

Coastal Resilience Community of Practice Meeting

July 15, 2024 – 1:00 - 3:00pm

Purpose of the COP: Bring together diverse coastal stakeholders to focus on how ecosystem resilience can build local community resilience. We don't necessarily have to have a "thing" to work on but will take on projects as appropriate and mutually agreed on. Website: <https://deq.nc.gov/coastal-resilience-cop>

Notes

In attendance:

- Alisa Davis, NC Wildlife Resources Commission
- Amanda Merrill, Moffatt & Nichol
- Amanda Mueller, Climate Leaders Program at North Carolina State University
- Bob Eades, NC Joint Underwriting Association
- Brian Byfield, NC Office of Recovery and Resilience
- Brooke Massa, NC Wildlife Resources Commission
- Cayla Cothron, NC Sea Grant
- Charlie Deaton, NC Division of Marine Fisheries
- Chris DeWitt, Vanasse Hangen Brustlin (VHB)
- Claire Rapp, North Carolina Coastal Federation
- Connor Bone, NC Office of Recovery and Resilience intern
- Craig Harris, City of Wilmington
- Eryn Futral, NC Emergency Management
- Everett Craddock, NC Office of Recovery and Resilience intern
- Forest Shepherd, NC Division of Water Resources
- Giancarlo Richardson, Albemarle Pamlico National Estuary Partnership
- Gina Hardy, NC Joint Underwriting Association
- Hannah Champion, NC Joint Underwriting Association
- Holly White, NC Office of Recovery and Resilience
- Jeff West, Cape Lookout National Seashore
- Jody Standly, pilot
- Joe Heard, Town of Duck
- Kasen Wally, NC Division of Coastal Management
- Kate Mitchell, NC Office of Recovery and Resilience
- Katie Whittington, Albemarle Pamlico National Estuary Partnership intern
- Kiera O'Donnell, Duke University
- Kyle Breuer, Town of Surf City
- Lee Duncan, Pender County
- Les Robertson, NC Joint Underwriting Association
- Lisa Williams, Mid-East Commission
- Lora Eddy, The Nature Conservancy
- Mackenzie Todd, NC Division of Coastal Management
- Marae West, Sandbar Oyster Company
- Mariko Polk, NC Sea Grant
- Meg Perry, SWCA Environmental Consultants
- Michelle Lovejoy, Environmental Defense Fund

- Michelle Raquet, NC Division of Water Resources
- Mike Christenbury, NC Division of Coastal Management
- Nicole Goddard, NC Office of Recovery and Resilience
- Phillip Todd, Freese & Nichols
- Rachel Love-Adrick, NC Division of Coastal Management
- Reide Corbett, Coastal Studies Institute
- Riley Lewis, Coastal Carolina Riverwatch
- Robbie Fearn, Audubon NC
- Robin Hoffman, NC Division of Water Resources
- Sandy Cross, Town of Duck
- Sara Marschhauser, Audubon NC
- Sarah Spiegler, NC Sea Grant
- Savannah Newbern, Wetlands Watch
- Stacey Feken, Albemarle Pamlico National Estuary Partnership
- Steve Bevington, NC Department of Natural and Cultural Resources, Land and Water Fund
- Whitney Jenkins, NC Coastal Reserve & National Estuarine Research Reserve

Town of Duck Resilience Efforts – Sandy Cross, Senior Planner with the Town of Duck & Chris DeWitt, Principal of Vanasse Hangen Brustlin (VHB) – [See Slides](#)

- Sandy set the stage: Western Carolina conducted a vulnerability assessment, highlighted a vulnerable section Highway 12
 - Several plans led to development, including 2014 comprehensive pedestrian plan
 - Experienced repeated flooding; only vehicle access for north-south route, only emergency vehicle access, evacuation route
- Chris, project design: Elevate roadway, sidewalks and bike lanes, storm chambers, and living shoreline
 - Existing roadway elevation right at base flood elevation of 4 feet, elevate above fill involved, replaced revetment
 - Living shoreline element, vertical sills with gaps to allow water flow, angles based on wind and wave energy, avoided Submerged Aquatic Vegetation (SAV), protect existing marsh, planted new marsh
 - Storm chambers for infiltration
- Sandy, challenges: funding ([see slide](#) showing funding sources), permitting (many negotiations), timing issues with permitting couldn't always carry money over, storms (finished project just in time)
 - Town of Duck worked as a community with citizens, staff to pull of this collaborative project
 - Lesson learned: start early, be persistent, challenge the status quo,
 - Communicate with stakeholders and agencies, vendors,
 - Document, we took tons of photos, way to communicate with DOT
 - Be prepared for the unexpected with a complex project like this
- Q&A:
 - Sarah: heard updates from Duck over years, cool to see where you are now, was there a driving force besides town, something surprised you in the process? Didn't expect in addition to lessons learned?
 - Joe Heard was our project ambassador; Dare County Emergency Management supported some funding and permitting; the offices of Senators Tillis and Burr helped move along the federal permitting process with phone calls
 - Lessons learned: a handicap ramp connection with local business had to be redesigned; the exact location of a septic system was determined to resolve owner concerns; documentation was necessary to show how the project was completed and why certain aspects were not a

problem when concerns were raised. For instance, one 50-foot section of sidewalk had an unexpected failure near an existing pier. It was documented that this area was left exposed for an extended period of time, which led to the base layer of rock being undermined. The contractor was required to reconstruct based on documentation.

- Reide: Do you have a post-construction monitoring plan? Given the scale of sills and existing marsh, curious what might happen, could help other communities trying to protect marsh and infrastructure.
 - There is detailed monitoring required for five years; the Town will use drones to document progress, including marsh grasses; Dr. Nick Cohn, with interns from the Duck Field Research Facility, will help do research over summer; Capstone students from the Coastal Studies Institute will continue in the fall; beyond that put something in written format for future communities to utilize; a formal monitoring plan is on our radar but there's no exact plan yet.
 - Chris: location of the sills was limited by permitting agencies; unexpected accumulation of sand behind sills occurred early on, followed by thin layer placement and equilibration, requiring some adaptation to the proposed location of wetland plantings.

