planning project evaluations. In addition, the team assisted APNEP in creating a new transparent process for funding the frequent requests for outreach, engagement, and educational activities and participate in outreach events. Considerations include relevance towards CCMP implementation, focus areas, and current priorities, partner reach, underserved populations, and target audiences.

Staff and partners recognize that the desired outcomes of many of the engagement and stewardship actions in the CCMP are challenging, if not impossible to measure, as many require changes in behavior or intergenerational transfer of knowledge that may occur long after the life of a project. Most funded projects require some sort of survey of participants to gauge increase in knowledge or skills because of the project.

Watershed Engagement Projects 2023-2024

In 2021, with input from its Engagement and Stewardship Action Team, APNEP initiated a request for proposal (RFP) process that will be utilized to fund targeted outreach and engagement initiatives moving forward. An independent review committee of environmental education and outreach professionals selected the following projects through a competitive evaluation and ranking process: Following the River: An Exploration of the Virginia Southern Watersheds/Pasquotank River Basin and Shad in the Classroom. Year 2 for both projects were completed in 2024 and final reports have been submitted and approved.

Watershed Engagement Projects (2024-25)

Objectives: Provide opportunities for partners and communities to obtain support for environmental /and natural resource projects that increase citizen stewardship, volunteerism, and environmental literacy within the Albemarle-Pamlico region.

Description: With input from its Engagement and Stewardship Action Team, APNEP released a competitive request for proposals (RFP) January 2024. Total available funds remained steady from the 2023 grant cycle since APNEP received CCMP implementation funding in the NC state budget. An independent review committee of environmental education and outreach professionals selected the following five projects through a competitive evaluation and ranking process. All projects are under contract and in progress. All projects are set to conclude June 30, 2025. A full report will be included in the FY 2024-25 closeout report.

Status: Ongoing

Partners:	APNEP Engagements and Stewardship Team (multiple members); TBD
Outputs/Deliverables:	Workshops, place-based learning opportunities, reports, community engagement activities, depends on activities proposed in responses to RFP
Outcomes:	Increased community involvement in water quality and habitat protection.
FY2024-25 Cost:	$20,000 fed and $79,250 NC funds
Estimated Leverage:	$168,913
CCMP Actions:	C1.1, C1.2, C2.1, C2.2
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3b
CWA Core Programs Addressed:	(4) addressing diffuse, nonpoint sources of pollution, (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program
EPA Element(s):	Trainings, Direct Assistance

- ***Growing Wild Celery to SAVe Our Wetlands: A Grassroot Collaborative:*** Back Bay Wildfowl Guild's project aims to restore wild celery (*Vallisneria americana*), a critically important part of the native submerged aquatic vegetation (SAV) community, in the Back Bay area, utilizing novel propagation and transplanting techniques in tandem with hands-on educational programs that will engage local students in replanting efforts.

- ***Experiencing the Albemarle-Pamlico Estuary: Fostering Watershed Stewardship:*** The North Carolina Wildlife Federation will 1) connect and engage community members in voluntary stewardship efforts to restore key watershed habitats, and 2) teach adults and youth about the estuary's natural treasures and its value to wildlife and people. Volunteers of all ages and backgrounds will experience and learn about the Albemarle-Pamlico watershed by creating three native pollinator gardens, restoring a wetland meadow, and installing educational signage in English and Spanish at two of the restored sites.

- ***Down East Resilience Network Communications Strategy:*** The Core Sound Waterfowl Museum hosts a Down East Resilience Network (DERN), a community of stakeholders (residents, researchers, educators, and state and federal government officials) with a common interest in advancing the long-term resilience of Down East area. Communicating in Down East presents unique challenges due to the absence of an incorporated town or centralized government. A community-led communications plan will establish a website for DERN, making it easier for users to access information about current issues, ongoing projects, resources for educators, and contacts. After building an online presence, they will develop and pilot a portfolio of materials to engage with residents, connecting local stories and research outputs to actionable information for community support and education.

- ***Shad in the Classroom***: The North Carolina Museum of Natural Sciences (NCMNS) project will

highlight careers in science and engages students in hands-on learning about American Shad and North Carolina's River Basins. In the spring of 2025, the program will have 25-35 classrooms raising shad from egg to fry, engaging students in education about water quality, American Shad ecology, riverine and coastal ecosystems, and careers in science.

- ***NCSU KIETS Climate Fellow*:** The KIETS Climate Leaders Program focuses on solutions via environmental, technical, managerial, political, or economic approaches that, if adopted, offer a promise of impactful developments that will help humanity deal with this existential threat. This program: helps empower, educate, and inspire young people to embark on careers and become innovative leaders in mitigating and adapting to a changing climate. Increases visibility of mitigation and adaptation efforts to the public, university, and student body.

Partnership-Building and Regional Coordination

Scuppernong Regional Water Management Study

Objectives: Develop a collaborative approach for conducting a hydrologic study of the headwaters of the Scuppernong River, Lake Phelps, and the surrounding land in Washington and Tyrell Counties. The study will create a water budget for the northern Albemarle-Pamlico peninsula and use scenario-based modeling to understand water-related issues and flooding. Engaging partners and community members will ensure the study produces useful results for decision-makers and land managers, helping to build a comprehensive regional water management strategy.

