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 **2022-2023 Progress Report**

**&**

**Work Plan Proposal for 2023-2024**

**US EPA 320**

**Cooperative Agreement CE-00D95519**

*DRAFT*

*To Be Reviewed by the*

*APNEP Leadership Council*

*on May 22, 2023*

[www.apnep.org](http://www.apnep.org/)

# Table of Contents

[Table of Contents 1](#_Toc134791048)

[Executive Summary 3](#_Toc134791049)

[Purpose 3](#_Toc134791050)

[Cooperative Agreement 3](#_Toc134791051)

[Principal Contacts 3](#_Toc134791052)

[2022-2023 Key Accomplishments 4](#_Toc134791053)

[Priority Focus Areas and Activities 4](#_Toc134791054)

[Water Quality 4](#_Toc134791055)

[Wetlands 5](#_Toc134791056)

[Submerged Aquatic Vegetation (SAV) 6](#_Toc134791057)

[Resilience 6](#_Toc134791058)

[Engagement and Stewardship 7](#_Toc134791059)

[Partnership-Building and Regional Coordination 8](#_Toc134791060)

[Infrastructure Investment and Jobs Act of 2021 10](#_Toc134791061)

[Proposed Grant Budget for 2023-2024 11](#_Toc134791062)

[Partnership Activities & Projects 12](#_Toc134791063)

[Supplemental Projects (Non-320 Funds) 39](#_Toc134791064)

[Administration and Program Implementation 45](#_Toc134791065)

[Travel 47](#_Toc134791066)

[Non-Federal Cost-Share (State Match) 50](#_Toc134791067)

[Leveraged Funds 51](#_Toc134791068)

[Core Partnership Entities 51](#_Toc134791069)

[Host 51](#_Toc134791070)

[Management Conference 51](#_Toc134791071)

[Partnerships 52](#_Toc134791072)

[Appendix A: CCMP Goals & Outcomes 54](#_Toc134791073)

[Appendix B: CCMP Actions 55](#_Toc134791074)

[Appendix C: 2021-22 Approved Grant Budget 58](#_Toc134791075)

Introduction

The Albemarle-Pamlico National Estuary Partnership (APNEP) is a component of the U.S. Environmental Protection Agency’s (EPA) National Estuary Program. It was one of the first programs established under amendments to the Clean Water Act in 1987. APNEP’s mission is to identify, protect, and restore the significant natural resources of the Albemarle-Pamlico region.The Partnership is a cooperative effort currently hosted by the NC Department of Environmental Quality (NC-DEQ) under a cooperative agreement with the EPA and works closely with the Commonwealth of Virginia. The Partnership also works closely with both EPA Regions III and IV.

APNEP’s initial Comprehensive Conservation and Management Plan (CCMP) was ratified by the Governor of North Carolina and approved by the EPA in 1994. A revised [CCMP](https://apnep.nc.gov/resources/publications-and-reports/ccmp) was created in 2012 through a stakeholder-driven process with an ecosystem-based management approach. The Partnership Office is advised by a Management Conference as currently authorized under [North Carolina Governor's Executive Order #250 (2022)](https://apnep.nc.gov/media/1981/open).

The Albemarle and Pamlico Sounds comprise the nation’s largest semi-lagoonal estuarine system. The system is composed of eight sounds and five major river basins draining over 30,000 square miles of watershed in North Carolina and Virginia. The sounds, rivers, creeks, wetlands, and terrestrial areas provide habitat for an abundance of animal and plant species. People depend on the system for residential and resort development, food, recreation, mining, forestry, agriculture, business, and industry.

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# Executive Summary

## Purpose

This document is a compilation of two distinct reports:

**2022-2023 Progress Report**

This report presents information about APNEP’s completed and ongoing projects from May 2022 to October 2023 under cooperative agreement *CE-00D95519.* Descriptions of projects completed prior to May 2022 under *CE-00D95519* may be found in previous years’ reports and are available at [APNEP.org](http://www.apnep.org/)

**2023-2024 Work Plan and Budget Proposal**

This report presents the 2023-2024 Annual Work Plan, associated budget, and proposed projects for the fiscal year beginning on October 1, 2022. This Work Plan and the associated grant application represent a funding increase request of $850,000 for year four (10/1/23 to 9/30/24) under cooperative agreement *CE-00D95519* between the U.S. Environmental Protection Agency (EPA) and the North Carolina Department of Environmental Quality (NC-DEQ).

## Cooperative Agreement

This document addresses actions under EPA/NC-DEQ Cooperative Agreement *CE-0D95519*to support implementation of the management strategies recommended in APNEP’s [Comprehensive Conservation and Management Plan (CCMP)](https://apnep.nc.gov/resources/publications-and-reports/ccmp) under the direction of the Leadership Council, as well as to support APNEP’s mission of identifying, protecting, and restoring the Albemarle-Pamlico region’s significant resources. The period of performance under this Cooperative Agreementis from October 1, 2019, through September 30, 2024.

## Principal Contacts

**Leadership Council Chair**  **APNEP Director**  **APNEP Program Manager**

**Dr. Kirk Havens Dr. William L. Crowell, Jr. Ms. Heather Jennings**

VA Institute of Marine Sci. Albemarle-Pamlico NEP Albemarle-Pamlico NEP
P.O. Box 1346 1601 Mail Service Center 1601 Mail Service Center

Gloucester Pt, VA 23062 Raleigh, NC 27699-1601 Raleigh, NC 27699-1601 (804) 684-7380 (919) 707-8633 (919) 707-8632

**EPA Project Officer** **EPA Region III Liaison** **EPA HQ Lead**

**Ms. Rachel Hart Ms. Angela Padeletti Mr. Vince Bacalan**

US EPA, Region IV US EPA, Region III US EPA, HQ
61 Forsyth Street 1650 Arch Street 1301 Constitution Ave NW

Atlanta, GA 30303 Philadelphia, PA 19103 Washington, D.C. 20460

(404) 562-9279 (215) 814-2314 (202)566-0930

# 2022-2023 Key Accomplishments

Key accomplishments from May 2022 to April 2023 are listed below. Additional details about these and other projects can be found in the [Activities and Projects 2021-2022 section](#_ACTIVITIES_&_PROJECTS) below.

## Priority Focus Areas and Activities

The Partnership continues its attention on CCMP focus areas and activities as directed by the Leadership Council during the January 2020 strategic planning meeting. These actions led to activities primarily focused on submerged aquatic vegetation (SAV), water quality, coastal wetlands, oysters, and resilience; all consistent with the CCMP and APNEP mission.

Additionally, the Partnership continues work on public engagement and fostering regional partnerships that support APNEP in CCMP implementation, including further development of its monitoring plan and updating the CCMP. Major priorities for much of the remaining grant period are completing the CCMP update and releasing the water quality component of the monitoring plan.

### Water Quality

**Development of Integrated Monitoring Strategy**

With input from the STAC, APNEP staff and SAV Team monitoring leaders developed a proof-of-concept Integrated Monitoring Strategy whose initial scope focused on coastal SAV and estuarine water quality that impacts coastal SAV. The plan was accepted by the Leadership Council in March 2021. During the current evaluation period, other APNEP monitoring and assessment teams are using the SAV monitoring plan as a model to develop monitoring plans for their ecosystem component, with the highest priority of staff being a monitoring plan for estuarine waters and bed sediments.

**Research Study to Support Water Clarity Metrics for SAV Protection**

Water clarity indicator research for SAV protection: To set SAV protection and restoration goals for the Albemarle-Pamlico Estuarine System and make the connection to needed nutrient and sediment load reductions, quantitative linkages between theconcentrations of optical constituents and SAV light requirements are needed. Under a contract with APNEP, Dr. Nathan Hall of the UNC Institute of Marine Sciences has developed scientifically defensible chlorophyll-*a* and turbidity threshold concentrations that when considered together lead to water clarity that is protective of SAV in high-salinity zones. This information will help guide the decisions made through the NC Nutrient Criteria Development Plan (NCDP) and the NC Coastal Habitat Protection Plan (CHPP). [Learn more](https://apnep.nc.gov/media/1985/open).

**NC Nutrient Criteria Development Plan Support**

APNEP staff and select STAC members are active in the NC Nutrient Criteria Development Plan (NCDP) process, now focused on the Albemarle Sound and Chowan River. Staff assisted the NC Division of Water Resources (NCDWR) with gaining a complete understanding of the system and recommended candidates for the NCDP’s Scientific Advisory Council who are experts in high- and low-salinity SAV, and SAV impacts on fish productivity, as well as water quality issues. NCDWR has selected SAV as a biological indicator for the health of the Albemarle Sound and Chowan River. APNEP staff will continue to actively participate in nutrient criteria development for the Albemarle Sound and Chowan River until recommendations are accepted by NCDWR, approved by the NC Environmental Management Commission, and submitted to EPA.

**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. Most of this project was funded by USFWS through an interagency agreement with the U.S. Geological Survey who performed the work needed to expand and streamline the R coding. In collaboration with USFWS on this project, APNEP funded the work of a regional water quality expert, Dr. Nathan Hall at the University of North Carolina at Chapel Hill Institute of Marine Sciences to significantly expand the tool’s list of parameters with associated benchmarks to include indicators and metrics approved by the APNEP STAC for the monitoring and assessment of water resources in the Albemarle-Pamlico estuarine system.

### Wetlands

Regional Wetland Assessment & Monitoring

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 assessment and monitoring. As a near-term APNEP Tier-1 wetland monitoring strategy, there is a need to acquire regional wetland data with improved spatial resolution. As such, C-CAP at the national scale is now transitioning their focus from 30m to 1m land cover classification along the coasts, with an initial rollout of “Level-1” maps that have only three land cover classes: impervious surface, vegetation, and water. The extent of these Level-1 maps reaches far enough inland to cover a majority of the APNEP region. It is understood that “Level-2” maps that include all 24 land cover classes is on the horizon. Based on information from C-CAP representatives, there exists an opportunity for NOAA partners to accelerate the transition to Level-2 mapping in any geography if they are willing to provide funding in a cooperative venture.

### Submerged Aquatic Vegetation (SAV)

**SAV –High-Salinity Tiers 1 and 2 Surveys**

APNEP continued to make progress on implementing their 2021 SAV monitoring strategy by conducting bi-seasonal surveys in the second (Core) subregion during Spring and Fall 2022. 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 including University of North Carolina at Wilmington, NC Division of Marine Fisheries, UNC at Chapel Hill Institute of Marine Sciences, and US Natural Resources Conservation Service, [Learn more](https://apnep.nc.gov/our-work/monitoring/submerged-aquatic-vegetation-monitoring).

### Resilience

**Tribal Coastal Resilience Connections**

Using supplemental EPA 320 funds designated to work with underserved and under-represented communities on climate resilience, APNEP partnered with the NC Commission of Indian Affairs (NCCIA), NC State University (NCSU), and Virginia Coastal Policy Center to work with tribal communities in the Albemarle-Pamlico region. The goal of this initiative is to develop a strategy for incorporating resilience into tribal planning and community engagement processes. The Tribal Coastal Resilience Team has been successful in generating research on tribal engagement in climate and resilience planning efforts throughout the U.S., launching a social media campaign, conducting outreach at conferences and events, and creating partnerships and building the groundwork for a sustainable program. The second phase of the project was initiated in 2022. [Learn more](https://apnep.nc.gov/our-work/outreach-and-engagement/building-capacity-climate-resilience-albemarle-pamlico-region-tribal-communities-project).

**Using Natural and Nature-Based Features to Build Resilience to Storm- Driven Flooding**

APNEP participated on a Virginia Institute of Marine Sciences (VIMS)-led team for a NOAA-funded Coastal Resilience project which began in 2017. The project team developed a spatial analysis tool for Virginia local governments to identify opportunities and criteria for using Natural and Nature Based Features (NNBFs) that increase resilience to flooding and generate credits for local governments in water quality (TMDL) and hazard mitigation programs (FEMA-CRS). The tool was released on ADAPTVA in 2021. To evaluate the tool’s applicability in North Carolina, APNEP worked with Wetlands Watch to conduct a needs assessment and contracted with them to build a template tool comparison and resilience planning, project, and funding database. Outreach materials including fact sheets that highlight CHPP habitats and promote the use of natural infrastructure to build community and ecosystem resilience are also being created. The remaining phase of the project will be completed in 2023. [Learn more.](https://apnep.nc.gov/our-work/protection/using-natural-and-nature-based-features-build-resilience-storm-driven-flooding)

**NC Executive Order 80 Implementation**

APNEP staff continue to participate in activities stemming from implementation of the 2020 NC Climate Risk and Resilience Plan, including the Natural and Working Lands Stakeholder Team, Coastal Habitats and Pocosin Wetlands Subcommittees, and the Coastal Resilience Community of Practice. APNEP’s involvement in these efforts have led to identification needs for integrating resilience activities with existing programs and initiatives, including working closely with NC Division of Marine Fisheries staff to develop actions that complement the goals and objectives of both APNEP’s CCMP and the NC CHPP. 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 a resilience strategy in the state plans. In addition, the Tribal Coastal Resilience Project (see above) stemmed from APNEP participation on various workgroups and committees. Staff continue to explore options to assist with implementation of the actions recommended in the NC Climate Risk and Resilience Plan. Staff are also working closely with other partners on resilience initiatives including the Natural and Nature-based Features project for local governments described above, and other projects that will inform development of resilience strategies including Ecological Flows and the Scuppernong Regional Water Management Study.

### Engagement and Stewardship

**Watershed Engagement Projects**

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. Year 1 for both projects was completed in 2022 and activities are underway for the second year for both projects. A new RFP will be offered through this year’s workplan.