Lower New River Watershed Restoration Plan – Riley Lewis, Coastal Carolina Riverwatch – [See Slides](#)

- Early stages of process, will discuss ways to engage at the end of the presentation
- Coastal Carolina Riverwatch (CCR) is a water quality non-profit, riverkeeper for White Oak River basin, work includes research and advocacy
- Lower New River watershed restoration plan identified as a need by community members, help with grant funding and project identification, funded through NC Land and Water Fund, thank you!
- Creating an EPA nine-element plan, to be eligible for 319 grant funding. Identifying existing data and gaps to determine project ideas
- New River is unique, exclusively in Onslow County. Working with county staff, marine base, unincorporated areas of Sneads Ferry and Topsail. Camp Lejeune is such a large piece, they have their own criteria for water quality
- One reason for the restoration plan, algal bloom, first time seeing this type algae this far south. Need to find sources of contamination. There are more impacts, industries, shellfish farms, oyster mortality events. There is something going on that needs to be addressed. Waters on the 303d list as well as outstanding resource waters that need protecting.
- Goals: get involved with community members, collect data, on ground assessments, fact check data collecting, develop projects, BMPs, restoration projects, etc. Shovel ready project development for future funding. Aimed at county staff, municipalities, community organizations, etc. that have capacity.
- The process: community advocacy group, community members concerns, their advice helps tackle issues. Analyze chemical and biological factors of lower New River, military has some data, Cooperative Extension no longer monitors, and there is a lack baseline from the last five years.
- Community engagement: A lot of way engage and develop plan, work with multiple stakeholders, county officials. New River Roundtable started up again early last year, and includes representatives from Sneads Ferry, the military base, City of Jacksonville, Onslow County. We host monthly meeting, like this group but a smaller scale, focused on the New River area.
- How you can help? Share your perspective, submit ideas for the completed plan, join the New River Roundtable, share data.
- Public survey – asks how long folks have been in the area, their perceptions of water quality, how they would like to be engaged:

https://docs.google.com/forms/d/e/1FAIpQLScJwha0sLEatyOPAu8pU7Fg9QkVJsethmahloVNBjuaRKfdkw/vie wform?usp=sf_link

- Survey for organizations, want input from organizations that understand the areas:
https://docs.google.com/forms/d/e/1FAIpQLSfCoBbQkZjbFnOJGG89di7x97SxxnH5d7RjLa2O5ZrX6mJFQQ/vie wform?usp=sf_link
- Comments:
 - Lora: Onslow soil and water conservation manage various cost share programs for project implementation. And there is a living shoreline suitability analysis conducted by Jenny Davis and Carolyn Currin, viewable on [The Nature Conservancy's Coastal Resilience online tool](#), for Carteret and Onslow counties
- Q&A:
 - Steve: How are you setting project goals?
 - Based on feedback, overcharging, stormwater, help with local ordinances, some special, help implement new policy, package help I, serendipitous, county work on horizon 2040, Cama plan set goals,
 - Steve: Ken Reckhow, retired from Duke University, would say for water quality statistics a true endpoint are oysters at a meal or fish on table, not overarching
 - Stacey: Project challenges?
 - Staffing limitations. Most challenging has been getting the public involved in the process. Excited to go to the Sneads Ferry shrimp festival and ocean festival and canvassing unincorporated areas to share the survey. So far counties and other municipalities have been helpful.
 - Whitney: we've had good success with public participation by attending existing meetings, booths at festivals, hosting community events with free food.
 - Mackenzie: Resilient Coastal Communities Program participants have had success with outreach at festivals, community events, parades, etc.

Fortified Roofs – Gina Hardy, North Carolina Joint Underwriting Association

- The Association is the market of last resort. If you can't get commercial insurance, you can come to us. We are a non-profit, established in 1969, Insure \$141.2 billion in 18 coastal counties of NC.
- Market share: Insure 80% of the beach area (barrier islands) and 51% coastal area.
- Q&A:
 - Joe: new cycle of funding, what's the timeline? For the Strengthen Your Coastal Roof program, anyone with a policy prior to 7/1/24 is eligible to apply, consumer information session starts this afternoon, roofers and evaluators help walk consumers through this
 - Lisa received a letter about fortified roofs, is that from the NCJUA? Gina can look at the letter, could be from a contractor
 - Sarah: recently got a fortified roof through this program, was a very easy process. How can we get the word out to others? I live in Beaufort and was surprised by the lack of awareness of your program.
 - Consumer education meetings soon.
 - Some content by NC Sea Grant on fortified roofs:
 - <https://ncseagrant.ncsu.edu/currents/2021/03/fortifying-homes-against-wind-and-water-damage/>
 - <https://ncseagrant.ncsu.edu/coastwatch/previous-issues/2018-2/autumn-2018/wind-damage-check-insurance-incentives-when-making-repairs/>
 - <https://ncseagrant.ncsu.edu/coastwatch/current-issue/summer-2021/currents/>

Round robin – members share what they are working on related to resilience

- Whitney: NOAA Office for Coastal Management Trainings – let her know if you'd like [something specific offered next year](#) (filter list for on-site delivery, trainings will be held at the NOAA Beaufort Lab).
- Nicole: NCORR will host a webinar to introduce the NC Resilience Exchange and demonstrate its resources and content. The Exchange offers funding opportunities, a directory of experts, interactive mapping tools, model ordinances, and more in a one-stop-shop that is relevant to North Carolina communities: <https://www.rebuild.nc.gov/news/events/webinar-introducing-nc-resilience-exchange-0>
- Robin: 205j RFP coming out on July 26, with a proposal due date of September 19. Grant funds are to be awarded to Regional Commissions and Councils of Governments for water quality management planning: <https://www.deq.nc.gov/about/divisions/water-resources/water-planning/nonpoint-source-planning/205j-wq-management-planning-grant>
- Riley: would like to present on North River community resilience work
- Stacey: Scuppernong water management study has wrapped up Phase I community engagement work, would like our team to present at a future meeting
- Mackenzie: [funding decision for Phases 3 & 4 coming out](#), funding for next phases of RCPP: NFWF grant, phase 1-2 wrapped up

Next meeting on Tuesday, October 15 from 1:00 - 3:00pm

- Next meeting topics:
 - Rachel Carson Reserve Living Shoreline – Dawn York & Paula Gillikin
 - Sandbar Oyster Co. project updates – Marae West & Niels Lindquist
- Future topics:
 - Salt marsh impacts/migration, marsh migration corridor mapping
 - SASMI – final conservation plan – Amanda (new coordinator), connection to NC stakeholders – state teams/action plans, get more info. Coastal Fed lead partner in NC
 - Coastal Carolina Riverwatch: community organizing in North River – Riley Lewis, White Oak Waterkeeper with the Coastal Carolina Riverwatch
 - Study on public policy students, protecting wetlands in Carteret County with public policy changes – Riley
 - UNC, ECU drone mapping of SAV. Susan Cohen/ UNC talk more about if interested – Robbie
 - Also, NERR drone mapping/monitoring of oyster reefs and salt marshes



North Duck Village Sidewalk, Living Shoreline, and NC 12 Resiliency Project

Presented by: **Sandy Cross, SENIOR PLANNER** | **Chris DeWitt, PRINCIPAL**

July 15, 2024

Always plan ahead. It wasn't raining when Noah built the ark.