Description: APNEP has been leading collaborative efforts to conduct a hydrologic study of the northern Albemarle-Pamlico peninsula including the Scuppernong River, Lake Phelps, Pocosin Lakes National Wildlife Refuge, and Buckridge Coastal Preserve since 2018. APNEP facilitated a partnership between the NC Division of Parks and Recreation (DPR), NC Soil and Water Conservation Districts, US Fish and Wildlife Service (USFWS), the Albemarle Commission (ACOG), and Washington and Tyrell Counties and secured funding from the NC Water Resources Development Grant in 2023.

The NC Division of State Parks requested APNEP's assistance in April 2018 to serve as a neutral, science-based partner to convene a steering committee to develop a regional hydrologic study. The purpose of the study is to determine a regional water budget as a decision support tool to guide future potential water management implementation actions in collaboration with stakeholders including conservation land managers, local governments, other state and federal agencies, and private landowners.

The study was initiated due to repeated cycles of flooding and drought, along with concerns from local communities about DPR and USFWS water management and hydrologic restoration efforts. It will assess the impacts of extreme weather events and recurrent inundation in an area highly susceptible to flooding. The study aims to enhance water monitoring in the watershed, update existing water management plans, and guide future water management strategies, including improving regional drainage efficiency and building regional resilience.

The outcomes will be used to build a comprehensive regional plan to address water management issues on both private and public lands, build resilience to flooding, support natural and working lands, and improve coordination amongst stakeholders.

Status:	Ongoing
Partners:	Albemarle Commission, NC-DEQ, NC Department of Agriculture and Consumer Services, Washington County, Tyrrell County, Soil and Water Conservation Districts, NC Division of State Parks, USFWS, NC Cooperative Extension, NC Sea Grant, NC Coastal Reserve, TNC, NOAA
Outputs/Deliverables:	Engineering and feasibility study to evaluate flood risk and future planning needs, stakeholder engagement process, scenario-based models and visualization, interactive stakeholder engagement tools such as augmented reality sandboxes, web-based maps, and data portals.
Outcomes:	Water budget for the Scuppernong River watershed; Engagement Strategy as basis for development of collaborative regional water management strategies
FY2023-26 CWA 320 Cost:	Staff time , Funding budgeted in IIJA/BIL Workplan
Estimated Leverage:	$200,000 (Awarded from the WRDG); $50,000 (Awarded from NOAA)
CCMP Actions:	B1.3, B2.3
CCMP Outcomes:	2a, 2b, 3d
CWA Core Programs Addressed:	(5) protecting wetlands
EPA Element(s):	Healthy Communities, Direct Assistance, Water Quality, Habitats, Living Resources

Progress to Date

Phase I of the Scuppernong Water Management Study focused on collecting and generating data necessary to complete the robust hydraulic and hydrologic modeling planned for Phases 2 and 3 of the projects and was completed in spring 2024. Phase II involved finalizing watershed-scale models, creating a water budget of the Scuppernong basin, and developing small scale, localized hydraulic models in priority areas of concern identified by the community. These models will provide a tool to evaluate the effect of proposed changes on seasonal and event-based flows. The Phase II Interim Report was submitted January 2025 and the draft final report was submitted March 2025. Planning for workshops and outreach with the Steering Committee, partners, and local communities is underway.

The Study has been supported by development of a community Engagement Strategy in partnership with the NC Coastal Reserve, NC Sea Grant, The Nature Conservancy, and SWCA Environmental Consultants through a grant from NOAA Digital Coasts and the National Estuarine Research Reserve Association (NERRA). The team developed a Steering Committee, expanding the regional partnership beyond the initial five grant partners to ensure development of a product that will help local decision makers with

flooding, drainage, and regional water management issues. Throughout 2023 and 2024, the Engagement Team organized and attended several community events, engaging hundreds of community members in conversations about areas of concern for flooding with the intent to incorporate community feedback and knowledge into Study development and implementation. The team coordinates closely with other regional resilience projects through RISE, RCPP, and an Audubon project to promote nature-based solutions in Tyrrell County to leverage resources, streamline community coordination, and reduce duplication of effort.

FY25-26 Plans: The final report was submitted March 2025. Planning for workshops and outreach with the Steering Committee, partners, and local communities is underway. Site visits are planned for April 2025 to finalize selection of placement for FIMAN gauge stations, a need expressed during Study development, with funding from APNEP.

NC Aquatic Nuisance Species Management Plan Development

Objectives: Update the strategic plan for coordinated management, research, and outreach on aquatic nuisance species in North Carolina. Garner renewed commitment from lead state agencies for plan implementation. Submit the plan to the NC Governor's Office for consideration and acquire approval from the federal Aquatic Nuisance Species Task Force (ANSTF).

Description: APNEP staff cofacilitate the NC-ANSMP Steering Committee, which focuses on revising the state's plan for federal approval and identifying next steps for implementation. The NC-ANSMP is a collaborative, multiagency plan aimed at improving North Carolina's ability to address aquatic invasive/nuisance species issues. Once finalized and federally approved, this coordinated management, research, and outreach plan will make North Carolina eligible for federal funding to support its implementation. Improved coordination and collaboration across state agencies will help leverage limited resources for invasive species management in the state.

Although the original plan was adopted in 2015 by the state's three lead regulatory agencies on invasive species, there has been no implementation to date. North Carolina never submitted the plan for federal approval to become eligible for external funding under the Aquatic Nuisance Species Prevention and Control Act (1990). Given the state's limited resources for invasive species management, federal funding is crucial l to the successful implementation of the NC-ANSMP. In support of the CCMP, APNEP staff and NC-DWR staff are co-leading a revision process of the NC-ANSMP by the plan's Steering Committee to renewing commitments for collaboration from state agencies and making North Carolina eligible to receive federal funding.