* + - ***Following the River: An Exploration of the Virginia Southern Watersheds/ Pasquotank River Basin***: Lynhaven River Now (LRNow) created a resource guide and lesson plans for educators in southeastern Virginia and northeastern North Carolina to increase knowledge about the unique history and natural resources of the region and connections of the shared waterways between the two states. The program also consisted of two unique, immersive teacher training experiences in the southern watersheds of Virginia Beach that flow into North Carolina’s Pasquotank River Basin and the Albemarle Sound.
		- ***Shad in the Classroom***: The Friends of North Carolina Museum of Natural Sciences was awarded funds to support the Museum in continuing their “Shad in the Classroom” program, which APNEP funded through previous education initiatives. The program engages students in hands-on learning about American Shad and North Carolina’s River Basins. It is also designed to foster an appreciation and understanding of the natural world, as well as to inspire the next generation of biologists and conservationists. The program trains teachers to facilitate classroom learning about water quality, American Shad ecology, riverine and coastal ecosystems, and careers in science. In person workshops for teachers and field experiences for students were also held in 2022 for the first time since the COVID pandemic.

### Partnership-Building and Regional Coordination

**NC Aquatic Nuisance Species Management Plan Committee Coordination**

APNEP staff continued working with the NC Aquatic Nuisance Species Management Plan Steering Committee to revise the Plan for federal approval, and afterwards identify next steps for Plan implementation. This state plan for coordinated management, research, and outreach of aquatic nuisance species, once finalized and federally approved, will make North Carolina eligible for federal funding to support the plan’s implementation. Improved coordination and collaboration across state agencies will leverage limited resources available for invasive species management in North Carolina.  APNEP and the NC Division of Water Resources have recently applied for a grant to support the final development of the plan. [Learn more.](https://apnep.nc.gov/our-work/identification-and-research/nc-aquatic-nuisance-species-management-plan-coordination)

**North Carolina - Virginia Memorandum of Understanding (2020)**

APNEP facilitated a renewed Memorandum of Understanding (MOU) between six environmental and natural resources agencies from North Carolina and Virginia. The MOU, released in September 2020, builds upon the MOU signed in 2017 and reaffirms the agencies’ commitments to foster interstate collaboration within the shared waterways of the Albemarle-Pamlico region. The MOU required a report on coordination, data-sharing, and assessment of interstate initiatives, which was circulated to the agency designees in summer 2021. The designees agreed upon climate resilience as an overarching theme for MOU implementation, with an initial focus on working together in the Chowan River Basin. A final recommendation regarding interstate joint-management strategies is pending coordination with the new Virginia administration. [Learn more](https://apnep.nc.gov/our-work/outreach-and-engagement/interstate-collaboration-shared-waterways/chowan-healthy-waters).

**Currituck Sound Coalition**

This initiative is being led by Audubon North Carolina and is a coalition of many of APNEP’s partner organizations. The idea behind the formation of the coalition is to increase collaboration and coordination on nature-based strategies that provide multiple benefits – flood risk reduction, storm protection, improved water quality, habitat, recreational opportunities, cultural heritage, etc. – for communities and wildlife in and around the Currituck Sound watershed. Together the coalition can effectively inform planning, advance policy, and lead on-the-ground projects that demonstrate the capacity of nature-based solutions to address the most pressing coastal challenges in northeastern North Carolina. APNEP staff participate on the Coalition’s Wetlands Working Group, which released a Marsh Conservation Plan in 2021. APNEP staff are working with Coalition members to develop strategies for outreach with Virginia partners and helped establish connections to Virginia partners for a meeting held August 2022. [Learn more.](https://pineisland.audubon.org/conservation/landing/alliance-currituck-sound)

**Scuppernong Regional Water Management Study**

At the request of the NC Division of Parks and Recreation, APNEP has been leading development of the Scuppernong Regional Water Management Study since 2018, serving as a neutral, science-based convenor of a diverse group of stakeholders and local communities to address flooding and water management issues on the northern Albemarle-Pamlico peninsula. After multiple years of delays due to contracting and capacity issues, APNEP made significant progress during the past year, working closely with the Albemarle Commission to secure funding and a technical subcontractor for a hydrologic study. A planning grant from the NCDEQ Water Resources Development Grant Program was awarded to the Albemarle Commission, the Regional Council of Government in February 2023. Match was secured from grant partners including the NC Division of Parks and Recreation, NC Division of Soil and Water Conservation, U.S. Fish and Wildlife Service, and Washington and Tyrrell Counties. APNEP also partnered with the NC Coastal Reserve, NC Sea Grant, and The Nature Conservancy and was awarded a NOAA Digital Coast Connects grant in November 2022 from the National Estuarine Research Reserve Association to develop a collaborative engagement strategy to ensure equitable community engagement and input from regional stakeholders to inform the Study. The outcomes will be utilized to build a comprehensive regional plan to address water management issues on both privately and publicly owned land.

**Albemarle-Pamlico Federal Partnership**

APNEP has been participating in the Albemarle-Pamlico Federal Partnership initiated by the USFWS in 2022. This effort is geared towards increasing regional coordination amongst federally funded partners to promote national attention towards the Albemarle-Pamlico region; while also seeking to leverage and maximize the benefits of the significant federal investments being directed towards the region through BIL, IRA, ARPA, and others. Based on initial conversations staff anticipate opportunities through this effort to guide project planning, prioritization, and implementation. As part of this regional coordination and with support and encouragement from the NC Governor’s office, APNEP partnered with the USFWS and the NC Office of Recovery and Resilience in July 2022 to submit a grant application, with APNEP as the applicant in cooperation with NCDEQ, through the National Fish and Wildlife Foundation America the Beautiful Challenge. Though the grant application was unsuccessful there is continued interest in partnering for future opportunities, and using the framework proposed to incorporate community engagement in efforts to protect and restore natural and working lands. Future efforts will be reported as part of the BIL workplan.

Sentinel Landscapes

APNEP has been participating in the Eastern North Carolina Sentinel Landscapes Partnership since its inception in 2016. ENCSL is an innovative partnership focused on collaboration and coordination between farmers and foresters, conservationists, and military installations to provide mutual benefits to protect the state’s two largest economic sectors – Agriculture and Defense. This regional initiative works to preserve agricultural lands, protect military bases from encroachment, contribute to national defense readiness, and restore and protect wildlife habitat in 33 eastern counties. Of these, 24 counties are in the Albemarle Pamlico watershed. The Sentinel Landscape designation is a new opportunity to increase collaboration among a diverse group of partners in North Carolina to advance conservation efforts. A coastal coordinator was hired by the NC Coastal Federation in 2021. Staff will continue to seek opportunities to collaborate on regional projects as part of this initiative.

South Atlantic Salt Marsh Initiative’s (SASMI)

APNEP was invited to review the South Atlantic Salt Marsh Initiative’s (SASMI) draft regional conservation plan and attend a virtual meeting for North Carolina state agency representatives in December 2022. The South Atlantic coast is home to an expansive network of salt marsh and tidal creeks stretching over one million acres.  Salt marshes are the ecological guardians of our coast, and this habitat is facing increasing pressures from rising seas and encroachment.  SASMI is a voluntary, collaborative, and non-regulatory effort that is bringing together diverse partners from North Carolina, South Carolina, Georgia, Florida and beyond to achieve landscape-scale conservation of one of the last vast areas of salt marsh in the United States. SASMI seeks to add value to ongoing efforts and create a framework and catalyst for cross-agency and organization collaboration supported by implementation at the state and local level by developing a regional conservation plan. For your reference, attached is an overview of SASMI, including a map highlighting the range of current salt marsh included within the initiative. Staff will continue to track this initiative to identify opportunities for collaboration given that wetlands have been identified as a focus area under the new CCMP.

# Infrastructure Investment and Jobs Act of 2021

The Infrastructure Investment and Jobs Act, passed by Congress in November 2021 and known as the Bipartisan Infrastructure Law (BIL) is designed to be a significant investment in the nation’s infrastructure and resilience. The BIL references EPA’s underlying authority under CWA §320 to fund the implementation of the National Estuary Programs (NEPs) CCMPs. As with annual appropriations distributed to NEPs to implement CWA §320, the funds distributed under the BIL must be directed to implement a management conference and EPA approved CCMP and workplan. The BIL funding is available to the NEPs until fully expended and will be distributed over five years.

In February 2023, APNEP received $1,819,600 inadditional funds from EPA under the BIL to support a 2022-2024 Work Plan for the timeframe of October 1, 2022, through September 30, 2024. APNEP anticipates requesting additional funds under BIL in June 2024 per guidance from the EPA as detailed by a July 26, 2022, NEP BIL Funding Implementation Memorandum from EPA Assistant Administrator, Radhika Fox. Additional funds are expected to be available for CCMP implementation up to 2027. The initial two-year BIL work plan and associated budget were approved by the Leadership Council in October 2022 and is available on the APNEP website [here](https://apnep.nc.gov/documents/files/publications/2022-2024-bil-cooperative-agreement-work-plan-proposal-1/open). APNEP will submit the Long Term BIL funding strategy to EPA by June 1, 2023.

# Proposed Grant Budget for 2023-2024

For the timeframe of October 1, 2023, to September 30, 2024, APNEP anticipates receiving an EPA Section 320 grant award of up to $850,000 to support activities geared towards implementing the Partnership’s CCMP and its mission under the current Cooperative Agreement. Funding received for 2022-23 was $750,000\*. The proposed uses for this funding are highlighted below. Detailed information about each funding category is described within this work plan.

|  |  |
| --- | --- |
| **Activity**  | **Grant Budget Proposal** |
| Water Quality Projects | $ 40,000 |
| SAV Projects | $ 40,000 |
| Wetland Projects | $ 40,000 |
| Oyster Projects | $ 40,000 |
| Resilience Projects | $ 40,000 |
| Engagement & Stewardship Projects (RFP)  | $ 20,000 |
| Management Conference Support | $ 4,000 |
| APNEP-NCSG Joint Fellowship | $ 5,000 |
| Events & Sponsorships | $ 3,000 |
| Program Administration\*\* | $ 558,925  |
| Travel | $ 10,000 |
| **Subtotal** | $ 899,925 |
| Indirect Cost (12.8%)\*\*\* | $ 49,075  |
| **Total Grant Funds** | $ **850,000** |

*\*A copy of the 2022-23 budget is available in Appendix C.*

*\*\*Includes personnel, supplies, equipment, and fringe benefits that are based on Social Security (7.65 %), Retirement (24.5 %) of position’s annual salary and Medical Insurance Plan rate of $7,397 per year per person (as of 21 April 2023, 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.*

# Partnership Activities & Projects

The following narrative provides an overview of the status of APNEP’s projects and activities under Cooperative Agreement CE-0D20614. The section provides a description of progress on projects since the last annual work plan was approved on May 25, 2022. Ongoing projects are those that began during or before the last fiscal year, and which APNEP expects to continue through the current fiscal year as well as new projects for 2023-24.

**Diversity, Equity, and Inclusion**

**Objectives:** Engage communities and stakeholders that are representative of the broader populations within our programmatic boundaries to implement the CCMP and the Partnership’s mission.

**Description:** APNEP affirmed its diversity, equity, and inclusion statement in 2020, which included commitments to engage diverse individuals, communities, and populations in the organization’s decisions, and actively diversify the perspectives represented within all of Partnership’s management and citizen advisory groups. Certainly, there is much progress that can be made in the coming year, however, at minimum, the commitment includes a requirement to report annually on actions taken to enact these commitments in our Annual Work Plan. These reports within the work plan are intended to develop broader efforts that will take much time, and thoughtful engagement and listening to the broader community and partners alike to make significant progress. APNEP’s DEI statement and equity strategy developed for the BIL workplan identify a baseline effort that will consistently evolve over the short and long term. [Learn more.](https://apnep.nc.gov/resources/publications-and-reports/apnep-diversity-equity-and-inclusion-statement)

**Progress to Date:**

* In 2023, APNEP developed a draft Equity Strategy that details how we will contribute to the national program-wide goal of ensuring that at least 40% of the benefits and investments from BIL funding flow to disadvantaged communities. We anticipate more detailed reporting and planning associated with our DEI statement in BIL reporting and workplans in the future.
* APNEP continues to partner with representatives from Tribal coastal plain communities, universities, and agencies through the Tribal Coastal Resilience Connections project described elsewhere. The project was initiated using supplemental funds from EPA designated for work with underserved communities on CCMP actions in NEP watersheds.
* STAC leadership in Spring 2021 formed an ad-hoc subcommittee to promote DEI opportunities within the science & technology community. A subcommittee representative briefed the greater STAC during their June 2021 meeting on a draft proposal outline to conduct an exploratory spatial analysis to investigate relations between indicators of human well-being and ecosystem health among disadvantaged communities within the APNEP Region.
* Staff continually seek opportunities to assist communities that lack the capacity and resources to deal with environmental issues, particularly in rural areas in eastern NC.
* Staff received numerous trainings on diversity and bias from NC-DEQ Human Resources.
* APNEP’s Summer 2021 intern Abby McNaughton developed a document entitled *Recommendations for Incorporating Diversity, Equity, Inclusion, and Justice in APNEP Communications & Outreach*. She interviewed APNEP staff and partners including the NC Office of Environmental Education and Public Affairs which assists the NC-DEQ Diversity and Inclusion committee and conducted online research. Her recommendations included starting with social media and grants. She assisted with diversifying outreach and targeting new audiences for the 2021 Engagement & Stewardship RFP which was released during her tenure. APNEP staff have begun implementing other recommendations including updating website content and will be considering them during the 2023 CCMP update and implementation of the Equity Strategy and BIL workplan. Staff will include the document in the next update to its Engagement Strategy.

**FY2023-2024 Plans:**

* Actively incorporate diversity, equity, and broad community inclusion efforts as necessary ecosystem outcomes with associated objectives and actions into the 2023 update of the CCMP.
* Actively promote and support Community-based Participatory Research (CBPR) efforts that are community-led and target the direct needs of communities impacted by environmental impacts. CBPR aims to achieve mutual benefits for the community and partnering organizations or researchers.
* Actively seek partnerships where APNEP can support or lead environmental justice focused work and connect community partners with resources and support. For example, APNEP can be a liaison for existing and developing partnerships to pursue relationships with the newly formed EPA Environmental Justice Thriving Communities Technical Assistance Center for Region 4 located at RTI in Research Triangle Park, NC and local HBCU host North Carolina Central University.
* Develop targeted strategies for social media consistent with the outreach and engagement strategy

**CCMP Update**

**Objectives:**  To update the APNEP CCMP to reflect current priorities of the Management Conference and resource issues in the region.