Richard Cushing, American Prelate of the Roman Catholic Church

- Resiliency Planning
- Background History
- Project Design, Construction/Implementation
- Challenges
- Lessons Learned

Vulnerability Assessment

Coastal Hazards Infrastructure Vulnerability Assessment Duck, North Carolina

February 2020



Program for the Study of Developed Shorelines Western Carolina University Cullowhee, NC 28723



PROGRAM FOR
THE STUDY OF
DEVELOPED
SHORELINES

Western
Carolina
UNIVERSITY

Outer Banks Hazard Mitigation Plan



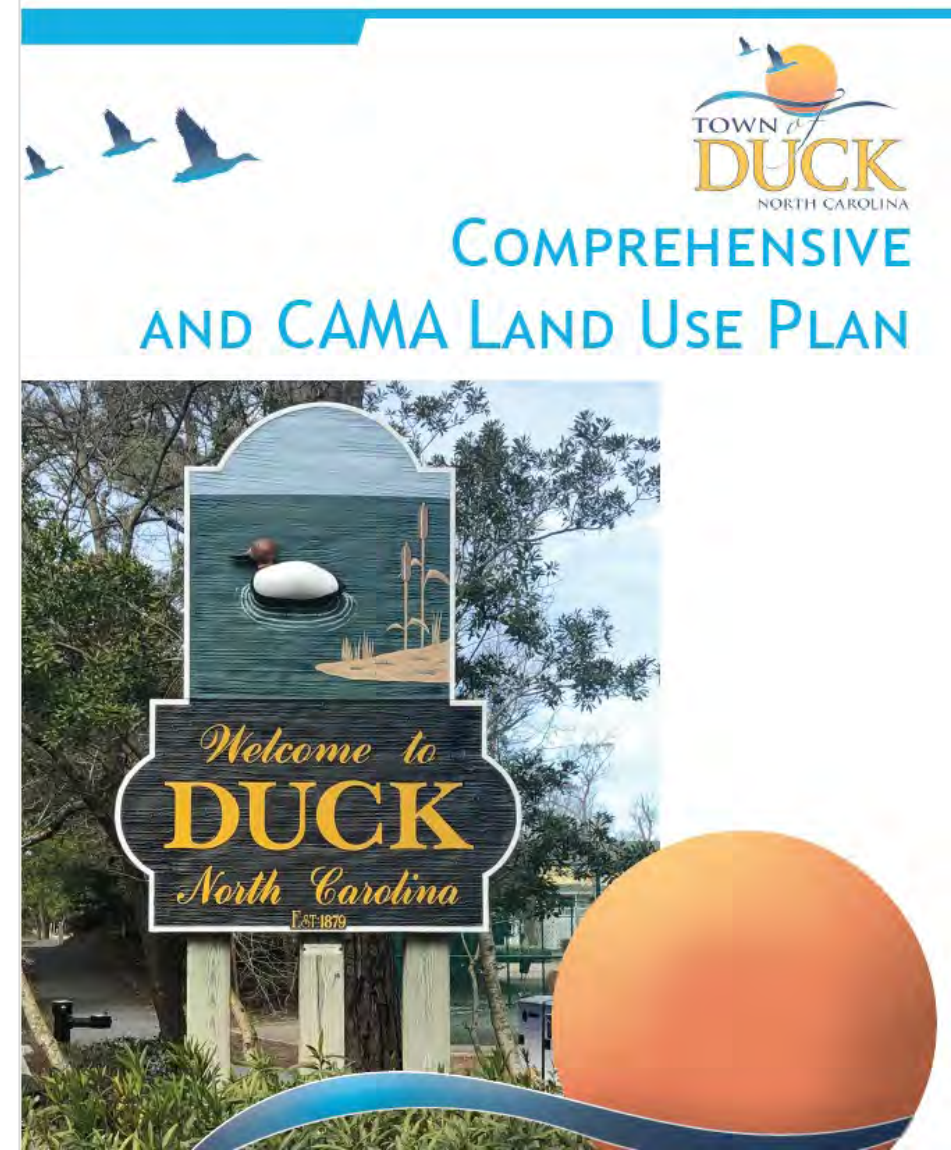
Outer Banks Regional Hazard Mitigation Plan



June 2020

wood.