In 2018, NC Division of Water Resources (NCDWR) and the APNEP, both within the NC Department of Environmental Quality (NCDEQ), began facilitating meetings of a NC-ANSMP Steering Committee to review and update the plan. Considerable progress was made by the Steering Committee throughout 2018-2020 but then stalled due to the COVID pandemic. In 2023, the Steering Committee resumed work on updating the NC-ANSMP to meet ANSTF guidelines.

Year(s): 2015-2016, 2018 – Present, Ongoing with external funding

Partners:	NC-DEQ, NC Wildlife Resources Commission, NC Dept. of Agriculture and Consumer Services, NC Dept. of Natural and Cultural Resources, US Fish and Wildlife Services, NCSU, The Nature Conservancy, NCSG
Outputs/Deliverables:	State plan for coordinated management, research, and outreach on aquatic nuisance species.
Outcomes:	Federal approval of this plan will make NC eligible to receive federal funding (~$40K/year) to support the plan's implementation. Improved coordination and collaboration across state agencies will leverage limited resources available for invasive species management in NC. The NC-ANSMP will also compliment Virginia's equivalent plan, thereby better enabling coordinated management actions between the two states under the 2020 MOU.
FY2019-23 CWA 320 Cost:	Staff Time
Estimated Leverage:	$35,000
CCMP Actions:	B1.5
CCMP Outcomes:	2c
CWA Core Programs Addressed:	(5) protecting wetlands (6) protecting coastal waters through the National Estuary Program
EPA Element(s):	Direct Assistance, Habitats, Living Resources

Progress to Date: Staff continued to co-facilitate the NC-ANSMP Steering Committee, focusing on revising the state's plan for federal approval and identifying implementation steps. APNEP and NCDWR have secured funding from both NCDEQ and the Mid-Atlantic Panel on Aquatic Invasive Species to support this work throughout 2025.

FY25-26 Plans: APNEP and NC DWR will continue to co-facilitate the NC-ANSMP Steering Committee. The Committee plans to seek the Governor's Office's support to submit the plan to the ANSTF in 2026. Once finalized and federally approved, the plan will make the State eligible for federal funding for implementation. The plan aims to improve coordination and collaboration across state agencies, optimizing limited resources for invasive species management

NC Coastal Habitat Protection Plan Implementation Support

Objectives: To coordinate across North Carolina state agencies to improve conservation and restoration of coastal habitats, and to raise awareness about the importance of these habitats for North Carolina fisheries.

Description: The NC Coastal Habitat Protection Plan (CHPP), adopted by the Coastal Resources, Environmental Management, and Marine Fisheries Commissions, has seen routine development since

its implementation began in 2004. The CHPP has assisted in creating an opportunity for agencies and commissions within NC-DEQ to work together on issues specific to fish habitat. While differences in scope, geography and mission exist, implementation of the CCMP and the CHPP are complimentary and APNEP staff ensure that both plans are implemented in a coordinated and integrated fashion. By statute, the CHPP must be reviewed and updated if needed every five years. The CHPP was last revised in 2016 and adopted by all three management commissions. An amendment to the 2016 CHPP began in 2020 and was adopted by the three commissions in November 2021.

Status:	Ongoing
Partners:	NC-DEQ, NC Coastal Resources Commission, NC Environmental Management Commission, NC Marine Fisheries Commission
Outputs/Deliverables:	CHPP Annual Report
Outcomes:	Coordinated activities and regulation across NC state agencies to improve estuarine habitats.
FY24-25 CWA 320 Cost:	Staff Time
FY25-26 CWA 320 Cost:	Staff Time
Estimated Leverage:	$76,000
CCMP Actions:	A1.1, B1.1, B1.3, B1.5, B1.6, B2.3, B2.6, B4.2, B4.3, C1.4, C1.5, C2.2, D1.1
CCMP Outcomes:	1a, 1b, 1c, 1d, 2a, 2b, 2c, 3b, 3c, 3d
CWA Core Programs Addressed:	(5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program
EPA Element(s):	Direct Assistance, Habitats, Living Resources

Progress to Date: APNEP, DMF, and other DEQ divisions, are continuing to work to implement recommendations from the 2021 CHPP Amendment to address water quality impacts on SAV due to changes in salinity, water temperature, and water clarity; wetland loss (e.g., wetland migration, fisheries, water quality, stormwater buffering capacity); water quality impacts from inflow and infiltration associated with wastewater infrastructure; and water quality degradation due to nonpoint source pollution from environmental rule compliance. This includes the formation of a private public partnership for further community engagement.

Additional considerations are being explored relative to potential impacts to wetlands regarding the Sackett Decision. The team is engaged with the development of a state Salt Marsh Strategy with the NC Coastal Federation and other partners. APNEP has a seat on the Salt Marsh Steering Committee.

In 2025 and 2026, DMF will work with APNEP to hold multiple CHPP Team and CHPP Steering Committee meetings. DMF will also continue working with other agencies and organizations to incorporate the recommendations from the Amendment into existing and future programs/efforts. A CHPP Team meeting was recently held to review implementation progress for the actions found in the 2021 Amendment and the 2016 Source Document. In September 2024, a CHPP Steering Committee meeting was held to see the results of the CHPP Team meeting and to also begin the planning process for the

2026 CHPP review and revision. In early 2025, the CHPP Team will meet to begin discussing and preparing for the next updated or revised version of the CHPP which will be due in 2026. The team continue to make progress on the Recommended Actions found in the 2016 CHPP Source Document and the 2021 CHPP Amendment. The SECCHI held a NRCS National Water Quality Initiative Chowan River Basin Assessment Review and Input Workshop in the summer of 2024. This workshop engaged local citizens and researchers understand the Initiative and how to go about identifying areas where BMPs need to be utilized.