**Description:** APNEP is currently in the process of updating its CCMP, a process that initially began in February 2017 with a joint Leadership Council and STAC meeting to discuss implementation progress, subsequent meetings with Leadership Council members and partners that participated in development of the current CCMP and APNEP’s transition to EBM, and briefings for staff that were involved in the factor analysis, Management Conference meetings, and public workshops that informed CCMP development. In meetings in 2020, the Leadership Council developed a set of focus areas for the program when updating the CCMP. Staff and the Leadership Council were initially considering an Addendum to the current CCMP until early 2022. However, through discussions with EPA region and headquarters staff regarding consistency with current guidelines, and after consideration that a new Executive Order had been established, decided that an updated / revised version was more appropriate. Upon receiving approval of extending the update/revision process in to 2023 by EPA Region IV (Sept 2022), the staff and the Leadership Council approached the process in earnest and following the recommendations for CCMP updates/revisions provided by the [2021-2024 EPA NEP Funding Guidance](https://docplayer.net/216589945-Fy-2021-fy-2024-clean-water-act-320-national-estuary-program-funding-guidance.html).

**Undesignated CCMP Implementation Projects**

(An ongoing undesignated category with new projects approved by Management Conference)

**Objectives:** Targeted CCMP Implementation Projects.

**Description:** APNEP staff and Leadership Council will work with the Advisory Committees, associated Teams, and partners to identify projects that need financial support or administrative support from APNEP for CCMP implementation. A group composed of the Leadership Council, the Citizen Advisory Committee and the Science and Technical Advisory Committee will evaluate requests and administer the funding for priority projects and activities that exceed $10,000. Project examples include Ecological Flows Phase III, Tribal Resilience, SAV Mapping, Wetland Mapping, Living Shorelines, or other projects that align with Partnership priorities and CCMP implementation.

As CCMP implementation refocuses with a renewed 2022 Executive Order #250, 2023 CCMP Update, 2017 & 2020 Interstate MOUs with Virginia, along with new opportunities through development of the 2023 Five-Year Bipartisan Infrastructure Law Workplan and associated Equity Strategy, APNEP will continue to develop and implement collaborative solutions that address regional needs and inform project development.

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| **Partners:** | To be determined by project or activity |
| **Outputs/Deliverables:** | Partnership building, CCMP implementation |
| **Outcomes:** | CCMP implementation |
| **FY2023-24 Cost:** | $ 40,000 per focus area, total $200,000  |
| **Estimated Leverage:** | $ 100,000 |
| **CCMP Actions:** | TBD |
| **CCMP Outcomes:** | TBD |
| **CWA Core Programs Addressed:** | TBD |
| **EPA Element(s):** | TBD |

**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 North Carolina to conduct applied research within the North Carolina portion of the APNEP management boundary. Fellows must conduct research that addresses focus areas identified in the CCMP and the NCSG Strategic Plan. [Learn more](https://apnep.nc.gov/our-work/identification-and-research/apnep-sea-grant-graduate-fellowship-estuarine-research)

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| **Year(s):** | 2015 – present |
| **Partners:** | NC Sea Grant (Lead) |
| **Outputs/Deliverables:** | Final report, presentations, maps, data |
| **Outcomes:** | Increased capacity to address CCMP implementation actions |
| **FY2023-24 Cost:** | $5,000 |
| **Estimated Leverage:** | $5,000 per cycle |
| **CCMP Actions:** | A2.1, B2.6, C3.1, D1.3, D2.1  |
| **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:**

* **2019:** In January 2019, fellow Erin Voigt (NC State University) began studying how native and non-native invasive mash species and wave exposure affect shoreline erosion and the availability of nursery habitat in Currituck, Albemarle, and Pamlico Sounds.
* **2020:** In January 2020, fellow Haley Plaas (UNC-Chapel Hill) began studying cyanobacteria toxins in the Chowan River and Albemarle Sound.
* **2021:** In January 2021, fellow Stacy Trackenberg (East Carolina University) began studying how restored seagrass beds in coastal North Carolina are functioning as habitat for faunal communities across varying depths.
* **2022:** In January 2022, fellow Joshua Himmelstein (UNC-Chapel Hill) began studying sediment delivery in North Carolina saltmarshes using low-cost, open-source sensors.
* **2023:** In January 2023, fellow Yasamin Sharifi (UNC-Chapel Hill) began studying the sedimentology of North Carolina’s seagrass beds to better understand carbon storage and sequestration.

**Coastal Plain Ecological Flows Evaluation: Pilot Project (Phase II)**

**Objectives:** Complete data compilation, field studies, and analysis needed to address data gaps in the coastal plain to identify surface flows needed to protect the ecological integrity of biota in coastal streams. Develop recommendations for the NC Division of Water Resources to inform development of ecological flows for the coastal plain.

**Description:** APNEP has led an Ecological Flows Action Team since 2015 at the request of partners that participated in the NC Ecological Flows Science Advisory Board (EFSAB) to address data gaps and needs identified by members of EFSAB’s Coastal Ecological Flows Working Group. The EFSAB was established in response to 2010 legislation directing the former NC Department of Environment and Natural Resources (now NC DEQ) to develop hydrologic models for each river basin in North Carolina and determine the flows needed to maintain ecological integrity in surface waters.  [Learn more](https://apnep.nc.gov/about-apnep/committees/action-teams/ecological-flows-team).

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| **Year(s):** | 2015 – 2023 |
| **Partners:** | East Carolina University, APNEP Ecological Flows Team members (multiple partners), NC Land of Water (NCLOW)  |
| **Outputs/Deliverables:** | Phase II Pilot Study & Summary Report. |
| **Outcomes:** | Refinement of data needed to develop recommendations for the NC Division of Water Resources for ecological flows in the NC coastal plain. Development of an evaluation process, decision tree, or matrix that can be replicated in other waterbodies.  |
| **FY2020-23 Cost:** | $ 50,000  |
| **Estimated Leverage:** | $ 43,478 |
| **CCMP Actions:** | A3.3, D3.2, E2.2 |
| **CCMP Outcomes:** | 2a, 2b, 3a, 2b |
| **CWA Core Programs Addressed:** | (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program |
| **EPA Element(s):** | Habitats, Water Quality |

**Progress to Date:**

APNEP provided funds to team co-lead Dr. Mike O’Driscoll and colleagues at ECU to conduct the Phase I study, [Existing Data for Evaluating Coastal Plain Ecological Flows in the Albemarle-Pamlico Estuary Region](https://apnep.nc.gov/documents/2018-apnep-ecological-flows-evaluation), completed in 2018. The team met regularly throughout 2019-2020, focusing on addressing the recommendations in the Phase I report and developing a proposal for a Phase II Study to conduct pilot studies in selected watersheds and develop an evaluation process to inform development of ecological flows in the coastal plain. APNEP contracted with ECU to conduct work on the Phase II pilot study which began in spring 2021.

In 2021-2022, the ECU team conducted hydrological/water quality data collection along the Trent River, performed initial data analysis, and engaged with community stakeholders to help develop ecological flow guidance for the Trent River system and evaluate approaches to facilitate applying this guidance to similar coastal watersheds in the Albemarle-Pamlico Estuary system. ECU met with the Ecological Flows Action Team to brief them on project progress and solicit input on sampling locations in July 2021 and April 2022.

In 2022-23, the ECU team conducted a second year of sampling and considered expanding into the Tar-Pamlico basin, leveraging funds from another ECU project funded by NSF. The ECU team completed the Phase II Pilot and is developing a report documenting the available data, noticeable data gaps, data collection sites, synthesis of data, literature review, and stakeholder perspectives. The report will address the framework for coastal ecological flows (NCEFSAB 2013) and will include:

* + Recommendations to NCDWR and APNEP regarding the establishment of ecological flows in the Trent River watershed and document process.
	+ Evaluation process that can be transferred to other basins.
	+ Recommendations for further research, monitoring to fill data gaps if needed.
	+ A spreadsheet with water quality, geomorphological, meteorological, ecological, flow alteration, water use, and flow data points.
	+ A map documenting locations of field data collection sites

APNEP staff plan to convene the Ecological Flows team in 2023 to discuss the results of the Phase II pilot and next steps including mechanisms to deliver the recommendations and evaluation process to NCDWR. APNEP will consider project expansion using BIL funds.

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

**Objectives:**

1. In collaboration with NC-DWR and the University of North Carolina Institute of Marine Sciences (UNC-IMS), collect necessary paired chlorophyll-*a*, colored dissolved organic matter (CDOM), and PAR data from select NC Ambient Monitoring System (AMS) stations in Chowan River, Albemarle Sound, Pamlico River, and Neuse River.
2. Calibrate a bio-optical model for low-salinity SAV in APES using the data from Objective 1.
3. Develop scientifically defensible chlorophyll-*a* standards for protection of low-salinity SAV.

**Description:** To set SAV protection and restoration goals for estuarine system and make the connection to needed nutrient and sediment load reductions, quantitative linkages between chlorophyll-*a* concentrations and SAV light requirements are needed.  APNEP previously contracted with UNC-IMS to conduct this analysis for both high- and low-salinity SAV. While the bio-optical model performed well for APES high-salinity waters where it was originally developed, further calibration is needed to utilize the model for low-salinity SAV. Extensive compilation and review of available water quality data revealed limited measurements of the critical parameters CDOM and PAR in low-salinity waters that are necessary for further calibration of the bio-optical model. This project will collect these data, calibrate the model, and develop recommendations for scientifically defensible chlorophyll-*a* standards that are protective of SAV for low-salinity zones. These findings, in association with the findings for high-salinity SAV, will help guide the development of water quality management strategies for the protection of SAV, particularly through the CHPP and NCDP.

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| **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 APES low-salinity zones. |
| **FY2021-22 Cost:** | $ 24,000 |
| **Estimated Leverage:** | $ TBD |
| **CCMP Actions:** | A1.1, B2.2., C1.1., C1.2, C3.3, E1.1 |
| **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 |

**Progress to Date:**

* **2021:** APNEP met several times with NC-DWR and Dr. Nathan Hall of UNC IMS regarding collaboration on this project, developing a workplan, and formalizing the roles and responsibilities of APNEP, NC-DWR, and UNC-IMS relative to specific tasks needed to complete the project. In May 2021, data collection began.
* **2022:** Data collection continued through October 2022 to capture the full seasonal dynamics of the water clarity metrics of interest.

**FY2023-2024 Plans:** Data collection is complete and next steps are well underway, including data QA/QC, data summaries, and model calibration. A final report is expected by July 2023.

**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 KdPAR 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 chlorophyll *a* and turbidity for low-salinity SAV habitats throughout APES.

**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 due to non-point source nutrient and sediment pollution have caused significant declines in SAV coverage but the remaining SAV of Currituck Sound still constitute an important fraction of North Carolina’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 (KdPAR) 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.

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| **Year(s):** | 2022 – present |
| **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 APES low-salinity zones.  |
| **FY2021-22 Cost:** | $ 4,993 |
| **Estimated Leverage:** | $ TBD |
| **CCMP Actions:** | A1.1, B2.2., C1.1., C1.2, C3.3, E1.1 |
| **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 |

**Progress to Date:** This project began on May 15, 2022.

**FY2023-2024 Plans:** A final report in conjunction with the previous project is expected by July 2023.

**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.

Most of this project was funded by USFWS through an interagency agreement with the U.S. Geological Survey who performed the work needed to expand and streamline the R coding. In collaboration with USFWS on this project, APNEP funded the work of a regional water quality expert, Dr. Nathan Hall at the University of North Carolina at Chapel Hill Institute of Marine Sciences to significantly expand the tool’s list of parameters with associated benchmarks to include indicators and metrics approved by the APNEP STAC for the monitoring and assessment of water resources in the Albemarle-Pamlico estuarine system. Additionally, Dr. Hall also worked with the USGS coders to refine data analysis and graphical and textual display functionalities of the tool.

More information about the wqReport R package can be found [here](https://rconnect.usgs.gov/wqReport/).

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| Status/ Year(s): | 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.  |
| FY2017-22 Cost:  | $ 9,038  |
| Estimated Leverage:  | $ 90,000  |
| CCMP Actions:  | E1.1, E1.2, E2.2 |
| 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 |

**Progress to Date:**

The APNEP portion of this project is complete. Partners gave a talk at the 2023 WRRI conference. Since completion of the project, USFWS has USGS on contract through summer 2024 to address bugs in the tool that arise from more people (particularly refuge biologists) using the tool and reporting issues. So far, the issues have all been minor and most fixes are really addressing processing efficiency of the R script rather major glitches with the functionality of the tool itself.

**NC Aquatic Nuisance Species Management Plan Development**

**Objectives:** To update a strategic plan for coordinated management, research, and outreach on aquatic nuisance species in North Carolina; to garner renewed commitment from lead state agencies for the plan’s implementation; to submit the plan to the NC Governor’s Office for consideration; to acquire approval from the federal Aquatic Nuisance Species Task Force.

**Description:** The NC Aquatic Nuisance Species Management Plan (NC-ANSMP) is a collaborative, multiagency plan to improve the state’s ability to address aquatic invasive/nuisance species issues. 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. Furthermore, 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 directed towards invasive species management, federal funding is critical to 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 with the end goals of renewing commitments for collaboration from state agencies and making North Carolina eligible to receive federal funding for invasive species management.

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| **Year(s):** | 2015-2016, 2018 - Present  |
| **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. |
| **FY2021-22 Cost:** | Staff Time |
| **Estimated Leverage:** | $12,000 |
| **CCMP Actions:** | A2.1, B2.6, C3.1, D1.3 |
| **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:**

APNEP staff provided feedback on the original NC-ANSMP adopted in 2015 and have been co-facilitating, along with NCDWR, an update of the Plan through the NC-ANSMP Steering Committee in 2018-2022.

**FY2023-2024 Plans:**

**Estimated Cost:** Staff Time

**Milestones:** APNEP staff will continue to co-facilitate the coordination of revisions to the NC-ANSMP in 2023-2024, with the goal of having the NC Governor’s Office submit the revised Plan to the federal Aquatic Nuisance Species Task Force by late 2024. From there, APNEP staff will continue to work with the Plan’s Steering Committee towards implementing the NC-ANSMP in support of shared CCMP priorities. APNEP and the NC-DWR have recently applied for a grant to support the final development of the plan.