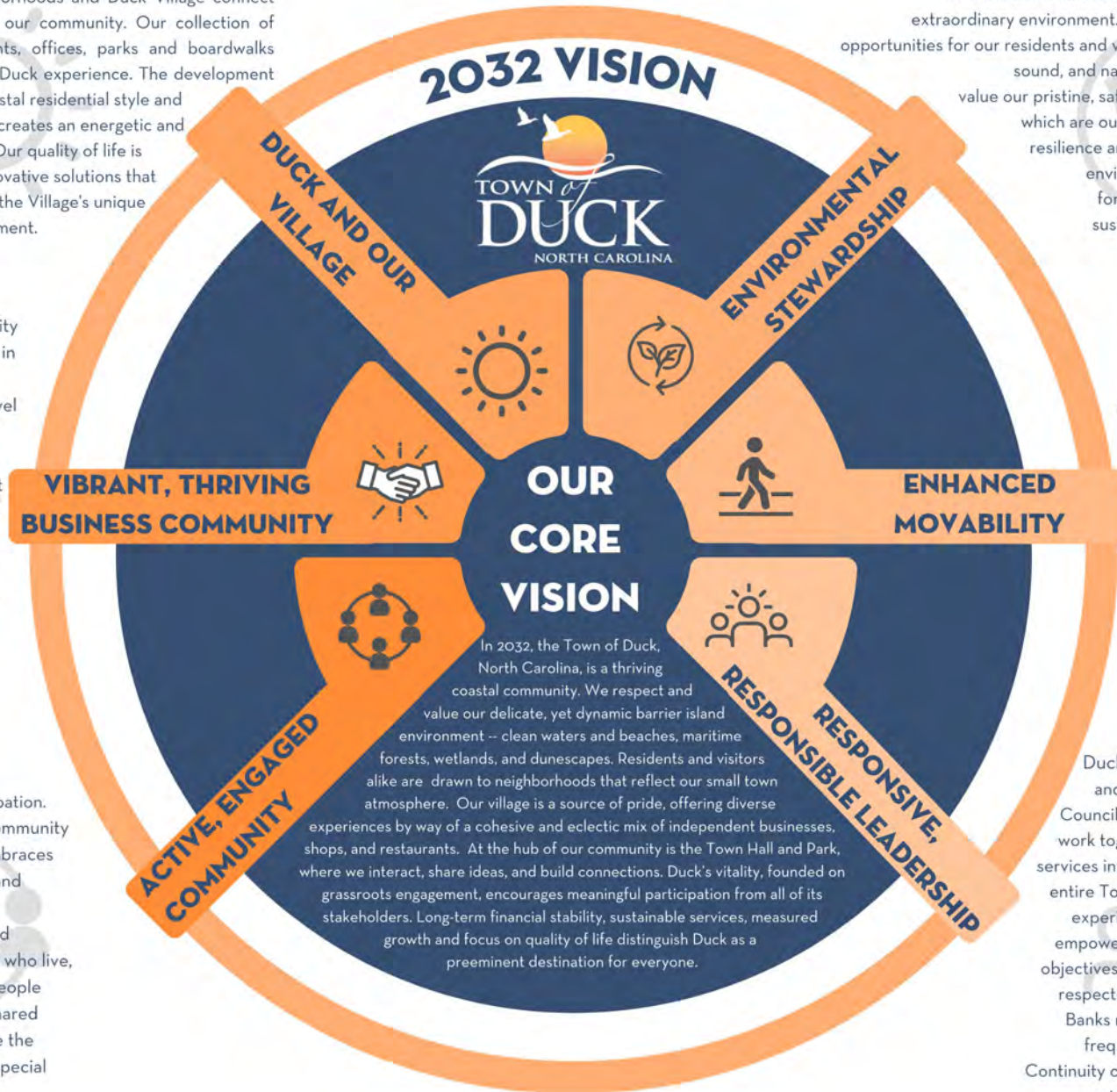
Comprehensive & CAMA Land Use Plan



Our residential neighborhoods and Duck Village connect to form the fabric of our community. Our collection of small shops, restaurants, offices, parks and boardwalks combine to shape the Duck experience. The development of the Village has a coastal residential style and scale and its continuity creates an energetic and walkable experience. Our quality of life is enhanced through innovative solutions that protect and preserve the Village's unique character and environment.

The business community plays an essential role in creating the Duck experience. A high level of collaboration and coordination ensures that we have a vibrant town where each and every individual can enjoy the recreation, arts, music, shopping, dining, and lodging unique to Duck.

Duck is built on participation. We are an inclusive community that welcomes and embraces the diversity, talents, and expertise of all of our stakeholders. Pride and ownership is felt by all who live, work, and visit here. People feel connected by a shared motivation to preserve the unique nature of this special place.



There is a conscious respect for Duck's fragile and extraordinary environment. We protect and preserve opportunities for our residents and visitors to enjoy our ocean, sound, and natural coastal habitats. We value our pristine, safe, uninterrupted beaches, which are our most valuable asset. Our resilience and adaptability, guided by environmental awareness and forward thinking, ensure our sustainability as a community.

Duck is a pedestrian first community that is safe and easy to navigate by walking and cycling. Our multi-use trail, sidewalks, soundside boardwalk, and beach provide a variety of ways to explore and discover Duck. Collaboration with various organizations enables us to optimize our traffic flow in our unique seasonal environment.




Duck maintains a responsive and responsible government. Council, staff, and the community work together to offer high quality services intended to add value to the entire Town. We have an educated, experienced and motivated staff empowered to execute the Town's objectives. Duck is an innovative and respected leader within the Outer Banks region and its solutions are frequently emulated by others. Continuity of leadership preserves our established values and vision.



Comprehensive Pedestrian Plan



TOWN OF DUCK Comprehensive Pedestrian Plan

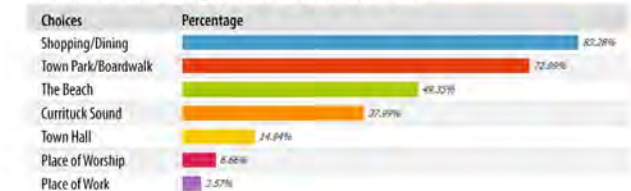
SUBMITTED TO
 Town of Duck
 North Carolina
 Department of Transportation
 NCDOT Division of Bicycle and
 Pedestrian Transportation

SUBMITTED BY
 **VHB** Engineering NC, PC.

SEPTEMBER 2014



What destinations would you most like to walk to in Duck?



Project Background

- Repetitive flooding
- Only north-south route
- Emergency vehicle access
- Storm evacuation route