FY25-26 Plans

- Continue to make progress on the Recommended Actions found in the 2016 CHPP Source Document and the 2021 CHPP Amendment.
- The CHPP team will meet to begin discussing and preparing for the next updated or revised version of the CHPP which will be due in 2026.

Virginia-North Carolina Memorandum of Understanding Implementation

Objectives: Facilitate and strengthen partnerships among NC and Virginia state agencies and other partners, identifying shared goals for Albemarle-Pamlico region watersheds and contributing to related projects.

Description: Facilitated by APNEP, six environmental and natural resources agencies from NC and Virginia signed a MOU in 2020 that re-affirmed their commitment to foster interstate collaboration within the shared waterways of the Albemarle-Pamlico region. The agreement builds upon the 2017 MOU and will assist agencies in coordinating with APNEP to tackle regional issues such as resilience, nonpoint source pollution, restoring fish passage and spawning habitat, and controlling invasive species. Agencies include NC-DEQ, North Carolina Department of Natural and Cultural Resources, North Carolina Department of Agriculture and Consumer Services, North Carolina Wildlife Resources Commission, Secretary of Natural Resources of the Commonwealth of Virginia, and the Secretary of Agriculture and Forestry of the Commonwealth of Virginia.

Progress to Date: APNEP continues to maintain relationships with multiple Virginia partners for these programs despite formal MOU coordination remaining stagnant with the present VA administration. Over the past decade, significant effort has been spent to re-strengthen relationships and coordinate closely with the VA-NHP on the Chowan Healthy Waters Program and maintain relationships with the Virginia DEQ Tidewater Regional office despite frequent staff turnover. Staff have fostered new relationships with other programs and divisions in DCR and DEQ and external partners, and often assist with coordination across state lines. As part of this commitment, APNEP and partners have been working actively to revitalize our efforts in Virginia, with additional efforts in the following areas:

- APNEP staff continue to actively work with partners and through initiatives described elsewhere in this report including the AP Federal Partnership, Currituck Sound Coalition, Tribal Coastal Resilience Connections, and RISE implementation including the Chowan/Albemarle Sound Algal Bloom project.

- Representatives from multiple Virginia organizations on the LC, STAC, CAC, MATS, and other focus area teams.
- PNEP continues to seek opportunities to collaborate with regional partners to submit grants that further MOU implementation and write support letters when requested.
- APNEP has been working closely with the Crater Planning District Commission (PDC) as they develop the Southern Rivers Roundtable, which is intended to reconvene, rebrand, and build upon past work conducted through the Albemarle-Chowan Watershed Roundtable. Staff reviewed the Scope of Work, participated in the inaugural meeting October 2024 and subsequent meetings in 2025 and have provided funding support to assist with roundtable activities.
- Staff continue to make connections between partners across state lines, including connecting the Hampton Roads Planning District Commission with North Carolina partners within their Metropolitan Statistical Area, and the interstate Atlantic Coastal Coalition.
- Staff continued coordination with Virginia Beach city staff and partners and are regularly invited to help plan and participate on panels at the annual North Landing River Albemarle Sound Symposium.

FY2-26 Plans: Continue to support the Crater Planning District Commission (PDC) with the Southern Rivers Roundtable through staff time and providing funding for regional workshops and projects. Explore similar opportunities through Hampton Roads, Southside, and other PDCs. Continue to connect partners across state lines to strengthen regional coordination efforts in watersheds that flow into Albemarle Sound. Continue to seek ways to support implementation of the Chowan Healthy Waters Plan and integrate with regional efforts to deal with algal blooms in Albemarle Sound. Continue Tribal resilience coordination discussed elsewhere.

Albemarle-Pamlico Federal Partnership

APNEP has been participating in the Albemarle-Pamlico Federal Partnership initiated by the USFWS in 2022. This effort aims to enhance regional coordination among federally funded partners and others to raise national awareness of the Albemarle-Pamlico region and maximize the benefits of federal investments through IIJA/BIL, IRA, ARPA, and other programs. Initial discussions suggest this effort will offer opportunities to guide project planning, prioritization, and implementation. It is still a developing effort.

Sentinel Landscapes

Since 2016, APNEP has participated in the Eastern North Carolina Sentinel Landscapes Partnership, which fosters collaboration between farmers, foresters, conservationists, and military installations to support agriculture and defense—the state's two largest economic sectors. This initiative aims to preserve agricultural lands, protect military bases from encroachment, enhance national defense readiness, and restore wildlife habitat across 33 eastern counties, 24 of which are in the Albemarle-Pamlico watershed. The Sentinel Landscape designation creates new opportunities for collaboration on conservation efforts, and staff will continue seeking regional project opportunities within this initiative.

Core Partnership Entities

Host

The main APNEP office is located within the NC-DEQ Office of the Secretary in Raleigh, NC, with additional staff in Washington, NC. Staff from the Virginia Department of Conservation and Recreation's Natural Heritage Program also support collaborative implementation of the 2020 VA-NC Memorandum of Understanding .