**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](http://portal.ncdenr.org/c/document_library/get_file?uuid=e6600731-daed-4c5f-9136-253f23c9bbcf&groupId=61563) 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.

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| **Year(s):** | 2004 - Present |
| **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.  |
| **FY2021-22 Cost:** | Staff Time |
| **Estimated Leverage:** | $76,000 |
| **CCMP Actions:** | A1.1, A2.3, A2.4, B1.2, B1.3, B1.4, B1.5, B2.2, B3.2, B3.3, C1.3, C1.4, C1.5, C2.2, C3.2, C3.3, C4.2, C4.3, C5.1, C5.2, C5.3, D1.2, D1.4, E1.2   |
| **CCMP Outcomes:** | 1a, 1b, 1c, 1d, 2a, 2b, 2c, 3b, 3c, 3d  |
| **CWA Core Programs Addressed:** | (6) protecting coastal waters through the National Estuary Program |
| **EPA Element(s):** | Direct Assistance, Habitats, Living Resources |

**Progress to Date:**

* APNEP’s projects and initiatives related to SAV monitoring and assessment are strongly tied to CHPP implementation. See SAV Monitoring and Assessment project description for more information.
* APNEP staff participate in efforts and initiatives to support CHPP implementation including the NC Oyster Blueprint and the Living Shorelines Action Team. Past APNEP efforts in support of CHPP implementation have included:
	+ Funding economic studies that have assisted in generating financial support from the NC General Assembly
	+ Long-term efforts to facilitate the use and construction of living shorelines including education and outreach initiatives which have led to streamlined permitting processes and increased demand.
* APNEP staff were involved in the development of the 2021 CHPP Amendment, Issue Papers, and workshops throughout 2020-2021. The draft CHPP update was released for agency and public review in the summer of 2021 and was adopted by the three commissions in late November of 2021.
* APNEP staff were involved in a series of webinars to create public outreach for the CHPP Amendment and to receive public comment on the amendment in 2021. APNEP also assisted with social media outreach to raise awareness about the CHPP and solicit public comment.
* APNEP staff participated in theWater Quality Summit in Fall 2022 (hosted by the NC Coastal Federation)
* An outcome of the Water Quality Summit was the formation of the Public-Private Partnership recommended in the 2021 CHPP Amendment. The partnership has formed and is operating under the name SECCHI - Stakeholder Engagement for Collaborative Coastal Habitats Initiative. The first initiative of this group was the authoring of a Water Quality Resolution seeking additional funds from the General Assembly for Best Management Practices (BMPs). These BMPs will focus on voluntary actions which will improve water quality. The resolution has been endorsed unanimously by the three regulatory commissions with CHPP oversight. Several NGOs and the NC Soil and Water Conservation Commission have also been in support of the resolution.

**FY2023-2024 Plans:**

 **Estimated Cost:** Staff Time

 **Milestones:**

* APNEP will coordinate through the CHPP NCDEQ team to further develop and develop strategies to share the outreach materials and fact sheets created through the Wetlands Watch Natural and Nature Based Features project described elsewhere to support implementation of the CHPP outreach plan.
* Formation of the formal public-private partnership as called for in the 2021 CHPP Amendment
* A timeline for recommendations is enumerated in the CHPP 2021 CHPP Amendment.

**APNEP Monitoring/Assessment Teams Facilitation**

**Objectives:** Facilitate interagency and inter-organization communication related to priority issues in the Albemarle-Pamlico region, improve cooperation and develop collaborative initiatives that accomplish shared goals and development of APNEP’s monitoring plans and assessment deliverables.

**Description:** APNEP’s initiatives are guided by input from a diverse group of regional partners and stakeholders. In 2017, APNEP re-convened seven Monitoring and Assessment Teams (MATs) to assist in developing (1) integrated monitoring strategies that collectively describe priorities among scientists, managers, policy makers, and citizens on how ecological monitoring should be targeted to best support APNEP indicator tracking of CCMP ecosystem outcomes, and (2) assessment deliverables in the form of metric reports, indicator reports, and ecosystem assessments; based on the higher-quality monitoring data available and targeted to technically-inclined stakeholders.

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| **Year(s):** | Ongoing |
| **Partners:** | [Varies; see Action Team webpages for partner organizations](https://apnep.nc.gov/about-apnep/committees/action-teams) |
| **Outputs/Deliverables:** | Decisions about CCMP implementation priorities; improved communication between Albemarle-Pamlico region environmental organizations |
| **Outcomes:** | CCMP implementation |
| **FY2021-22 Cost:** | Staff Time |
| **Estimated Leverage:** | $12,000 |
| **CCMP Actions:** | All |
| **CCMP Outcomes:** | All  |
| **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):** | Healthy Communities |

**FY2023-2024 Plans:** The MATs receiving staff facilitation priority will continue to be those who most closely align with the further development of the integrated monitoring strategies and the focus areas (SAV, Water Quality, Coastal Wetlands, Oysters, and Resilience) as directed by the Leadership Council.

**Building Climate Resilience Capacity in Tribal Communities**

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

**Description:** APNEP utilized supplemental Section 320 funding from the EPA and worked with representatives from tribal communities in the Albemarle-Pamlico region and the coastal plain of Virginia and NC to develop a 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.

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| **Status:** | In progress |
| **Partners:** | NC Commission of Indian Affairs, NCSU, Virginia Coastal Policy Center, Duke University  |
| **Outputs/Deliverables:** | Comparative analysis of engagement approaches, focus group discussions, workshops, project summaries, asset mapping, risk & vulnerability assessments, social media engagement, recommendations for inclusion in state and local climate risk and resilience plans. |
| **Outcomes:** | Increase in the number of communities in the APNEP region that incorporate resilience into local planning processes. |
| **FY2019-22 Cost:** | $37,500  |
| **Estimated Leverage:** | At least $27, 500 |
| **CCMP Actions:** | D3.3 |
| **CCMP Outcomes:** | 1a, 1b, 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):** | Healthy Communities, Direct Assistance |

**Progress to Date:** Through extensive coordination with tribal representatives, community leaders, and organizations including the NC Office of Recovery and Resilience, APNEP developed a project proposal which was approved by the Leadership Council in fall 2019 and the NC Commission of Indian Affairs (NCCIA) in March 2020. APNEP contracted with the NCCIA and through North Carolina State University (NCSU) in spring 2020. Both partners were granted an extension in March 2021 through September 2021 due to COVID and lack of ability to conduct planned in-person engagement including workshops, Powwows, and community events.

APNEP worked closely with the NCCI to hire a Tribal Resilience Program Director to coordinate the project. Ms. Beth Roach, Tribal Councilwoman with the Nottoway Indian Tribe of Virginia, formed the Tribal Coastal Resilience Connections team including Dr. Ryan Emanuel and graduate student Jocelyn Painter (both formerly NCSU, now with Duke University), the Virginia Coastal Policy Center, NCCIA, and APNEP. Phase I included research on tribal climate adaptation plans, online experimentations with tribal engagement, field work, partnership and network development, and continued discussions on tribal engagement issues in Virginia and North Carolina. The TCRC team continued its social media (#WaterStory) campaign launched 2020 on Indigenous People’s Day to share information about climate science, and resilience and adaptation planning. This platform provided a way during Covid to engage virtually about climate issues of concern to Tribal communities, collect stories about Indigenous connections to the land and waterways of the coastal plain in Virginia and NC, and share resilience and adaptation work being conducted by Tribes. Team members conducted outreach through presentations and panels at around fifteen events. In addition to engaging with Tribal communities about climate resilience, the team is using success stories from coastal tribal communities in and adjacent to the Albemarle-Pamlico region as well as those throughout Turtle Island to build awareness around what is working well and could be. A final report was finalized by the team in 2022 and is being shared with the NCCIA and other parties before distribution to the APNEP Management Conference and public.

APNEP participates as a team member and assists with the Facebook page, Tribal Coastal Resilience Connections, that was launched fall 2020. APNEP organized and facilitated a panel discussion highlighting the team’s work at the May 2021 Carolinas Climate Resilience Conference. Staff are working to ensure tribes are included in regional resilience planning efforts and will ensure that recommendations from the project are incorporated into reports and workplans that result from the Virginia/NC MOU. APNEP has assisted in making numerous connections between Tribal representatives and resilience practitioners, notably resulting in direct engagement between NCORR and the NCCIA on the RISE planning effort.

In addition, APNEP assisted Dr. Brittany Hunt, a postdoctoral researcher at Duke University in the Nicholas School of the Environment and a member of the Lumbee Tribe of North Carolina, with inviting representatives from various NCDEQ divisions to participate in a workshop on Indigenous Peoples in 2022. This workshop was part of a series of trainings for environmental professionals in NC to learn about more Indigenous communities in the state and how to collaboratively work with tribes to achieve environmental justice. During this session, we will also host a talking circle, which is an Indigenous practice of communication and sharing of knowledge. During the talking circle, they asked a series of questions related to Indigenous knowledge in NC. Recommendations and outcomes from the workshop will be published in a manuscript.

Phase II of the Tribal Resilience Project, initiated in 2022, narrows the scope and focus on engagement with Tribal communities in the shared waterways of the Albemarle-Pamlico region between Virginia and North Carolina (also supporting implementation of APNEP’s MOU), building upon a Climate Risk Analysis conducted by the Climate Service for the NCCIA in Phase I with the Nottoway Indian Tribe of Virginia and Meherrin Indian Nation. The plan is to expand tools identified in Phase 1 (Terrastories, GIS Storymapping, and WAMPUM) and utilize geospatial mapping platforms to collect water stories and present climate threats and vulnerabilities identified by Tribal communities in this region. The team will utilize these efforts to build towards creating a Tribal Coastal Resilience toolbox, create interactive skill building workshops, and develop interactive maps 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.

Based on preliminary coordination for this phase, it has been recognized that more work is needed to assess community readiness to engage in these more technical discussions surrounding climate resilience. Community projects have been identified as a mechanism for engaging tribal communities to build trust and assess community readiness to engage in more detailed conversations about climate risk and vulnerability and participation in planning and adaptation processes. Activities could include, but are not limited to planting trees, building rain gardens, river cleanups and increased access to ancestral lands and waterways, protecting cultural assets and traditional ecological knowledge, building food security and sustainability, and projects to alleviate flooding.

**FY2023-2024 Plans:**

APNEP will continue to work with the Tribal Coastal Resilience Connections Team and Program Director hired to serve as a liaison to Tribal communities in the AP region in Virginia and North Carolina and throughout the Coastal Plain to develop more detailed recommendations for future iterations of the BIL workplan.  The newly formed CAC, which will closely guide implementation of the BIL workplan and equity strategy, also includes a representative from the NC Commission of Indian Affairs. APNEP will consider project expansion using BIL funds.

**Event Participation 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 partnership opportunities. APNEP may participate in sponsored or non-sponsored events via tabling, environmental education activities, or logistical support.

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| **Year(s):** | Ongoing |
| **Partners:** | Varies |
| **Outputs/Deliverables:** | Event sponsorship. |
| **Outcomes:** | CCMP implementation, increased visibility, and improved partner relationships. |
| **FY2023-2024 Cost:** | $3,000 |
| **Estimated Leverage:** | $12,000 |
| **CCMP Actions:** | All |
| **CCMP Outcomes:** | All  |
| **CWA Core Programs Addressed:** | All |
| **EPA Element(s):** | Healthy Communities, Direct Assistance |

**Progress to Date:**

* 2023 I Heart Estuaries (social media, February)
* 2022 National Estuary Week (social media, September)
* Staff participated in the 2022 Envirothon
* APNEP staff served as a sponsor for the 2022 NC Sea Grant Conference and hosted a booth.
* NC Coastal Federation Water Quality Summit October 2022 with 115 participants. Formation of a Public-Private Partnership was initiated.
* Chowan Edenton Environmental Group (CEEG): Celebration of Sound Waterways, September 2022. APNEP was invited to host a booth and give a presentation at this event.
* APNEP staff served as a sponsor for the 2023 WRRI conference and hosted a booth. Staff also assisted with judging the student poster competition. Several partners gave talks on APNEP sponsored initiatives including:
	+ Michelle Moorman, US Fish and Wildlife, wqReport: A Tool for Compiling and Visualizing Watershed Data
	+ Haley E. Plaas, UNC Chapel Hill, Harmful Cyanobacterial Aerosolization Dynamics in the Airshed of a Eutrophic Estuary
	+ Michael O’Driscoll, East Carolina University, Tailoring Ecological Flow Guidance to Coastal Watersheds: Examples from the Trent River
* APNEP participated in the 2023 North Landing River & Albemarle Sound Estuarine Symposium held by the City of Virginia Beach and assisted with connections to North Carolina partners.
* APNEP participated in the Oyster Summit hosted by the NC Coastal Federation May 2023

**FY2023-2024 Plans:**

Staff will evaluate participation in events as they are announced. Known or planned scheduled events for 2022-23 include:

* WRRI Annual Conference (March 2024)
* 2023 National Estuary Week (social media)
* 2024 I Heart Estuaries (social media)

**Communications and Engagement**

**Objectives:** Increase awareness of and access to APNEP and partner resources, increase knowledge and understanding of Albemarle-Pamlico region issues and promote environmental stewardship behaviors. Develop and highlight targeted communications strategies and materials for specific initiatives such as SAV and incorporating DEI and environmental justice concentrations into social media efforts.

**Description:** APNEP produces a wide variety of communications materials to improve the Partnership’s ability to reach different audiences, including its partner organizations, local government, the public, and scientists and researchers. APNEP accomplishes this through print and digital materials, including its website, social media platforms, blog, e-newsletter, and printed fact sheets and brochures.