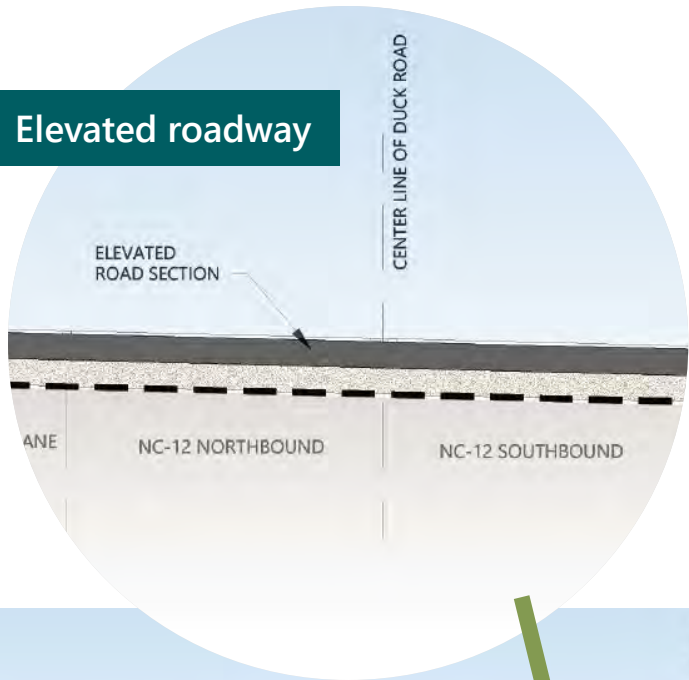
Photo: February 7, 2020

Project Design

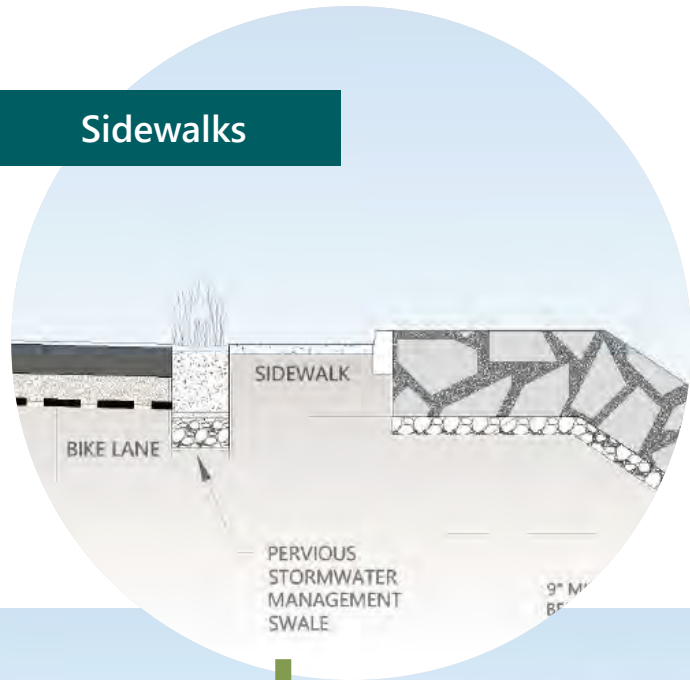


Three Integrated Project Elements

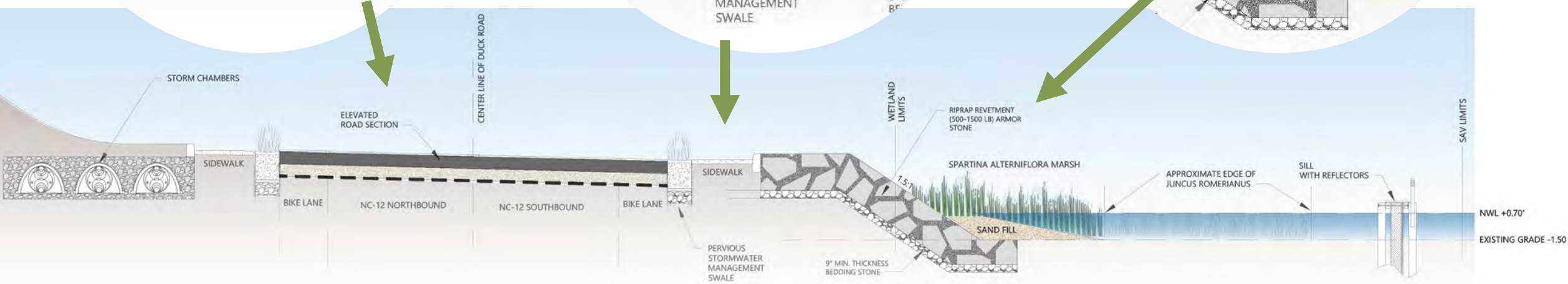
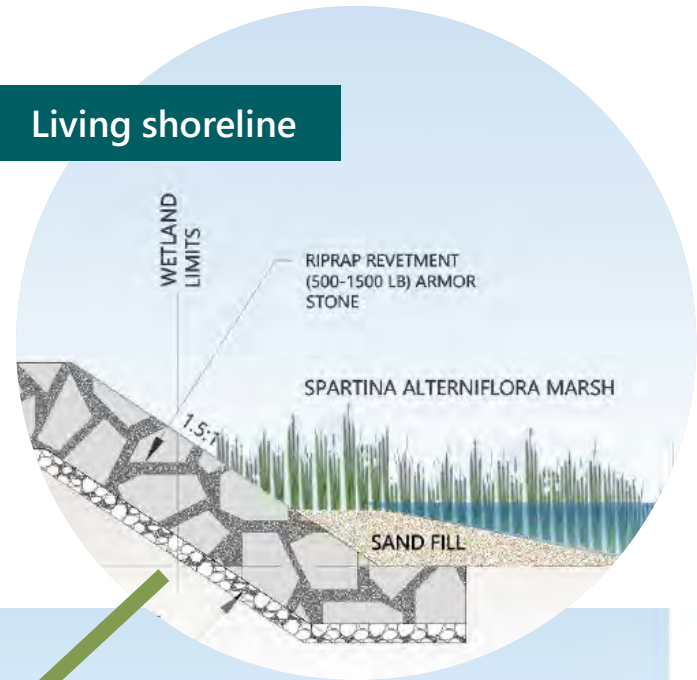
Elevated roadway