Management Conference

Leadership Council

The Leadership Council is the primary advisory body for APNEP and the Management Conference. Established by NC Governor's Executive Order #250, it advises, guides, evaluates, and supports CCMP implementation, while promoting collaboration among state and federal agencies, local governments, tribes, the public, and interest groups. The Council consults with advisory committees and the APNEP Office for recommendations on CCMP actions at regional and local levels, as well as research and monitoring priorities. Its key responsibility is to keep the CCMP relevant and address emerging issues impacting the Albemarle-Pamlico estuarine system. In cooperation with the APNEP Office, the Council develops an annual report, budget, and workplan.

Science and Technical Advisory Committee

The Science and Technical Advisory Committee, established in 2004, provides independent advice to the Leadership Council and Citizen Advisory Committee on scientific and technical issues, including ecosystem assessment and monitoring, to support CCMP implementation.

Citizen Advisory Committee

The Citizen Advisory Committee, re-established in 2023, collaborates with the Leadership Council, STAC, and staff on CCMP implementation and community engagement. Committee members serve as liaisons to citizens, agencies, tribes, and other stakeholders on environmental and natural resource management related to CCMP. The Committee aims to engage communities throughout the region and represent varied perspectives within the Management Conference.

Action Teams

Action Teams focus on implementing CCMP objectives and actions. They are responsible for developing the necessary outputs to achieve the desired ecosystem outcomes. Membership is open to all interested parties. Active Action Teams, which align with the Leadership Council's focus areas, receive priority staff facilitation.

Monitoring and Assessment Teams

To enhance program capacity and promote collaboration, APNEP established six resource Monitoring and Assessment Teams (MATs), each focused on a major sub-system of the Albemarle-Pamlico ecosystem.

Partnerships

APNEP serves as a boundary organization, facilitating collaboration and information exchange among research disciplines and public policy and management. It works with partner organizations and the public to raise awareness and understanding of environmental issues in the Albemarle-Pamlico region. For more details on these engagement efforts, see the APNEP Engagement Strategy.

Coordination primarily happens through relationships within our partner network, regardless of formal APNEP team participation. APNEP tracks key issues, offering support where possible, such as addressing Chowan algal blooms, flooding, and habitat impacts. Engagement has resulted in grant support letters, formal Leadership Council comments, technical advice to agencies, funding and logistical assistance, and technical workshops.

APNEP staff regularly participate in external workgroups and committees to broaden our impact, promote regional collaboration, and support volunteer involvement. When possible, we prioritize projects that align with the goals of these external groups and actively seek to integrate their efforts with Management Conference priorities and initiatives.

Administration and Program Implementation

Programmatic Administration

APNEP staff coordinate, plan, and ensure the successful completion of partnership functions, including Management Conference meetings, workshops, assist with partner events. They also monitor and engage in activities of federal and state resource management agencies and local and regional governments related to the APNEP mission and CCMP implementation. Staff attend meetings, conferences, and workshops to stay informed about technological advancements that could benefit the APNEP region and partnership. While the Leadership Council and Advisory Committees help identify local environmental issues and prioritize management actions, most actions are implemented by federal, state, and local agencies at various levels, requiring staff involvement and coordination.

Host Entity

NC-DEQ serves as the host entity for the APNEP Office and partnership. The Department manages the administrative and fiscal aspects of the APNEP-EPA cooperative agreement, which provides federal funding for APNEP. Its operational efficiency and support of the Management Conference are crucial to APNEP's success, including managing the cooperative agreement and other funding sources.

Administrative Costs

The total budgeted administration costs for the federal grant in FY2025-25 are estimated at $607,273 covering six staff FTE salaries, interns, benefits, longevity pay, equipment, supplies, office rent, storage

space, IT services, phone, and training. An anticipated NC Government employee salary increase is included in the budgeted cost. APNEP owns one boat and trailer used primarily for SAV work, with operational and maintenance costs covered by projects that use the vessel. Temporary employees and interns hired for specific projects will be paid under the project's budgeted amount.

Indirect Cost

Pursuant to the North Carolina Department of Environmental Quality's Indirect Cost Administration Policy, the Chief Financial Officer has determined the that the indirect cost for APNEP is set at the Federal *de minimis* rate of 10% of all salaries supported by this federal grant. The estimated indirect costs will be $41,927 based on the indirect rate for the grant-supported salaries.

Personnel

Most APNEP staff are based at the APNEP office in Raleigh, located within the NC-DEQ Headquarters. This office includes the Director, Program Scientist, Program Manager, Project Manager, Policy and Engagement Manager, Quantitative Ecologist, and Partnership Coordinator. The Conservation Coordinator is based at the APNEP field office in Washington, NC. The Virginia Department of Conservation and Recreation also provides personnel to support CCMP implementation, at no additional cost to the program. All positions comply with NC Office of State Human Resources rules and policies.

Director

This position administers and coordinates program activities and CCMP implementation, working with federal, state, and local agencies, universities, interest groups, and the public. It manages post-CCMP grants and contracts, supports the APNEP Leadership Council and Advisory Committees, and represents APNEP at local, state, regional, and national meetings. Dr. Bill Crowell has been the Director since June 2002.

Program Manager

This position assists with administering the U.S. EPA §320 Grant and manages APNEP contracting and related activities. The role helps build support for the APNEP mission and CCMP implementation, develops tracking systems for performance measures, and provides staff support to the Management Conference. Heather Jennings has served as Program Manager since June 2018.

Program Scientist

This position supports CCMP implementation, helping to design and implement a comprehensive monitoring strategy and reporting process. The role guides the Science and Technical Advisory Committee (STAC), reviews project proposals and reports, and provides staff support to the Leadership Council and Advisory Committees. Dr. Dean Carpenter has held this position since November 2003.