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| **Year(s):** | Ongoing |
| **Partners:** | Varies |
| **Outputs/Deliverables:** | Regularly update print and digital communications materials |
| **Outcomes:** | Increased understanding of the issues affecting the Albemarle-Pamlico region and awareness of APNEP’s role in the region |
| **FY2021-22 Cost:** | Staff Time; cost for printed materials to be determined |
| **Estimated Leverage:** | $TBD |
| **CCMP Actions:** | All |
| **CCMP Outcomes:** | All  |
| **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):** | Direct Assistance |

**Progress to Date:**

In 2018APNEP staff developed a new long-term Engagement Strategy for the Partnership, which presents a detailed vision for how APNEP plans to conduct its communications and outreach efforts going forward. Overall capacity for these efforts has been reduced with the return of the Communications and Outreach Specialist to graduate school in 2020 and lack of a full-time person in the position.

* In March 2019 APNEP launched a new website with an updated look, feel and content. The website was updated again in early 2021 to adjust to software changes. This new website is mobile-friendly and designed to meet accessibility standards.
* Print communications materials were updated in 2020; printing has been on hold due to restrictions on in-person events due to COVID.
* A targeted communications strategy for SAV was developed in 2020-2021.
	+ In February 2021, a high-salinity SAV extent metric report was released.
	+ Summer intern Abby McNaughton created infographics (one for the public, one for

local governments) and a webpage to assist with communications regarding the SAV economic valuation report.

* APNEP has hosted a Science Communications and Outreach intern through the Department of Administration State of NC Internship since 2018. Past interns have developed ArcGIS StoryMaps, GIS-based project maps for our website, analysis of communication and outreach strategies for aquatic invasive and nuisance species, strategies for SAV, and recommendations for Diversity, Equity, Justice, and Inclusion into the Partnership’s outreach activities.
* Update Engagement Strategy for the Partnership in-line with the planned CCMP amendment and DEI recommendations.

**FY2023-2024 Plans:**

* APNEP will maintain the website, including its GIS map of past projects. Social media platforms, e-newsletter, and other digital products will be updated on an ongoing basis.
* An intern will be hired for Summer 2023 to assist with communications and engagement materials. Specific projects and workplan will be developed in partnership with the selected intern based on APNEP needs and the intern’s interests.
* Develop a communications workplan for addressing the backlog of needs due to staff vacancies in prior years. The workplan will be geared toward engaging the broader community in APNEP projects, resources, and opportunities, and sharing of science and technological progress and challenges in the region.

**Watershed Engagement Projects:**

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 1 for both projects was completed in 2022 and activities are underway for both projects for Year 2. Current APNEP support for these projects will be completed in 2023 and funds posted to 2023 Engagement and Stewardship RFP.

**Following the River: An Exploration of the Virginia Southern Watersheds/ Pasquotank River Basin (Year I and Year II)**

**Objectives:** Engaging teachers in the Virginia Southern Watershed to incorporate APES- specific curriculum into annual student lesson plans.

**Description:** Lynnhaven River Now (LRNow) will create a resource guide and lesson plans for educators in southeastern Virginia and northeastern NC to increase knowledge about the unique history and natural resources of the region and connections of the shared waterways between the two states. There is a lack of resources geared towards the “Southern Watersheds” in Virginia Beach and the Pasquotank River Basin in NC, and Virginia educators are often unaware that their waterways drain into Albemarle Sound and not the Chesapeake Bay. The project will increase knowledge of the connections to APES and the shared waterways between the two states. The program will also consist of two unique, immersive teacher training experiences in the southern watersheds of Virginia Beach that flow into NC’s Pasquotank River Basin and the Albemarle Sound. The team also hopes to expand the NC Pasquotank River Basin booklet to include maps and information about the Virginia portion of this river basin.

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| **Year(s):** | 2021-23 (Year 1 and Year 2) |
| **Partners:** | Lynnhaven River NOW, US Fish and Wildlife Back Bay, Weasel Creek Watershed Expeditions, VA Department of Conservation and Recreation, False Cape State Park, multiple North Carolina partners including the NC Office of Environmental Education |
| **Outputs/Deliverables:** | Two unique immersive teacher trainings. Create a resource guide and lesson plans about the upper part of the watershed in Virginia that would be available online for both NC and Virginia Beach teachers. Expand upon existing NC Pasquotank River Basin booklets to include maps and information about the Virginia portion of this river basin. |
| **Outcomes:** | Increased awareness and understanding of Virginia’s connection to APES. |
| **FY202-2 Cost:** | $ 20,000 |
| **FY202-2 Cost:** | $ 20,000 |
| **Estimated Leverage:** | $ 27,970 |
| **CCMP Actions:** |  D1.1, D2.1, D2.2  |
| **CCMP Outcomes:** |  1a, 1b, 1d, 2a, 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 |

**Progress to Date:**

Lynnhaven River Now (LRN) developed and ran two unique immersive teacher training courses in June and July 2022. For the first training, they took a cohort of five 9-12th grade teachers on a 6-day sail/motor down the watershed to learn all about the habitats, history, economics, land use, and problems that this watershed faces. A pre-sail workshop was held April 2022 for teachers to learn about the boat, basics of sailing and an overview of the watershed. APNEP staff and partners participated LRN worked with APNEP staff and partners to establish a network in NC and stopped to meet with experts and visit sites such as museums, nature areas, and historic sites along the way.

The trip began with an exploration of Elizabeth City. From there, we joined the sailboat in Coinjock. The boat took us across the Albemarle Sound to Dowry Creek/Bellhaven area, down to Hatteras Island, across the Pamlico to Roanoke Island, back up to Coinjock, then into the North Landing River, through the locks to the Elizabeth River and ended in Norfolk. As they followed the river on the voyage of discovery, the teachers became more familiar with the rich resources that are in North Carolina and met many people who enriched the experience with firsthand stories about the area.

The second training was a 2-day workshop for five K-12 teachers (two of whom had also done the sailing trip) to learn about the history and natural history of the North Landing River and Back Bay sub-watersheds. This group of teachers learned about the unique habitats found in this region. The first part of the day was spent in Back Bay NWR exploring from the bay to the ocean. They boarded a tram and traveled to False Cape State Park. Using kayaks, they explored the marshes and shoreline of the bay, learned about the people and culture of this area, and saw the ghost forests. The next day, they explored the land portion of False Cape and learned more about the history and cultural history of the area.

In August, the two groups of teachers joined together at False Cape State Park and Back Bay NWR and worked for three days to create lesson plans for Virginia and North Carolina educators on the VA Southern Watersheds/Pasquotank River Basin. Each day, they were exposed to activities, speakers, and field experience opportunities that they could bring back to their classrooms and integrate into their lesson plans. The report was submitted to APNEP Spring 2023.

A Story Map has been created for the entire program. Follow this link, <https://storymaps.arcgis.com/stories/63acff0dad6d4639a592ff47051dc09e> to view the map and photos. We also created a “stockpile” of links to many aspects of the watershed. Each topic is divided into links that are websites, videos/power points, lesson plans and tools, and related literature; as well as images and maps and organizations working in the AP Watershed. Follow this link, https://docs.google.com/document/d/1FqfOPI4JA5ch5Lc9tuen\_72iH-8Bjo3mZ6nQBBpJtVY/edit to access the Stockpile. The teachers felt that this would be more useful to teachers that a resource guide to the watershed. This will be a living document with new resources being added by partners and teachers throughout the school year. Eventually, the Stockpile will live on the LRNow website.

[Learn more.](https://apnep.nc.gov/resources/educators/virginia-teacher-resources)

**FY2022-2023 Plans:**

LRN initiated planning in early 2023. Contracting is underway for Year II and plans have been initiated in Spring 2023. LRN extended the invitation to North Carolina teachers and worked through APNEP and the NC Office of Education to connect and share the opportunity. A pre-sail workshop was held with interested teachers in April. The sailing trip and workshops have been scheduled for summer 2023.

**Shad in the Classroom (Year I & Year 2)**

**Objectives:** Engage students in hands-on learning about American Shad and Albemarle-Pamlico region river basins, foster environmental stewardship and understanding of watershed connections, contribute to the restoration of American Shad within the Neuse River Basin, and inspire a new generation of biologists and ecologists.

**Description:** The Shad in the Classroom project provides teachers with the training, resources, and support to raise American shad from eggs to fry in their classrooms, and then release fry into the Neuse basin waters. In doing this, students can learn about water quality issues, watershed connections, and aquatic ecosystems through hands-on activities and outdoor education. Teachers are also able to utilize extension activities facilitated by the Shad in the Classroom program, including fish dissections, gyotaku (fish printing), and other lesson plans. Raising and releasing shad contributes to the U.S. Fish and Wildlife Service’s and NC Wildlife Resource Commission’s goals for restoring American shad populations in these river basins. The collaborative project provides students with an understanding of the scientific process, an inspiration for careers in science, and a desire to protect our waterways.

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| **Year(s):** | 2021-22 (Year 1) |
| **Partners:** | NC Museum of Natural Sciences (Lead), US Fish and Wildlife Service, NC Wildlife Resources Commission, NCSU, ECU |
| **Outputs/Deliverables:** | American shad fry released into the Neuse River in conjunction with USFWS and NCWRC restoration efforts, ~30 educators/year trained on rearing and releasing American shad, 1000+ students participating/year. |
| **Outcomes:** | Increased community involvement in water quality and habitat protection. |
| **FY2021-2 Cost:** | $ 20,000 |
| **FY2022-23 Cost:** | $ 20,000 |
| **Estimated Leverage:** | $ 11,000 |
| **CCMP Actions:** | D2.1, D2.2, D2.3 |
| **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 |

**Progress to Date /Milestones:**

* January-March 2022: Applications reviewed, teachers selected, supplies purchased, teacher training session scheduled and facilitated, shad weeks scheduled with USFWS, NC WRC, classrooms, and extension educational activities coordinated.
* April-May 2022: Shad delivered to classrooms, raised, and released. Extension education activities coordinated. Hatchery field trip for teachers.
* June 2022: Evaluations returned from classrooms and summary of program completed.

**Engagement and Stewardship 2023 Request for Proposals**

**Objectives:** Provide opportunities for partners and communities to obtain funding for environmental 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 will release an RFP during summer 2023. An independent review committee of environmental education and outreach professionals will select the projects through a competitive evaluation and ranking process.

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 the Partnership receives to fund 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.

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| **Year(s):** | 2023-24 |
| **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. |
| **FY2023-24 Cost:** | $ 20,000 |
| **Estimated Leverage:** | $ 11,000 |
| **CCMP Actions:** | D1.1, D2.1, D2.2, D2.3 |
| **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 |
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**Virginia-North Carolina Memorandum of Understanding Implementation**

**Objectives:** Facilitate and strengthen partnerships between NC and Virginia state agencies and other partners; identify shared goals for Albemarle-Pamlico region watersheds and contribute to projects that work towards those goals.

**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 MOU signed in 2017 and will assist agencies in coordinating with APNEP to tackle regional issues such as climate resilience, nonpoint source pollution, restoring fish passage and spawning habitat, and controlling invasive species. Agencies included: 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.

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| **Year(s):** | 2017 – present |
| **Partners:** | NC-DEQ, NC-DNCR, NC-WRC, NC-DACS, Virginia Secretary of Natural Resources, Virginia Secretary of Agriculture and Forestry.  |
| **Outputs/Deliverables:** | Reports, annual work plan, recommendations, new partnerships and activities in Virginia and NC focused on protecting and restoring the region. |
| **Outcomes:** | Increased capacity to implement CCMP. |
| **FY2021-22 Cost:** | Staff Time |
| **Estimated Leverage:** | TBD |
| **CCMP Actions:** | All |
| **CCMP Outcomes:** | All         |
| **CWA Core Programs Addressed:** | (2) identifying polluted waters and developing plans to restore them, (4) addressing diffuse, nonpoint sources of pollution, (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program |
| **EPA Element(s):** | Healthy Communities, Direct Assistance |

**Progress to Date:**

Designees from both states have been meeting regularly since the 2020 MOU was signed. Staff from APNEP and the Virginia Department of Conservation and Recreation, Natural Heritage Division were designated to lead coordination and facilitation of MOU implementation, with assistance from the Virginia Deputy Secretary of Natural Resources. The MOU requires a report on coordination, data-sharing, and assessment of interstate initiatives by March 2021, which was circulated to the agency designees in summer 2021. The designees agreed upon climate resilience as an overarching theme for MOU implementation, with an initial focus on working together in the Chowan River Basin.

Progress was made on a Governor-level agreement to elevate the status and recognition of the importance of the Albemarle-Pamlico ecosystem both regionally and nationally. A draft agreement was developed by the designees and sent for review by the Governor’s offices in both states. The Governor’s agreement will elevate the commitment between Virginia and North Carolina to collaborate in the shared waterways of the Albemarle-Pamlico estuarine system.

Progress on the Governor’s agreement and MOU implementation has stalled pending changes in agency leadership with the incoming Virginia administration. Staff have developed a transition document to brief the new agency heads once they have all been appointed. A final recommendation regarding interstate joint-management strategies will be delivered to the signatories in 2022.

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:

* Participation in the Currituck Sound Coalition and Wetlands Watch/VIMS NNBF Coastal Resilience project, and Tribal Coastal Resilience Connections project discussed elsewhere.
* **Coordination with Congresswoman Luria:** APNEP participated in an Albemarle-Pamlico Roundtable hosted by Virginia Representative Luria since March 2021 to foster federal support and resources for the shared waterways. The Roundtable primarily includes members of Virginia based organizations including Back Bay Restoration Foundation, Wetlands Watch, the Virginia Chapter of The Nature Conservancy, and Lynhaven River Now but also includes other Congressional members and staff from the APNEP region. Other participating agencies and organizations include Back Bay and Dismal Swamp National Wildlife Refuges, Virginia Cooperative Extension, USACE. Staff have worked to connect other regional partners to the roundtable including NC Wildlife Refuge staff, Audubon, and others. A new Representative was elected for this district Fall 2022 so it is unclear whether this effort will continue.
* **Grant Coordination:** APNEP was invited to collaborate on a NFWF proposal with VIMS and Virginia Dept of Wildlife Resources. Staff continue to seek opportunities to collaborate with regional partners to submit grants that further MOU implementation and write support letters when requested.