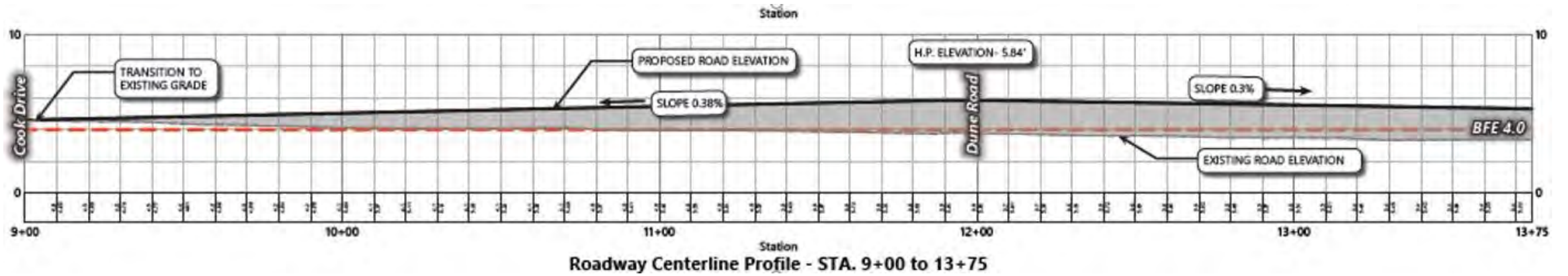
Sidewalks



Living shoreline



Implementing Plans: N.C. Highway 12 Elevation



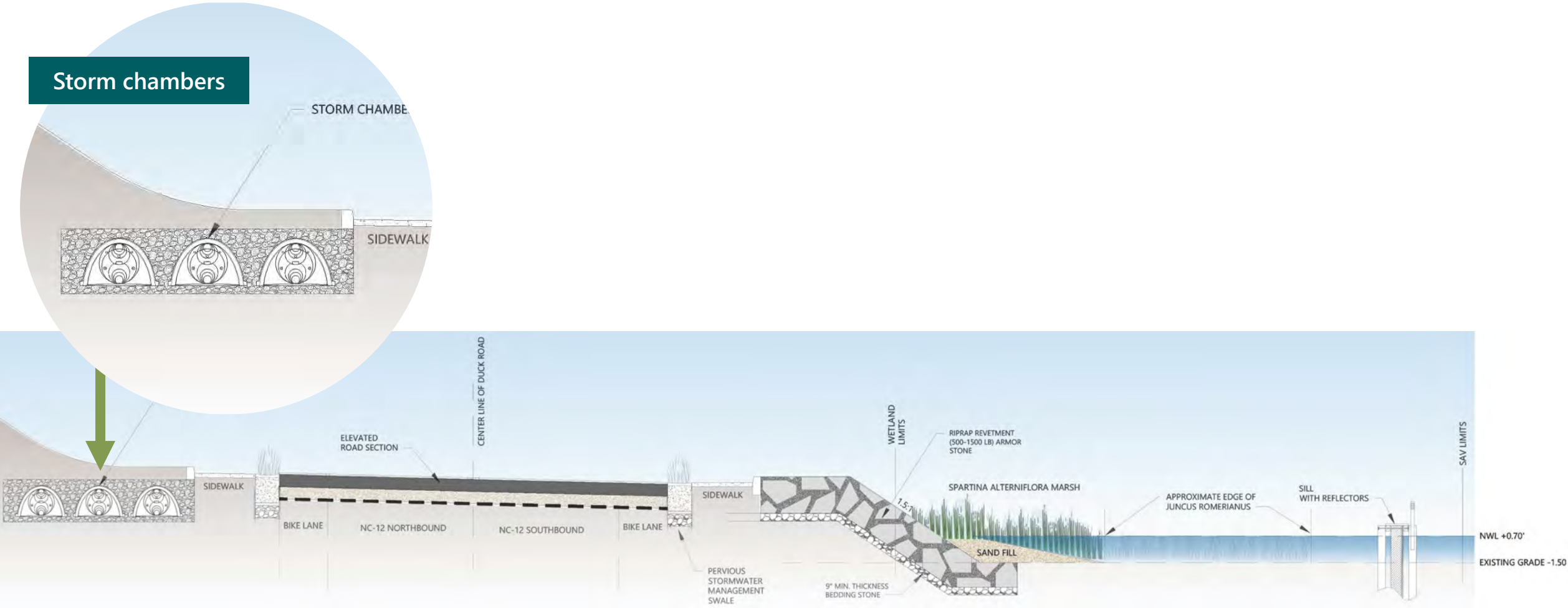


Elevated Roadway



Storm Chambers and Infiltration

Storm chambers



Implementing Plans: Pedestrian Improvements – Phase 4





Living Shoreline



Challenges

- Funding
- Permitting
- Timing
- Maintenance of Traffic
- Weather
- Easements



Funding Sources



Tourism Board
\$148,000
11/2019

NFWF
\$384,000
3/2020

BRIC
\$1,849,000
2021-2023

DCSWCD
\$20,000
1/2022

DEM
\$550,000
6/2022

DEM
\$1,000,000
5/2024

TOTAL
\$3,951,000

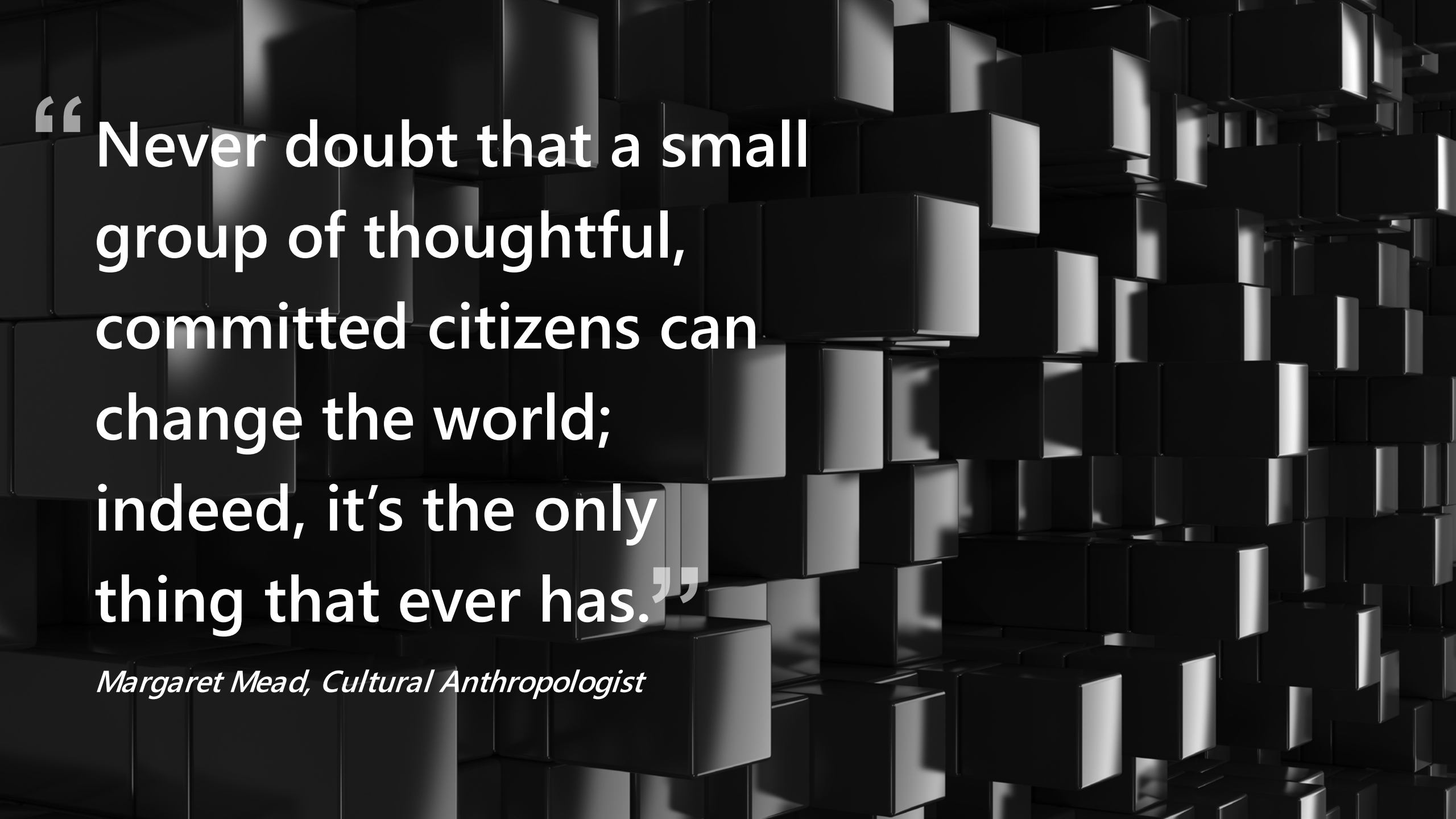
Town
\$398,500

Design & Contract
TOTAL
\$4,349,500
9/2023



January 2024 Storm





“ Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it’s the only thing that ever has.”