Partnership Coordinator

This position assists the program office and the Management Conference with engagement, education, and outreach. The role oversees the implementation of APNEP's Engagement Strategy,

guides the CAC, seeks new partnership and funding opportunities, and collaborates with staff on new CCMP actions. Additionally, it provides staff support for the Management Conference and serves as a liaison to external working groups. Currently vacant and anticipate filling position prior to October 2025.

Quantitative Ecologist
This position supports CCMP implementation and science-based management in the watershed, coordinating with partners to assess the health of the Albemarle-Pamlico estuarine system. Key responsibilities include analyzing and reporting on health indicators, identifying monitoring gaps, developing research to address data needs, supporting APNEP Action and Monitoring & Assessment Teams, and managing the program's GIS functions. Dr. Tim Ellis has held this role since March 2017.

Conservation Coordinator (Non-federal Match)
This position serves as an APNEP liaison to local governments and state agencies, NGOs, and other stakeholders in support of CCMP implementation. This role also oversees the coordinated implementation of the CCMP with partners. Funded by NC-DEQ, the position provides part of the non-federal match for the U.S. EPA §320 grant. Currently vacant and anticipate filling position prior to October 2025.

Policy and Engagement Manager (Non-federal Match)
This position guides program development, implementation, and administration of IIJA/BIL funding through development of budgets, projects, contracts, and tracking expenditures. The position works to foster project development, and leverage federal, state, and local investments coming to the region. The position directly manages multiple projects and initiatives supportive of CCMP implementation including APNEP's MOU with Virginia, resilience coordination and planning, and support to local governments and Tribal communities. Stacey Feken has served in this role since March 2016, initially focusing on engagement, education and outreach and adding IIJA/BIL responsibilities October 2022.

Travel

National Estuary Programs can use EPA §320 funds and matching funds to cover travel costs for staff and stakeholders from other NEPs or watershed organizations collaborating on shared issues. Stakeholders may include public members, environmental and public interest groups, business or industry representatives, academics, scientists, and technical experts.

- EPA §320 funds and matching funds may be used to cover costs associated with attending conferences, meetings, workshops, or events that advance CCMP implementation. These funds also may be used to cover the travel cost of projects described in the annual workplan and the cost of renting facilities.
- Note that when using EPA §320 funds for travel, NEPs should use the least expensive means of travel whenever possible.
- EPA §320 and matching funds <u>are not</u> used to cover the travel costs of Federal employees.

APNEP, the Management Conference, and EPA consider personal, face-to-face contact essential for information sharing and technology transfer. As part of the federal grant requirements to attend EPA-NEP meetings, each NEP is required to allocate minimum of $10,000 as travel funds for program activities, enhancement, education, and outreach support. APNEP intends to use budgeted travel funds to support the following where relevant to CCMP implementation:

1) Management Conference, Action Team, MAT, and Ad-Hoc committee meetings,
2) Participation in local and regional stakeholder meetings, workshops, and conferences
3) Participation in national or regional NEP and EPA meetings
4) Participation in international, nation, regional, and local workshops, or conferences
5) Travel to other NEPs or communities to provide technical and policy assistance
6) Travel by NEP staff or stakeholders from other NEPs or watershed programs to provide APNEP with assistance

Travelers may include Management Conference members, Action Team members, MAT members, citizens, and representatives from environmental or public interest organizations, businesses, academia, science, technical fields, or others as determined by the APNEP Director.

As a requirement of this grant agreement, a member of APNEP's staff is required to participate in meetings called on behalf of the NEPs by EPA.

Food

Travel funds are primarily for staff, management conference members, and action team participants. However, APNEP funds awarded as grants or contracts may also be used for light refreshments and meals at meetings, conferences, workshops, and outreach events, in accordance with 41 CFR 301-74.7, NC-DEQ travel policies, and with APNEP Director approval.

2024-2025 Travel

APNEP staff attended several meetings and conferences using allocated travel funds, project-specific funds, and administration costs. Travel costs may be associated with certain projects, and these expenses are budgeted and reported accordingly. Rates are provided in the table below. The following is a summary of past and upcoming activities for the year:

Personnel	Date	Purpose	Location	Cost
APNEP Staff/ Management Conference	10/1/24 to 9/ 30/25	Routine Program Activities/ meetings/ projects/ workshops/ conferences/ fieldwork/ MC meetings	APNEP area	8,000
Spring NEP-EPA Meeting	March 2025	NEP meeting	Washington, D.C.	2,000
			Total*	$ 10,000

2025-2026 Projected Travel

All travel, including non-staff travel, must comply with NC-DEQ's published travel policies and regulations. Due to the dynamic nature of the Partnership, travel cannot always be planned a year in advance, so only estimates can be provided based on NC-DEQ rates (below). Some travel costs are associated with specific projects and are included in their respective budgets. Rates are listed in the table below.

Funds may be used for light refreshments and meals at meetings, conferences, training workshops, and outreach activities, in accordance with 41 CFR 301-74.7, and as approved by the APNEP Director through the NC-DEQ travel approval process.