**FY2023-2024 Plans:**

* The final report required by the MOU and associated tasks described below are pending coordination with the new Virginia administration.
	+ Maintain momentum on the MOU with new VA administration. Work with co-lead from VA NHP to ensure the incoming leadership is briefed on the MOU.
	+ Deliver transition document to designees for review in 2022.
* New CAC members from Virginia have indicated an interest in revisiting past efforts to pass state legislation in Virginia to direct resources to the Southern Watersheds. In 2020, Lynnhaven River *NOW* worked to introduce a resolution through the Virginia legislature in directing the Virginia Department of Environmental Quality to conduct a study of the Albemarle-Pamlico Watershed in Virginia. The proposed study included collecting and analyzing land use and demographic data, water quality, water management, impacts from storms, and data on key species of flora and fauna. APNEP proposed utilizing the MOU to assist with this effort. Discussions are tentatively scheduled for summer 2023.
* Work with the NC Water Resources Improvement Team (WRIT) to develop recommendations for projects to implement under the MOU.
* Tribal Community Resilience: the second phase of the project funded by APNEP will focus on engaging with tribes in the shared waterways in the Chowan and Pasquotank basins.
* Currituck Sound Coalition: APNEP assisted coalition members with outreach to Virginia partners to implement the Marsh Conservation Plan as described elsewhere.
* **City of Virginia Beach Coordination:** Staff continued coordination with Virginia Beach city staff and partners, building on relationships developed during planning for the 2018 North Landing River / Albemarle Sound Ecosystem Symposium. Staff participated in a forum held March 2023 and connected the planners to North Carolina partners and wrote letters of support for grants.

**Integrated Monitoring Strategy & Ecosystem Indicator Development**

**Objectives:** Facilitate the development and implementation of an integrated monitoring network (ecosystem observatory) through the guidance of regional monitoring and assessment teams, assess the value of information for measuring ecosystem and CCMP implementation outcomes.

**Description:** APNEP continues to facilitate the establishment of an integrated monitoring strategy to detect, measure, and track changes in the ecosystem.  Much preparatory work has already been conducted by the APNEP Monitoring and Assessment teams (MATs), and these teams’ on-going contributions will be essential.  The strategy will provide resource managers and other partners with cost and information quality alternatives that will facilitate the selection of a set of monitoring protocols for monitoring strategy implementation.

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| **Year(s):** | 2017 - Present |
| **Partners:** | [See list of members on each Monitoring and Assessment Teams](https://apnep.nc.gov/about-apnep/committees/monitoring-and-assessment-teams) |
| **Outputs/Deliverables:** | List of indicators and metrics for the Albemarle-Pamlico region, Monitoring Plan. |
| **Outcomes:** | Improved understanding of the status and trends of APES, detection of environmental changes in support of CCMP implementation. |
| **FY2021-23Cost:** | Staff Time |
| **Estimated Leverage:** | $2,441 |
| **CCMP Actions:** | E1.1, E1.2, E1.3, E2.1, E2.2 |
| **CCMP Outcomes:** | 1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d |
| **CWA Core Programs Addressed:** | (6) protecting coastal waters through the National Estuary Program |
| **EPA Element(s):** | Healthy Communities, Direct Assistance |

**Progress to Date:**

By the start of 2019, each MAT had identified a prioritized list of indicators and metrics. APNEP staff synthesized the priorities of each Team to create an overall list of “high priority/Tier 1” indicators and metrics for monitoring. With the input of APNEP’s STAC, staff and SAV Team monitoring leaders developed a proof-of-concept Integrated Monitoring Strategy whose initial scope focused on coastal SAV and estuarine water quality that impacts coastal SAV. The plan was accepted by the Leadership Council in March 2021. Other MATs are using the SAV monitoring plan as a model to develop monitoring plans for their ecosystem component, with the highest priority of staff in 2022-2023 being a monitoring strategy for estuarine waters and bed sediments.

**FY2023-2024 Plans:**

In addition to refining the initial SAV and estuarine waters and sediments monitoring plans, staff will continue to engage with members on the respective MATs to generate initial monitoring strategies for the five remaining ecosystem components: Air Resources, Aquatic Fauna, Human Dimensions, Terrestrial Resources, and Wetland Resources.

**Milestones:**

* SAV Monitoring Plan 1.0 (March 2021)
* Estuarine Waters and Sediments Monitoring Plan 1.0 (Summer 2023)

**Recreational Water Quality Monitoring**

**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.

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| --- | --- |
| **Year(s):** | 2014 - Present |
| **Partners:** | NC-DMF |
| **Outputs/Deliverables:** | *Enterococci* bacteria data for approximately 30 recreational water quality testing sites. |
| **Outcomes:** | CCMP Implementation, integrated monitoring strategy. |
| **FY2021-23Cost:** | $ 12,007 (extended and renewed for another year), total $18,594 |
| **Estimated Leverage:** | $ 283,000 |
| **CCMP Actions:** | D2.3, E1.1, E2.1, 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 26 APNEP swimming sites are sampled 19 times throughout the year totaling 494 samples with bacteriological results posted immediately to the NC Recreational Water Quality website.
* Three APNEP sites are sampled 31 times throughout the year totaling 93 samples with bacteriological results posted immediately to the website.
* To date, a total of 3,579 samples have been analyzed to inform the citizens of North Carolina about *Enterococci*  levels throughout the Albemarle-Pamlico Watershed.

**FY2023-2024 Plans:**

NC-DMF will continue 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. Staff anticipates that continued support for this program will be evaluated during MAT deliberations for the upcoming APNEP monitoring strategy for estuarine waters.

**Coastal Submerged Aquatic Vegetation Monitoring and Mapping**

**Objectives:** Monitor and map the extent, spatial cover class, and percent cover of coastal SAV in the Albemarle-Pamlico region.

**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 coastal SAV monitoring via various platforms, including remote sensing and boat-based protocols.

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| **Year(s):** | 2005 - Present |
| **Partners:** | East Carolina University, NOAA, NC-DMF, NC-NERR, NC Department of Transportation, NC-DWR, UNC-Wilmington, UNC-Chapel Hill, U.S. NRCS  |
| **Outputs/Deliverables:** | Maps of coastal SAV areal extent by cover class; metric reports whose target readership are technically inclined environmental managers |
| **Outcomes:** | New information for decision-makers |
| **FY2021-22 Cost:** | $ Staff time |
| **FY2022-23Cost:** | $ 16,000 |
| **Estimated Leverage:** | $27,000 |
| **CCMP Actions:** | A1.1, E1.1, E2.1 |
| **CCMP Outcomes:** | 1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d |
| **CWA Core Programs Addressed:** | (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 coastal SAV is important because among other benefits it can serve as an indicator of estuarine habitat condition. The 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 final 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 beginning in Spring 2021 (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.

**FY2023-2024 Plans:**

 **Estimated Cost:**  $16,000 with additional funds provided by NC-DEQ pending.

APNEP will be seeking additional funds.

 **Milestones:**

* Update the spring 2021 APNEP high-salinity SAV metric report, incorporating the 2019-2020 SAV high-salinity extent by cover class map. APNEP and its partners will use this information to develop protection and restoration strategies for SAV and fish species in the region and support the CHPP update.
* Planned enhancement of the SAV monitoring strategy based on knowledge gained during the 2021 and 2022 field seasons.
* Building on the SAV monitoring strategy, establish an expanded survey effort in low-salinity waters.
* APNEP plans to make progress on implementing their 2021 SAV high-salinity monitoring strategy by conducting bi-seasonal surveys in the third (Southern Pamlico) subregion during Fall 2023 and fourth (Northern Pamlico) subregion in Spring 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 including UNC-Wilmington and the US Natural Resources Conservation Service,

# Supplemental Projects (Non-320 Funds)

**Using Natural and Nature-Based Features to Build Resilience to Storm-Driven Flooding Project**

**Objectives:** Work with the Virginia Institute of Marine Sciences (VIMS) project team and partners to evaluate the applicability of tools for assisting coastal local governments and planners in determining suitable areas for natural and NNBFs within NC.

**Description:** APNEP participated on a Virginia Institute of Marine Sciences (VIMS)-led team for a NOAA-funded Coastal Resilience project which began in 2017. The project team developed a spatial analysis tool for Virginia local governments to identify opportunities and criteria for using Natural and Nature Based Features (NNBFs) that increase resilience to flooding and generate credits for local governments in water quality (TMDL) and hazard mitigation programs (FEMA-CRS). The tool was released on ADAPTVA in 2021. To evaluate the tool’s applicability in North Carolina, APNEP worked with Wetlands Watch to conduct a needs assessment and contracted with them to build a template tool comparison and resilience planning, project, and funding database.

|  |  |
| --- | --- |
| **Year(s):** | 2018 - present |
| **Partners:** | Virginia Institute of Marine Science, Virginia Coastal Policy Center, Wetlands Watch |
| **Outputs/Deliverables:** | Inventory and comparison of NC and Virginia data sources; workshops and meetings with partners in NC. Report and template resilience database/toolbox for local governments. Factsheets on CHPP habitats.  |
| **Outcomes:** | Increase in incentives and tools for local governments and communities to utilize natural and nature-based features including living shorelines. Increase in the number of communities in the APNEP region that incorporate resilience and consideration of impacts from sea level rise and climate change into local planning processes. |
| **FY2021-22 Cost:** | $31,050, Staff Time |
| **Estimated Leverage:** | $31,050 |
| **CCMP Actions:** | A2.2, B3.1, D3.3 |
| **CCMP Outcomes:** | 2a, 2b, 2c, 3a, 3b, 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, Healthy Communities  |

**Progress to Date:**

In 2021, the project team completed the analysis and map viewer which is available on [ADAPTVA](https://urldefense.com/v3/__http%3A/cmap2.vims.edu/AdaptVA/adaptVA_viewer.html__;!!HYmSToo!JUXwhwQ_FLB0G8c89tTO6tIsYYkYVLEyCPb3snDpkCN3mbTnIEOE3-9JxbF0G3Cw3VHAYA$). The project team conducted outreach with Virginia localities throughout 2021. APNEP staff conducted virtual meetings and other outreach opportunities to solicit feedback from NC agency personnel and other partners throughout 2020-21 and participated in outreach events led by the project team. APNEP contracted with Wetlands Watch in to compare the Virginia based tool with those that exist in North Carolina. They are also conducting a needs assessment and outlining resources that North Carolina local government staff can use to compare tools and the types of NNBFs that can meet their needs (which also helps further implementation of actions in the NC Risk and Resilience Plan and Natural and Working Lands Plan related to developing interstate toolboxes and resources for local government). APNEP participates on the Statewide Resilience Toolbox Committee led by NCORR and NCDEQ and will be providing the results of the project to the group for consideration. Staff will discuss the applicability of the resilience database developed by Wetlands Watch to implement projects from the RISE portfolio, particularly based on needs identified by the Albemarle Commission which covers the 10 counties in northeastern NC that comprise our shared waterways with Virginia.

Outreach with NC partners for this portion of the project began summer 2021. was completed late 2022. The scope of this effort is generally focused on our shared waterways with Virginia, and results will be included in future reporting done for the MOU and to NC-DEQ and NCORR regarding EO80 implementation. Outreach materials including fact sheets that highlight CHPP habitats and promote the use of natural infrastructure to build community and ecosystem resilience are also being created. Deliverables from the project also include fact sheets on CHPP habitats. APNEP will coordinate through the CHPP NCDEQ team to develop strategies to share the outreach materials to support implementation of the CHPP outreach plan. The final report has been drafted and project deliverables are being finalized (database, fact sheets). The remaining phase of the project will be completed in 2023. [Learn more.](https://apnep.nc.gov/our-work/protection/using-natural-and-nature-based-features-build-resilience-storm-driven-flooding)

**2019 SAV Aerial Imagery and Interpretation**

**Objective:** Map North Carolina’s coastal SAV using aerial imagery.

**Description:**  In 2019, NC-DEQ provided APNEP with funds to support acquisition of new aerial images and conduct analysis of the data collected and to reassess previous data interpretations. APNEP under a cooperative agreement with the NC Department of Transportation acquired aerial imagery of SAV. APNEP and NC-DMF will provide the photo interpretation and ground truthing necessary to analyze the photographic data.

|  |  |
| --- | --- |
| **Status:** | Complete |
| **Partners:** | NC Department of Transportation, NC-DMF, NC- DEQ |
| **Outputs/Deliverables:** | 2019-20 Map of high-salinity SAV extent and density  |
| **Outcomes:** | Data verified map of SAV through the APNEP region. The map will be used for protection of vital SAV habitat and the restoration of SAV habitat.  |
| **FY2020-21 Cost:** | $130,000 (Provided by NC-DEQ) |
| **Estimated Leverage:** | $50,000 |
| **CCMP Actions:** | B2.2, C3.3 |
| **CCMP Outcomes:** | 2a, 2b |
| **CWA Core Programs Addressed:** | (6) protecting coastal waters through the National Estuary Program |
| **EPA Element(s):** | Living Resources, Habitats |

**Progress to Date:**

Unfortunately, the 2019 images were impacted by poor water clarity in several areas and thus images were acquired again in spring 2020 using APNEP’s existing SAV mapping efforts and funds. NC-DMF was able to analyze some data and has been working to address issues with earlier images and habitat mapping efforts. An additional $80,000 in APNEP (320 Grant Funds) were added to the contract to capture spring and fall 2020 imagery.

**2020 SAV Aerial Images and Analysis**

**Objective:** Map North Carolina’s coastal SAV using aerial imagery.

**Description:**  In 2020, NC-DEQ provided APNEP with funds to support acquisition of new aerial images and conduct analysis of the data collected and to reassess previous data interpretations. APNEP under cooperative agreement with NC Department of Transportation acquired aerial imagery submerged aquatic vegetation. APNEP and NC-DMF will provide the photo interpretation.

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| --- | --- |
| **Status:** | Complete  |
| **Partners:** | NC Department of Transportation, NC-DMF, NC- DEQ |
| **Outputs/Deliverables:** | 2019-20 Map of high-salinity SAV extent and density  |
| **Outcomes:** | Data verified map of SAV through the APNEP region. The map can be used for protection and restoration of vital SAV habitat. |
| **FY2020-21 Cost:** | $56,000 (Provided by NC-DEQ) |
| **Estimated Leverage:** | $50,000 |
| **CCMP Actions:** | B2.2, C3.3 |
| **CCMP Outcomes:** | 2a, 2b |
| **CWA Core Programs Addressed:** | (6) protecting coastal waters through the National Estuary Program |
| **EPA Element(s):** | Living Resources, Habitats |
|  |  |

**Progress to Date:**

Images were acquired in spring and fall 2020 under APNEP’s existing SAV mapping efforts and funds. NC-DMF was able to analyze some data, but APNEP contracted additional expertise to finish the interpretation required. The 2020 SAV mapping layer was published in August 2022.