Margaret Mead, Cultural Anthropologist

Lessons Learned

- ✓ Start early
- ✓ Be persistent
- ✓ Challenge the status quo
- ✓ Communicate
- ✓ Document
- ✓ Be prepared for the unexpected

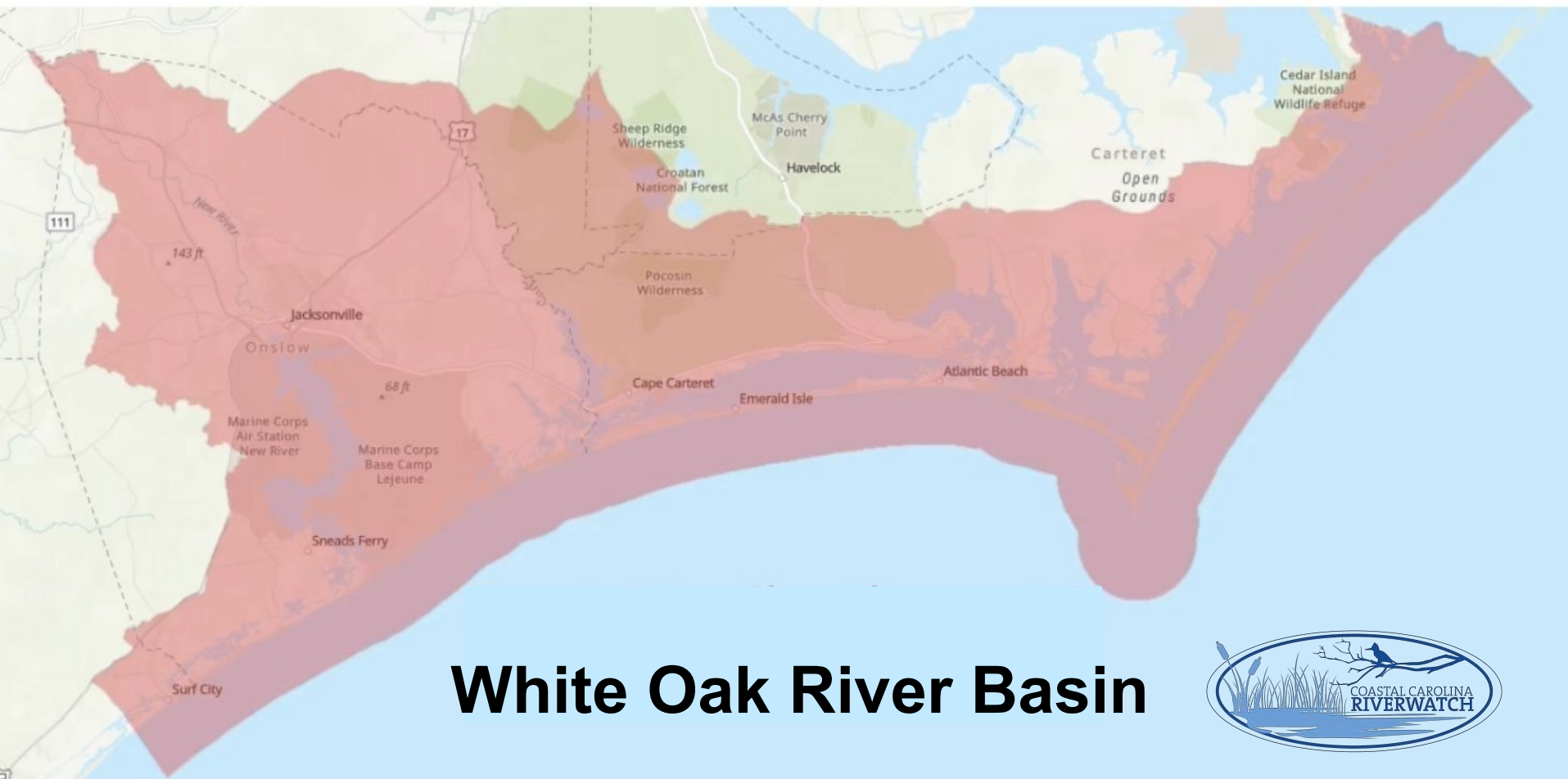


Coastal Carolina Riverwatch

Lower New River Restoration Plan

2024-2026 Planning and Development





White Oak River Basin



Lower New River Watershed Restoration Plan

Funding through NC Land and Water Fund

Writing will take place from 2024 - 2026

Written by CCRW staff and interns

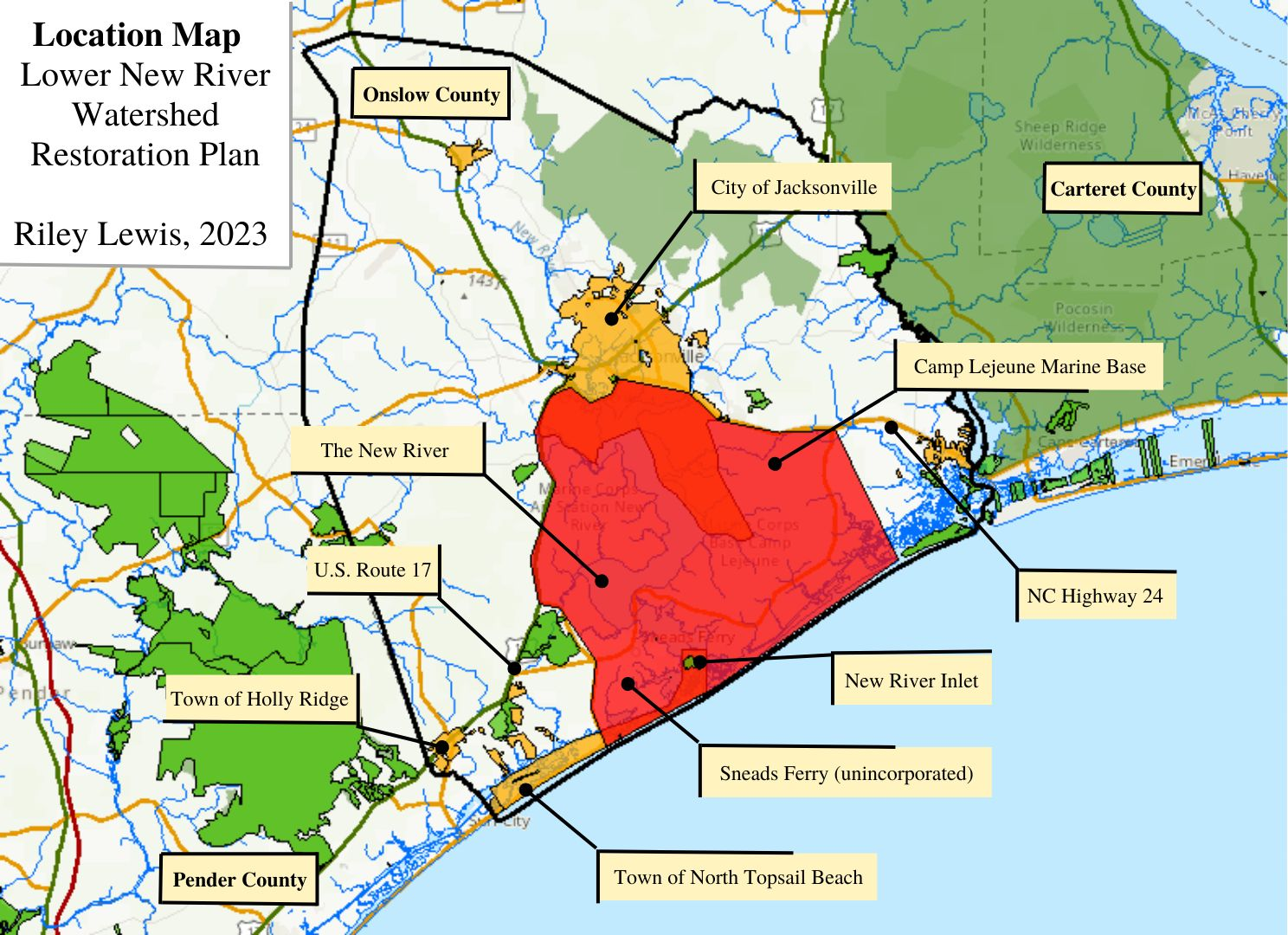


NORTH CAROLINA
LAND & WATER
• F U N D •

EPA 9 element plan

The lower New River Watershed Plan would focus on the first 4 elements of the Nine Element Plan.

Location Map
 Lower New River
 Watershed
 Restoration Plan
 Riley Lewis, 2023



Legend

- Onslow County Boundary (hosted)
- State-Owned_Lands_NC_Latest
- USA Parks
 - National park or forest
 - State park or forest
 - Regional park
 - County park
 - Local park
- City Limits
- Surface Water Classifications
- NCDOT State Maintained Roads
 - State Maintained Roads - Primary Routes
 - Interstate
 - US Route
 - NC Route
- Project Area (Lower New River)



Why the Lower New River?

Stump Sound ORW area (Alligator Bay) - **SA;ORW**, Primary Nursery Area, **303(d)**, NCCREWS Wetlands of Exceptional significance

Southwest Creek- **SC;NSW,HQW**, Primary Nursery Area, NCCREWS Wetlands of Exceptional significance

Northeast Creek - **SC;HQW,NSW**, Primary Nursery Area, NCCREWS Wetlands of Exceptional significance

Intracoastal Waterway- **SA;ORW and HQW, 303(d)**

NEW RIVER (From Atlantic Coast Line Railroad Trestle to Mumford Point)- **SC;HQW,NSW**, Primary Nursery Area

Chadwick Bay- **SA;HQW**, Primary Nursery Area, SAV habitat, NCCREWS Wetlands of Exceptional significance

Goals

Stakeholder
Outreach

Develop List
of BMPS

On-the-ground
Assessments

Compile Land
Use and
Research Data

Landowner
Outreach

GIS Analysis

Develop
Priority Future
Projects

Design Priority
Projects to be
"Shovel Ready"

The Process

Identify and prioritize community restoration goals and intended future use of the lower New River.

Analyze the biological and chemical factors that are influencing conditions of water in the lower New River.

Identify gaps in service based on known data and regulations and surface water contaminants.

Assess residential and industry development in adjacent land and to locate sources of pollution.

Develop pollution reduction methods and informational material to maximize residents' knowledge of problems and solutions.

Prioritize areas to develop a list of BMPs/treatments based on community input and gaps in service.

Develop a timeline to prioritize future work and an evaluation process for assessing the effectiveness of future work.

Write the lower New River Watershed Restoration plan to **guide future efforts using the EPA's Nine Element Plan.**