NC-DEQ TRAVEL RATES*

Item	In-State	Out of State	Overnight Trip	Day Trip
Breakfast	$ 10.10	$ 10.10	Depart Office before 6:00 AM	Depart before 6:00 AM; Extend workday by 2 hours
Lunch	$ 13.30	$ 13.30	Depart Office by 12:00 Noon; Overnight return after 2:00 PM	NA
Dinner	$ 23.10	$ 26.30		Depart before 5:00 PM; Return after 8:00 PM; Workday extended by 3 hours
Hotel	$ 89.10	$ 105.20		NA

**1 January 2025 DEQ.* Albemarle-Pamlico *region often exceeds hotel rates*

In State:

In-state travel is primarily for APNEP staff to conduct routine business associated with daily operations, field work, staff training or topical meetings germane to the Partnership. It may also cover non-staff for APNEP business (i.e., council and committee members, guest speakers, and experts). Funds are also used to cover meetings as allowed under the NC-DEQ travel guidance. Rates are listed above.

Out-of-State:

The NEPs generally hold two national meetings each year (these may on not be in same fiscal year). Each program is strongly encouraged to participate in the meetings. The spring meeting is held in Washington, DC and the fall meeting is hosted by one of the 28 NEPs. The level of staff participation will vary depending on the agenda for a particular meeting. Travel may also cover non-staff (e.g., Management Conference members, partners).

Out-of-state travel is primarily for APNEP staff to conduct business associated with the NEP general meetings and to attend training, conferences, or topical meetings germane to the Partnership. Travel

may also cover non-staff (e.g., council and committee members, guest speakers, experts) for NEP-related activities.

2025-2026 Projected Travel (320 Funds)

Personnel	Date	Purpose	Location	Estimated Cost
APNEP Staff, Management Conference, and Volunteers	10/2025 – 9/2026	Normal program activities	Albemarle-Pamlico region	$5,000
APNEP Staff	11/2025	EPA/NEP National Fall Meeting	TBD	$2,500
APNEP Staff	3/2026	EPA/NEP National Spring Meeting	Washington, DC	$2,500
				$10,000

Non-Federal Cost-Share (Match)

Summary of Match Requirements

As Partnership host (grant applicant), NC-DEQ provides $850,000 for the required 1:1 non-federal matching funds. This match will be provided through:

Summary of Non-federal State Match

In-kind Positions (salaries and benefits)	$ 221,000
Water Quality Improvement Project(s) Expenditures:	$ 629.000
TOTAL:	**$ 850,000**

1) **In-kind Services**: NC-DEQ intends to provide $ 221,000 as part of the required 1:1 non-federal match for federal fiscal year October 1, 2025 to September 30, 2026. This match will be provided for staff support (salaries and benefits) by the Conservation Coordinator and Policy and Engagement Manager positions (see "Personnel" above). The match positions are responsible for program administration, support, community involvement and guiding implementation of the CCMP.

2) **In-kind Project Expenditures Non-federal Match:** The NC-DEQ intends to provide $ 629,000 as part of the 1:1 non-federal match for federal fiscal year October 1, 2025 to September 30, 2026. The expenditure of these non-federal funds will be provided through water quality improvement projects in one or more of the river basin areas within APNEP's programmatic jurisdiction. The projects will be administered by the NC Division of Water Infrastructure.

NC Division of Water Infrastructure

The NC Division of Water Infrastructure provides financial support for projects that improve water quality, including sewer systems, water treatment plants, and stormwater management. The Division also supports the State Water Infrastructure Authority (SWI), established in 2013

under NC General Statute 159G-70. The SWI is an independent body responsible for awarding both federal (revolving loans) and state funding for water and wastewater infrastructure projects.

Leveraged Funds

APNEP actively seeks alternative funding sources to support activities and projects that align with CCMP implementation. Additionally, APNEP collaborates with partners to target program funds toward CCMP and basin-wide projects. Whenever possible, APNEP works to cost-share projects, enhancing their impact, even when it is not the primary driver of a project or activity.

In 2024-2025, APNEP continued to seek partners and additional opportunities to target actions and funding for CCMP implementation. APNEP submitted its leverage results to the EPA NEPORT database in September 2024**.**

Appendix A: 2025 CCMP Goals & Outcomes

Goal 1: A region where human communities are sustained by a functioning ecosystem

Ecosystem Outcomes:

a. Waters are safe for personal contact.
b. Designated surface and ground water supplies are safe for human consumption.
c. Surface hydrologic regimes sustain regulated human uses.
d. Fish and game are safe for human consumption.
e. Opportunities for recreation and access to public lands and waters are protected and enhanced.

Goal 2: A region where aquatic, wetland, and upland habitats support viable populations of native species

Ecosystem Outcomes:

a. The biodiversity, function, and populations of species in aquatic, wetland, and upland communities are protected, restored, or enhanced.
b. The extent and quality of upland, freshwater, estuarine, and near-shore marine habitats fully support biodiversity and ecosystem function.
c. Non-native invasive species do not significantly impair native species' viability or function, nor impair habitat quality, quantity, and the processes that form and maintain habitats.

Goal 3: A region where water quantity and quality maintain ecological integrity

Ecosystem Outcomes:

a. Appropriate hydrologic regimes support ecological integrity.
b. Nutrients and pathogens do not harm species that depend on the waters.
c. Toxics in waters and sediments do not harm species that depend on the waters.
d. Sediments do not harm species that depend on the waters.

Appendix B: 2025 CCMP Objectives and Actions

A: Understand

Objective A1: Assess the condition of and potential impacts to targeted ecosystems.

Actions:

A1.1: Facilitate mapping the distribution of significant ecological, hydrologic, bathymetric, geologic, demographic, and cultural features. (IIJA Priority).