**Scuppernong Regional Water Management Study**

**Objectives:** Develop a collaborative approach forconducting a hydrologic study of the headwaters of the Scuppernong River, Lake Phelps, and the surrounding land in Washington and Tyrell Counties. The outcomes from the study will be utilized to build a more comprehensive approach to regional water management to create a water budget for the northern Albemarle-Pamlico peninsula.

**Description:** The NC Division of State Parks requested assistance from APNEP (formally in April 2018 via the Leadership Council) to serve as a neutral, science-based partner and convene a steering committee to develop an approach for a regional hydrologic study. The study’s purpose is todetermine a regional water budget that can serve 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 need for the study was prompted by cycles of flooding and drought, as well as concerns from local communities regarding NC Division of State Parks and USFWS water management and hydrologic restoration activities on lands they manage in the region. The study will also consider impacts from climate variability and sea level rise in an area that is extremely vulnerable to flooding. This study will provide for more water monitoring in the watershed, update existing water management plans, and inform future water management strategies, including improving regional drainage efficiency and building regional resilience.

At the request of the NC Division of Parks and Recreation, APNEP has been leading development of the Scuppernong Regional Water Management Study since 2018, serving as a neutral, science-based convenor of a diverse group of stakeholders and local communities to address flooding and water management issues on the northern Albemarle-Pamlico peninsula. APNEP facilitated a partnership with the NC Division of Parks and Recreation, NC Division of Soil and Water Conservation, U.S. Fish and Wildlife Service, Albemarle Commission, and Washington and Tyrrell Counties to develop a collaborative approach for a hydrologic study that will characterize the hydrology of the region, update water management plans, and address recurrent flooding. APNEP provided technical assistance and secured funding, match for a NCDEQ Water Resources Development planning grant awarded to the Albemarle Commission, the Regional Council of Government in February 2023. APNEP partnered with the NC Coastal Reserve, NC Sea Grant, and The Nature Conservancy and secured funding through a NOAA Digital Coast Connects grant in November 2022 from the National Estuarine Research Reserve Association to develop a collaborative engagement strategy to ensure equitable community engagement and input from regional stakeholders. The outcomes from the study will be utilized to build a comprehensive plan to address water management issues on both privately and publicly owned land.

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| --- | --- |
| **Status:** | In progress  |
| **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  |
| **FY2023-25 Cost:** | Staff time |
| **Estimated Leverage:** | $$200,000 (Awarded from the WRDG); $50,000 (Awarded from NOAA) |
| **CCMP Actions:** | A3.1, B2.3, C2.3 |
| **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**

After multiple years of delays due to contracting and local capacity issues, APNEP made significant progress during the past year, working closely with the Albemarle Commission to secure funding and a technical subcontractor for a hydrologic study. A planning grant from the NCDEQ Water Resources Development Grant Program was awarded to the Albemarle Commission, the Regional Council of Government in February 2023. Match was secured from five grant partners including the NC Division of Parks and Recreation, NC Division of Soil and Water Conservation, U.S. Fish and Wildlife Service, and Washington and Tyrrell Counties. APNEP also partnered with the NC Coastal Reserve, NC Sea Grant, and The Nature Conservancy and was awarded a NOAA Digital Coast Connects grant in November 2022 from the National Estuarine Research Reserve Association to develop a collaborative engagement strategy to ensure equitable community engagement and input from regional stakeholders to inform the Study. The outcomes will be utilized to build a comprehensive regional plan to address water management issues on both privately and publicly owned land. The teams are meeting regularly to shape Study and Strategy development. The first Steering Committee meeting (grant partners) was held January 5, 2023, and the first Steering Committee workshop will be held May 18. Stakeholder and public engagement workshops are being planned throughout the duration of 2023. The contractor has circulated the SOW for the Study to the partners for review and input at the next meeting.

# Administration and Program Implementation

**Programmatic Administration**

APNEP staff is responsible for the coordination, planning, and successful completion of partnership functions, including Management Conference and Action Team meetings, APNEP forums, and other APNEP-sponsored/partner events. In addition, staff monitor and often become involved in activities of federal and state resource management agencies that relate to CCMP implementation, the APNEP mission, and APES. Additional interactions occur with local and regional governments as appropriate. Staff also attend meetings, conferences, and workshops to stay apprised of technological advancements that may prove beneficial in the APNEP region and the partnership. Although the Leadership Council and Advisory Committees are instrumental in identifying local environmental issues and prioritizing management actions within each basin, most management actions are implemented by various federal, state, and local agencies on a local, basin-wide, regional, or statewide basis and require staff involvement and interactions.

**Host Entity**

NC-DEQ currently serves as the host entity for the APNEP Office and the partnership. The Office was moved back to NC-DEQ’s Office of the Secretary in March 2018. The Department is responsible for assisting with administrative and fiscal management of the APNEP-EPA cooperative agreement, which provides federal funds for APNEP. The Department’s efficiency of operation and support of the Management Conference plays a key role in the success of APNEP, including assisting in the administration of the cooperative agreement and other funding sources.

 **Administrative Costs**

Overall budgeted administration costs under the federal grant during FY2023-24 are estimated at approximately $558,925 and include six staff FTE salaries, interns, benefits, longevity pay, equipment, supplies, office and office and storage space rent, IT services and phone, and training and development. APNEP maintains one boat and trailer primarily for SAV work. Operational costs and maintenance are covered under projects where the vessel is used. Maintenance costs are associated with supplies. Temporary employees added for contract or specific project support will be paid under the budgeted amount for the project.

**Indirect Costs**

Under the FY2022-23*Negotiated Indirect Cost Agreement* between NC-DEQ and EPA, indirect rate is 12.8% of all salaries supported by this federal grant (April 2023). Estimated indirect costs will be $49,075 based on the indirect rate for grant-supported salaries.

 **Personnel**

Presently, a majority of APNEP staff are housed at the APNEP office in Raleigh within the NC-DEQ Headquarters. This site houses the Director, Program Scientist, Program Manager, Project Manager, Policy and Engagement Manager, Quantitative Ecologist, and Partnership Coordinator. The APNEP field office in Washington, NC houses the Coastal Habitats Coordinator. The Virginia Department of Environmental Quality also provides personnel to support CCMP implementation, however this position (currently vacant) is not covered under program administration as it occurs at no additional cost to the program. *All positions are administered in compliance with NC* Office of State Human Resources *rules and policies.*

**Director**

The Director administers and coordinates program activities and CCMP implementation, involving interaction with numerous federal and state resource management agencies, universities, interest groups, and the public. This position manages the post-CCMP grants and associated contracts, provides staff support to 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**

The Program Managerassists in the administration of the U.S. EPA §320 Grant and coordinates and manages APNEP contracting and associated activities within NC-DEQ. The position also assists in the development and maintenance of broad support for the APNEP mission and CCMP implementation; develops tracking mechanisms for performance measures and CCMP implementation efforts; and provides staff support to the Leadership Council and Advisory Committees. Heather Jennings has been the Program Manager since June 2018.

**Program Scientist**

The Program Scientistassists the Director with CCMP administration. This position helps design and implement a comprehensive monitoring strategy and reporting process, guides the Science and Technical Advisory Committee (STAC), and reviews project proposals and reports for merit. This position provides staff support to the Leadership Council and Advisory Committees. Dr. Dean Carpenter has served in this role since November 2003.

**Partnership Coordinator**

The Partnership Coordinator assists the Director and Management Conference with engagement, educational and outreach activities. The position oversees implementation of APNEP’s Engagement Strategy, guides the CAC, pursues new partnership and funding opportunities, and works with program staff to engage in new CCMP implementation actions. It also provides staff support for the Management Conference and serves as a liaison on various external working groups. Steve Anderson has served in this role since March 2023.

**Quantitative Ecologist**

The Quantitative Ecologist provides support for the development and implementation of science-based management across all ecosystems with the Albemarle-Pamlico watershed and building linkages across APNEP’s conservation strategies. The position coordinates with staff and contributing scientists and managers to assess the environmental health of the Albemarle-Pamlico estuarine system. Responsibilities include working with partner agencies and researchers to analyze and report upon indicators of watershed and estuarine health, including identification of monitoring gaps, development of research for application of funds to fill data needs, facilitating and supporting APNEP Action Teams and Monitoring & Assessment Teams, and managing the program’s GIS functions. Dr. Tim Ellishas served in this role since March 2017.

**Coastal Habitats Coordinator** (Non-federal Match)

This position serves an APNEP liaison to local governments and state agencies. The Coastal Habitats Coordinator provides coordination and support to local governments and state agencies to enhance CCMP implementation. The position also directs coordinated implementation of the CHPP with three NC Commissions: Coastal Resources, Marine Fisheries, and Environmental Management. Jimmy Johnson has served in this role since January 2006. *This position is funded by NC-DEQ and provides a portion of the non-federal match for the* U.S. EPA §320 *grant funds.*

**BIL Projects Manager** (Non-federal Match)

The primary purpose of this position is to assist APNEP in CCMP implementation in the implementation and tracking of BIL projects. The position provides support to APNEP advisory committees and workgroups. The also works towards implementation of the CHPP with the APNEP Coastal Habitats Coordinator. *This position is funded by NC-DEQ and provides a portion of the non-federal match for the* U.S. EPA §320 *grant funds.* Stacey Feken has served in this role since October 2022, and previously served as Policy and Engagement Manager from March 2016-September 2022.

## Travel

National Estuary Programs may use EPA §320 funds and matching funds to cover the cost of travel by staff and/or stakeholders from other NEPs or watershed organizations who collaborate with the NEP on issues of common interest. Stakeholders may include members of the public and of environmental and public interest organizations, business or industry representatives, academicians, 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. Section 320 funds also may be used to cover the cost of projects described in the annual work plan 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 are not 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:

1. Management Conference, Action Team, MAT, and Ad-Hoc committee meetings,
2. Participation in watershed stakeholder meetings, workshops, and conferences relevant to CCMP implementation
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 peer-to-peer technical assistance
6. Travel to other NEPs or watersheds for assistance
7. Travel by NEP staff or stakeholders from other NEPs or watershed programs to provide NEP with assistance

Travelers may include Management Conference members, Action Team members and MAT members, citizens, and members of environmental or public interest organizations, business or industry representatives, academicians, scientists, or technical experts as determined appropriate by the APNEP Director.

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

**Food**

While most travel funds are associated with staff, management conference members, and action team participants, travel funds and funds associated with specific workplan projects, APNEP funds awarded as grants or contracts may be used for light refreshments and/or meals served at meetings, conferences, training workshops and outreach activities (events), consistent with 41 CFR 301-74.7 and NC-DEQ travel policies, and as approved by the APNEP Director.

**2022-23 Travel**

APNEP staff attended a few meetings and conferences using the allotted travel funds and specific project funds or administration costs. Some travel costs may be associated with specific projects and travel costs are budgeted/reported for those projects not listed specifically as travel. Rates are listed in the table below. Below is a summary of these activities that have occurred or are currently planned for the year:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Personnel** | **Date** | **Purpose** | **Location** | **Cost**  |
| APNEP Staff/ Management Conference  | 10/1/22 to9/ 30/24 | Routine Program Activities/ meetings/ projects/ workshops/ conferences/ fieldwork/ MC meetings  | APNEP area | 8,000 |
| Spring NEP-EPA Meeting | March | EPA- NEP meeting | Washington, D.C. | 2,000  |
|  |  |  |  |  |
|  |  |  | Total\* | $ 10,000 |
|  |  |  |

**2023-24 Projected Travel**

All travel is allocated into three categories: In-State, Out-of-State, and EPA Required. All travel, including non-staff travel, must be consistent with published NC-DEQ travel policies (2023) and regulations. Due to the dynamic nature of the Partnership, all travel cannot be scheduled a year ahead: therefore, only an estimate can be provided based on established NC-DEQ rates (below). Some travel is associated with specific projects, and travel costs are included in budgeted amounts. Rates are listed in the table below.

Funds will also be used for light refreshments and/or meals served at meetings, conferences, training workshops, and outreach activities (events) projects and contracts, consistent with 41 CFR 301-74.7, and as approved by the APNEP Director and through the NC-DEQ travel approval processes.

 NC-DEQ TRAVEL RATES\*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **In-State** | **Out of State** | **Overnight Trip** | **Day Trip** |
| **Breakfast** | $ 9.00 | $ 8.60 | Depart Office before 6:00 AM | Depart before 6:00 AM; Extend workday by 2 hours |
| **Lunch** | $ 11.80 | $ 11.80 | Depart Office by 12:00 Noon;Overnight return after 2:00 PM | NA |
| **Dinner** | $ 20.50 | $ 23.20 |   | Depart before 5:00 PM; Return after 8:00 PM; Workday extended by 3 hours |
| **Hotel** | $ 78.90 | $ 93.20 |  | NA |

*\*1 July2022 DEQ approved rates.* Albemarle-Pamlico *coastal area often exceeds posted 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.

**EPA-NEP Associated Out-of-State:**

The NEPs generally hold two national meetings each year (these may be in same fiscal year or not). Each program is strongly encouraged to participate in the meetings. The spring meeting is held in the Washington, DC area 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. Generally, one or two staff members attend. Travel may also cover non-staff (e.g., Leadership Council or Advisory Committee members).

**Other Out-of-State:**

Out-of-state travel is primarily for APNEP staff to conduct business associated with the NEP general meetings (see above), and to attend training or topical meetings germane to the Partnership. It may also cover non-staff (e.g., council and committee members, guest speakers, experts) for NEP-related activities.