Disseminate and encourage use of the completed lower New River Watershed Restoration Plan.

Community Engagement

Identify key stakeholders through established community working groups and connections with residents through our organization's water quality work.

Identify issues of concern that have been brought to the attention of our organization by the public

Set preliminary goals through public forums and goals set by the government.

***New River Roundtable* - CCRW has already built partnerships with the community of Sneads Ferry, Military base Camp Lejeune, and Onslow County.**

Upcoming events: Sneads Ferry Shrimp festival Aug 27-28, Ocean Fest Sep 21st

The background of the slide is a photograph of a wide river. In the foreground, several vertical wooden posts are partially submerged in the water. The water is a light, slightly murky brown color. In the distance, a line of green trees marks the far bank of the river. The overall lighting is soft and natural, suggesting an overcast day.

Characterize the lower New River watershed.

Gather existing data from partnerships with university researchers and public data released by the state.

Identify data gaps by comparing existing data to known water quality needs and status.

Collect additional data and analyze findings to assess unknown levels of contamination

Identify causes and sources of impairments by **assessing land use** and collaborating with university researchers.

Finalize goals and ID solutions

Finalize goals and identify solutions given the known data and identified gaps in service and knowledge.

Set overall goals given the feedback from the communities and state standards.

Determine load reductions needed based on data collected and developed goals.

Develop BMPs to achieve set goals focused in critical EJ areas.

Develop “Shovel Ready” Projects

Design an implementation program that governments, communities, and organizations can refer to.

Develop criteria to **measure progress** toward meeting watershed goals, including continued monitoring.

Develop information to **expand the reach** of the plan’s resources and promote action.

Identify technical and financial assistance needed to implement the plan.

Assign responsibility for reviewing and revising the plan

How You Can Help

Submit projects to be included in the completed plan

Join the New River Roundtable hosted by City of Jacksonville Stormwater

Share New River data from EPA, NCDEQ, DoD, Onslow County and other sources

For the general public

https://docs.google.com/forms/d/e/1FAIpQLScJwha0sLEatyOPAu8pU7Fg9QkVJsethmahloVNBjuaRKFdkw/viewform?usp=sf_link

For organizations and entities with larger capacity

https://docs.google.com/forms/d/e/1FAIpQLSfCoBbQkZjbFnOJGG89di7x97SxxnH5d7RjLa2O5ZrX6mJFQQ/viewform?usp=sf_link

Complete our survey!



Q&A

If you are interested in working with us please email me.

RileyL@coastalcarolinariverwatch.org