A1.2: Facilitate improved projections of land and water use, and climate related impacts on the ecosystem to enhance the coordination of multi-scale planning, management, and community resilience. (IIJA Priority)

A1.3: Develop and refine a regional ecosystem assessment and supporting assessments such as indicator metric reports and syntheses.

B: Protect & Restore

Objective B1: Protect and restore areas containing significant natural communities and habitats.

Actions:

B1.1: Refine and implement a submerged aquatic vegetation (SAV) protection and restoration strategy. (IIJA Priority)

B1.2: Refine and implement a regional wetland protection and restoration strategy. (IIJA Priority)

B1.3: Protect and restore targeted natural communities, habitats, and ecosystem processes. (IIJA Priority)

B1.4: Facilitate the development of policies to minimize dredge and fill activities in naturalized areas and sensitive habitats.

B1.5: Refine for federal approval and facilitate the implementation of a *North Carolina Aquatic Nuisance Species (ANS) Management Plan*.

B1.6: Facilitate the construction of new native oyster habitats.

Objective B2: Protect and restore water quality by minimizing or eliminating targeted sources of water pollution.

Actions:

B2.1: Support the development of water quality standards and any subsequent development of new management strategies for estuarine waters. (IIJA Priority)

B2.2: Facilitate the implementation of existing contaminant management strategies.

B2.3: Protect, restore, and enhance targeted shorelines and riparian buffers to reduce and treat runoff, and to support ecosystem function/services. (IIJA Priority)

B2.4: Facilitate voluntary retrofitting of existing development and infrastructure to reduce runoff.

B2.5: Minimize the introduction of toxics into receiving waters by facilitating the use of approved best management practices at marinas, boatyards, stormwater discharges and wastewater facilities.

B2.6: Minimize contaminant loads to receiving waters through wastewater management and system upgrades.

B2.7: Facilitate the use of approved best management practices (BMPs) on targeted agricultural and silvicultural lands to improve water quality for the protection, and restoration of SAV and oyster habitats.

Objective B3: Ensure hydrological processes in rivers and estuaries support significant natural communities and ecosystem functions.

Actions:

B3.1: Facilitate the development and implementation of coordinated landscape-scale hydrological restoration strategies.

B3.2: Facilitate the hydrologic restoration of floodplains and streams.

B3.3: Develop and refine ecological flow requirements for each major river for inclusion in basin-wide water management plans.

Objective B4: Restore spawning areas for diadromous fish.

Actions:

B4.1: Facilitate the installation of fish bypass infrastructure and operational protocols on existing dams and other permanent barriers.

B4.2 Facilitate the removal of dams, culverts, and other in-stream barriers.

B4.3 Restore degraded anadromous fish spawning habitats.

C: Engage

Objective C1: Foster watershed stewardship.

Actions:

C1.1: Communicate the importance of stewardship and offer opportunities for volunteerism to further APNEP's mission.

C1.2: Provide and promote opportunities for outdoor experiences that connect individuals with the Albemarle-Pamlico ecosystem.

Objective C2: Conduct targeted environmental education efforts regarding estuarine habitats, water quality, and ecosystem services.

Actions:

C2.1: Provide environmental education training opportunities for educators.

C2.2: Increase public understanding of the relationship between ecosystem health and human health advisories relating to water, fish, and game.

Objective C3: Provide tools and training to support ecosystem-based management.

Actions:

C3.1: Develop and implement a strategy to improve decision-makers' understanding of the return on investments in environmental protection, restoration, planning, and monitoring.

C3.2: Enhance the coordination of targeted ecosystem management by federal, state, regional, Tribal, and local governments, and communities, by assisting with the incorporation of resilience, climate change and sea level rise considerations into planning processes. (IIJA Priority)

D: Monitor

Objective D1: Develop and maintain an integrated monitoring network to collect and disseminate information for assessment of ecosystem outcomes and management actions associated with CCMP implementation.

Actions:

D1.1: Facilitate the development and implementation of an integrated monitoring network through the guidance of regional monitoring and assessment teams. (IIJA Priority)

D1.2: Facilitate the expansion of volunteer monitoring into a core element of the integrated monitoring network.

D1.3: Develop and maintain an online resource that clearly conveys regional information in support of ecosystem-based management.

Appendix C: FY24-25 Approved Grant Budget

For the timeframe of October 1, 2024, to September 30, 2025, APNEP was awarded an EPA Section 320 grant award of up to $850,000 to support activities geared towards implementing the Partnership's updated CCMP and its mission under the current Cooperative Agreement. The proposed uses for this funding are highlighted below. Detailed information about each funding category is described within the FY24-25 Workplan.

Activity	Grant Budget Proposal
Water Quality Projects	$ 30,000
SAV Projects	$ 30,000
Wetland Projects	$ 30,000
Oyster Projects	$ 30,000
Resilience Projects	$ 30,000
Engagement & Stewardship Projects	$ 30,000
Management Conference Support	$ 3,000
APNEP-NCSG Joint Fellowship	$ 5,000
Events & Sponsorships	$ 4,000
Program Administration*	$ 595,588
Travel	$ 10,000
Subtotal	$ 797,588
Indirect Cost (*12.8%*)**	$ 52,412
Total Grant Funds	$ **850,000**

**Includes personnel, supplies, equipment, and fringe benefits that are based on Social Security (7.65 %), Retirement (25.02 %) of position's annual salary and Medical Insurance Plan rate of $7,557 per year per person (as of 6 May 2024, NC DEQ).*

***Indirect Costs are based on an EPA negotiated rate of federal salaries under "Water Resources" currently based on 2023-23 agreement from April 27, 2023.*