 **2023-24 Projected Travel (320 Funds)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Personnel** | **Date** | **Purpose** | **Location** | **Estimated Cost** |
| APNEP Staff, Management Conference, and Volunteers | 10/2023 – 9/2024 | Normal program activities | Albemarle-Pamlico region | $6,000 |
| APNEP Staff | 10/2023 –  | EPA/NEP National Fall Meeting | TBD | $2,000 |
| APNEP Staff | 3/2024 | EPA/NEP National Spring Meeting | Washington, DC | $2,000 |
|  |  |  |  | $10,000 |

## Non-Federal Cost-Share (State Match)

**Summary of Match Requirements**

As Partnership host (grant applicant), NC-DEQ intends to provide $850,000 for the required 1:1 non-federal matching funds from October 1, 2023, to September 30, 2024. This match will be provided through:

**Summary of Non-federal State Match**

In-kind Positions (salaries and benefits) $ 216,493

Water Quality Improvement Project(s) Expenditures: $ 633,507

 **TOTAL: $ 850,000**

1. **In-kind Services**: NC-DEQ intends to provide $ 216,493 as part of the required 1:1 non-federal match for federal fiscal year October 1, 2023, to September 30, 2024. This match will be provided for staff support (salaries and benefits) by the Coastal Habitats Coordinator and Watershed Manager positions (see “Personnel” above). The match positions are responsible for program administration, support, community involvement and guiding implementation of the CCMP and CHPP, as well as other Albemarle-Pamlico watershed issues.
2. **In-kind Project Expenditures Non-federal Match:** The NC-DEQ intends to provide $ 633,507 as part of the 1:1 non-federal match for federal fiscal year October 1, 2023, to September 30, 2024. 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.

**Division of Water Infrastructure**

The NC Division of Water Infrastructure provides financial assistance for projects that improve water quality. Programs within this agency fund many types of projects, including sewer collection and treatment systems, drinking water distribution systems, water treatment plants, storm water management systems, and stream restoration. The Division supports the State Water Infrastructure Authority (SWI), which was created in 2013, under North Carolina General Statute 159G-70.  The SWI Authority is an independent body with primary responsibility for awarding both federal and state funding for water and wastewater infrastructure projects.

## Leveraged Funds

APNEP actively seeks alternative and supportive funding sources for activities and projects to support CCMP goals. In addition, APNEP pursues additional avenues for collaborating with partners to assist in targeting program funds towards CCMP and basin-wide goals. Where possible, APNEP works to cost-share projects to increase the effectiveness or the magnitude of projects, even though in several cases APNEP has not been the primary catalyst for a project or activity.

APNEP has been successful in its ability to promote the needs, as well as the successes, associated with natural resource management, protection, and enhancement efforts in the Albemarle-Pamlico region. Several NC conservation-funding sources were developed in response to research funded by the Albemarle-Pamlico Estuarine Study, such as the NC Clean Water Management Trust Fund.

**2021-23**

During the 2022 federal fiscal year (October 1, 2021 - September 30, 2022), APNEP continued to seek partners and additional opportunities for partners in targeting actions and funds towards CCMP implementation. APNEP submitted its leverage results in September 2022 to the EPA *NEPORT* database: total leverage was $367 for every dollar provided by the EPA §320 grant.

**2023-24**

APNEP will continue to seek additional avenues for collaborating with various partners to assist in targeting funds to support CCMP implementation actions and the Partnership mission. Where possible, APNEP will actively seek additional sources of funding for APNEP activities and projects to support CCMP goals. We will work to maintain our goal of a minimum of 6:1 leverage for the coming year.

# Core Partnership Entities

## Host

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

## Management Conference

**Leadership Council**

The Leadership Councilis the main advisory body for APNEP and the Management Conference. It was established by NC Governor’s Executive Order #250 to advise, guide, evaluate and support the CCMP implementation process, advance the CCMP and its management actions, and to ensure the highest level of collaboration, coordination and cooperation among state and federal agencies, local governments, the public and various interest groups. The Leadership Council consults with the advisory committees and the APNEP Office for recommendations pertaining to implementation of CCMP actions at the regional and local levels, and the coordination and development of research and monitoring priorities. A major duty of the Leadership Council is to maintain the relevance of the CCMP and to make recommendations to address emerging issues that may affect the significant natural resources of the Albemarle-Pamlico estuarine system. The Leadership Council, in cooperation with the APNEP Office, develops an annual report, budget and work plan.

**Science and Technical Advisory Committee**

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

**Citizen Advisory Committee**

The Citizen Advisory Committee was established in 2023 to work with the Leadership Council on CCMP implementation and meaningful community engagement activities. Committee members shall serve as liaisons to citizens, agencies, tribes, and relevant parties regarding environmental and natural resource management relevant to CCMP implementation. The Committee works to engage diverse communities and populations in its decisions and represent diverse perspectives within the Management Conference.

**Action Teams**

APNEP has established several Action Teams focused on implementing CCMP objectives and actions. Action Teams are responsible for developing the outputs associated with each action deemed necessary to achieve desired ecosystem outcomes. Action Team membership is open to any interested party. For 2021-22, the active Action Teams receiving staff facilitation priority will be those who most closely align with the focus areas as directed by the Leadership Council.

**Monitoring and Assessment Teams**

Two of the four phases of APNEP's adaptive management cycle, “Monitoring” and “Assessment”, help ensure that stakeholders have regular, reliable decision support as to whether CCMP outcomes and actions are being achieved. To leverage program capacity and promote partner collaboration when implementing these two crucial phases, APNEP established in 2008-2009 six resource MATs whose missions each addressed a major sub-system of the Albemarle-Pamlico regional ecosystem.  For FY22-23 the MATs receiving staff facilitation priority will be those who most closely align with the further development of the monitor plan and the focus areas (SAV, Water Quality, Coastal Habitats, & Resilience) as directed by the Leadership Council.

## Partnerships

In general, APNEP is considered a boundary organization, or an organization that facilitates collaboration and information flow between diverse research disciplines and between the research and public policy community. As such, APNEP engages its partnering organizations and the public to improve awareness and understanding of environmental issues facing the Albemarle-Pamlico region. The various methods of APNEP engagement are discussed in greater detail in the [APNEP Engagement Strategy](https://apnep.nc.gov/documents/2018-2019-engagement-strategy).

Much of this coordination occurs through relationships built via our partner network, independent of whether partners are participating on an APNEP team. APNEP is tracking issues of interest to the Partnership and providing support where feasible, such as Chowan algal blooms, offshore oil drilling, impacts to communities due to flooding and sea level rise, and fisheries issues. Engagement associated with these issues has led to letters of support for partners applying for grants, formal comments through the Leadership Council, technical advice and support to agency management, funding and logistical assistance, and hosting workshops to convene technical experts.

APNEP staff also regularly participate in external workgroups and committees to expand our reach, facilitate regional collaboration, and reciprocate volunteer involvement. Where possible, APNEP seeks to prioritize projects that align with the complimentary missions of these external workgroups. Staff also actively seek opportunities to integrate external workgroup projects with APNEP Action Team projects.

# Appendix A: CCMP Goals & Outcomes

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

**Ecosystem Outcomes:**

1. Waters are safe for personal contact.
2. Designated surface and ground water supplies are safe for human consumption.
3. Surface hydrologic regimes sustain regulated human uses.
4. Fish and game are safe for human consumption.
5. 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:**

1. The biodiversity, function, and populations of species in aquatic, wetland, and upland communities are protected, restored, or enhanced.
2. The extent and quality of upland, freshwater, estuarine, and near-shore marine habitats fully support biodiversity and ecosystem function.
3. 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:**

1. Appropriate hydrologic regimes support ecological integrity.
2. Nutrients and pathogens do not harm species that depend on the waters.
3. Toxics in waters and sediments do not harm species that depend on the waters.
4. Sediments do not harm species that depend on the waters.

# Appendix B: CCMP Actions

**IDENTIFY**

A1.1 Facilitate the mapping of significant ecological, bathymetric, geologic, demographic, and cultural features.

A1.2 Facilitate the refinement and use of online conservation planning tools.

A2.1 Facilitate the development of protocols and conduct rapid assessments to determine presence and potential threat of invasive species.

A2.2 Create and improve projections of land use and climate change related impacts on the regional ecosystem.

A2.3 Support research on adapting to impacts associated with climate change and sea level rise.

A2.4 Facilitate risk assessments of targeted personal care and pharmaceutical products in the aquatic system.

A3.1 Assess the effectiveness of policies and regulations to minimize wetland loss.

A3.2 Assess the effectiveness of policies and regulations regarding riparian buffers.

A3.3 Develop and refine ecological flow requirements for each major river.

**PROTECT**

B1.1 Minimize the introduction of toxics from targeted sources.

B1.2 Minimize the introduction of pathogens from targeted sources.

B1.3 Facilitate the protection of natural riparian buffers to reduce runoff.

B1.4 Facilitate the development of state and local policies that support the use of low impact development.

B1.5 Facilitate the use of best management practices on agricultural and silvicultural lands.

B2.1 Facilitate the development and implementation of an integrated freshwater habitat protection strategy.

B2.2 Develop and implement a submerged aquatic vegetation (SAV) protection strategy.

B2.3 Facilitate the development of incentives for protection and management of targeted natural communities and habitats.

B2.4 Facilitate the development of policies to minimize dredge and fill activities in naturalized areas and sensitive habitats.

B2.5 Facilitate protection of designated anadromous fish spawning areas and inland primary nursery areas from marina impacts.

B2.6 Minimize and rapidly respond to the introduction of invasive species through the development and implementation of integrated prevention and control strategies.

B3.1 Assist local governments in the development of incentives for protecting natural shorelines.

B3.2 Develop and distribute educational materials encouraging landowners to protect natural shorelines.

B3.3 Facilitate the development of requirements for living shoreline stabilization projects that optimally protect estuarine aquatic and shoreline habitats while minimizing regulatory requirements.

**RESTORE**

C1.1 Establish contaminant management strategies for waters not meeting water quality standards.

C1.2 Facilitate the implementation of existing contaminant management strategies.

C1.3 Facilitate the restoration of riparian and estuarine shorelines.

C1.4 Reduce unregulated discharge from wastewater treatment systems.

C1.5 Facilitate voluntary retrofitting of existing development and infrastructure to reduce runoff.

C2.1 Facilitate the development and implementation of coordinated landscape-scale hydrological restoration strategies.

C2.2 Facilitate the development of incentives to replace hardened estuarine shorelines with living shorelines.

C2.3 Facilitate the hydrologic restoration of floodplains and streams.

C3.1 Develop and refine integrated invasive species eradication and control strategies.

C3.2 Develop and implement a coordinated wetland restoration strategy.

C3.3 Develop and implement a submerged aquatic vegetation restoration strategy.

C4.1 Install fish ladders and eel-ways on existing dams and other permanent barriers.

C4.2 Facilitate the removal of dams, culverts, and other in-stream barriers.

C4.3 Restore degraded anadromous fish spawning habitats.

C4.4 Facilitate research to improve fish passage.

C5.1 Construct new oyster habitats.

C5.2 Reduce the adverse impacts of harvests to existing oyster habitat.

C5.3 Facilitate research to improve oyster restoration technologies and methods.

**ENGAGE**

D1.1 Communicate the importance of stewardship and offer opportunities for volunteerism to further APNEP’s mission.

D1.2 Facilitate efforts to improve collaborations to protect and restore ecosystem processes.

D1.3 Coordinate outreach and engagement efforts regarding the impacts of invasive species.

D1.4 Coordinate outreach efforts regarding the proper application of fertilizers to reduce nutrient runoff.

D1.5 Increase opportunities for public access to waterways, public lands, and trails.

D2.1 Provide and promote opportunities for outdoor experiences that connect individuals with the Albemarle-Pamlico ecosystem.

D2.2 Provide environmental education training opportunities for educators in the region.

D2.3 Increase public understanding of the relationship between ecosystem health and human health advisories relating to water, fish, and game.

D3.1 Develop and implement a strategy to improve decision-makers’ understanding of the costs and benefits of environmental protection, restoration, planning, and monitoring.

D3.2 Facilitate the development and implementation of basin-wide water management plans to ensure no less than minimum in-stream flows are maintained.

D3.3 Provide assistance to state, regional, and local governments to incorporate climate change and sea level rise considerations into their planning processes.

**MONITOR**

E1.1 Facilitate the development and implementation of an integrated monitoring network through the guidance of regional monitoring and assessment teams.

E1.2 Assess the value of information for measuring ecosystem and CCMP implementation outcomes.

E1.3 Facilitate the expansion of volunteer monitoring into a core element of the integrated monitoring network.

E2.1 Facilitate the design and content acquisition of a regional database based on partners’ data and information needs.

E2.2 Develop and maintain an online resource that clearly conveys regional information in support of ecosystem-based management.

# Appendix C: 2021-22 Approved Grant Budget

For the timeframe of October 1, 2022, to September 30, 2023, APNEP anticipates receiving an EPA Section 320 grant award of up to $750,000 to support activities geared towards implementing the Partnership’s CCMP and its mission under the current Cooperative Agreement. Funding received for 2021-22 was $700,000.

The proposed uses for this funding are highlighted below. Detailed information about each funding category is described within this work plan.

|  |  |
| --- | --- |
| **Activity**  | **2022-2023 Grant Budget Proposal** |
| Undesignated Implementation Projects | $50,000 |
| SAV Assessment & Monitoring | $ 16,000 |
| Shad in Classroom (Year II) | $ 20,000  |
| Following the River (Year II) | $ 20,000  |
| APNEP-NCSG Joint Fellowship | $ 5,000 |
| Events & Sponsorships | $ 2,000 |
| Program Administration\*\* | $ 585,955 |
| Travel | $ 10,000 |
| **Subtotal** | $ 708,955 |
| Indirect Cost (10.2%)\*\*\* | $ 41,045 |
| **Total Grant Funds** | $ **750,000** |

*\*\*Includes personnel, supplies, equipment, and fringe benefits that are based on Social Security (7.65 %), Retirement (24.10 %) of position’s annual salary and Medical Insurance Plan rate of $7,019 per year per person (as of 1 May 2022 NC DEQ).*

 *\*\*\*Indirect Costs are based on an EPA negotiated rate of federal salaries under “Water Resources” currently based on 2021-22 agreement from May 2021.*