



ENVIRONMENTAL RESILIENCY OPEN HOUSE

The Town of Duck is working with CPE to prioritize a more comprehensive set of future projects and initiatives for our community to boost our environmental resiliency, **but we need your input!**

WEDNESDAY, APRIL 12

4:30 - 6:00 PM

**PAUL F. KELLER MEETING HALL
1200 DUCK ROAD**

Join us as CPE provides more information regarding the Resilient Coastal Communities Program. Following the meeting, you will have an opportunity to rank the list of studies and projects to identify your top priorities via an online survey.

FOR MORE INFORMATION, VISIT WWW.TOWNOFDUCK.COM/RESILIENCE

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COASTAL
PROTECTION
ENGINEERING

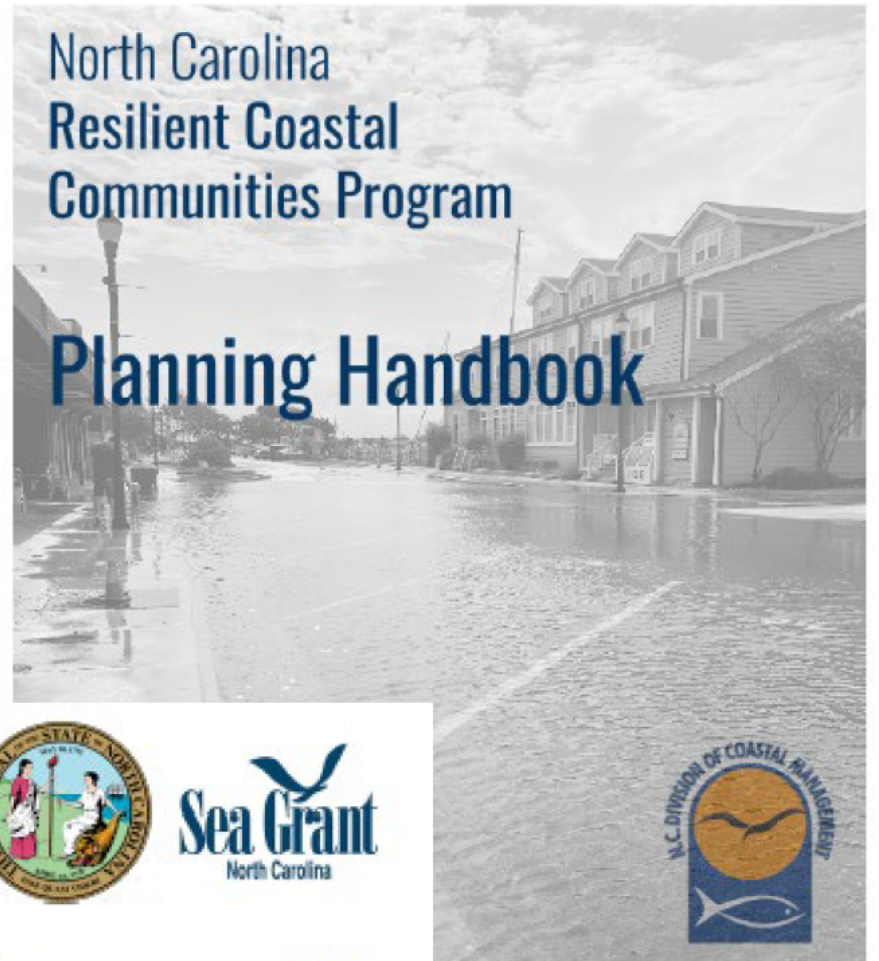
RCCP Program

- Provide funding & technical assistance for:
 - Developing Resilience Strategies (risk & vulnerability assessments, portfolios of prioritized resilience projects)
 - Project engineering, design, & implementation
- Promote locally-driven, inclusive, & forward-thinking approaches to traditional hazard mitigation planning
- Incentivize innovative solutions (Natural & Nature-Based Solutions)

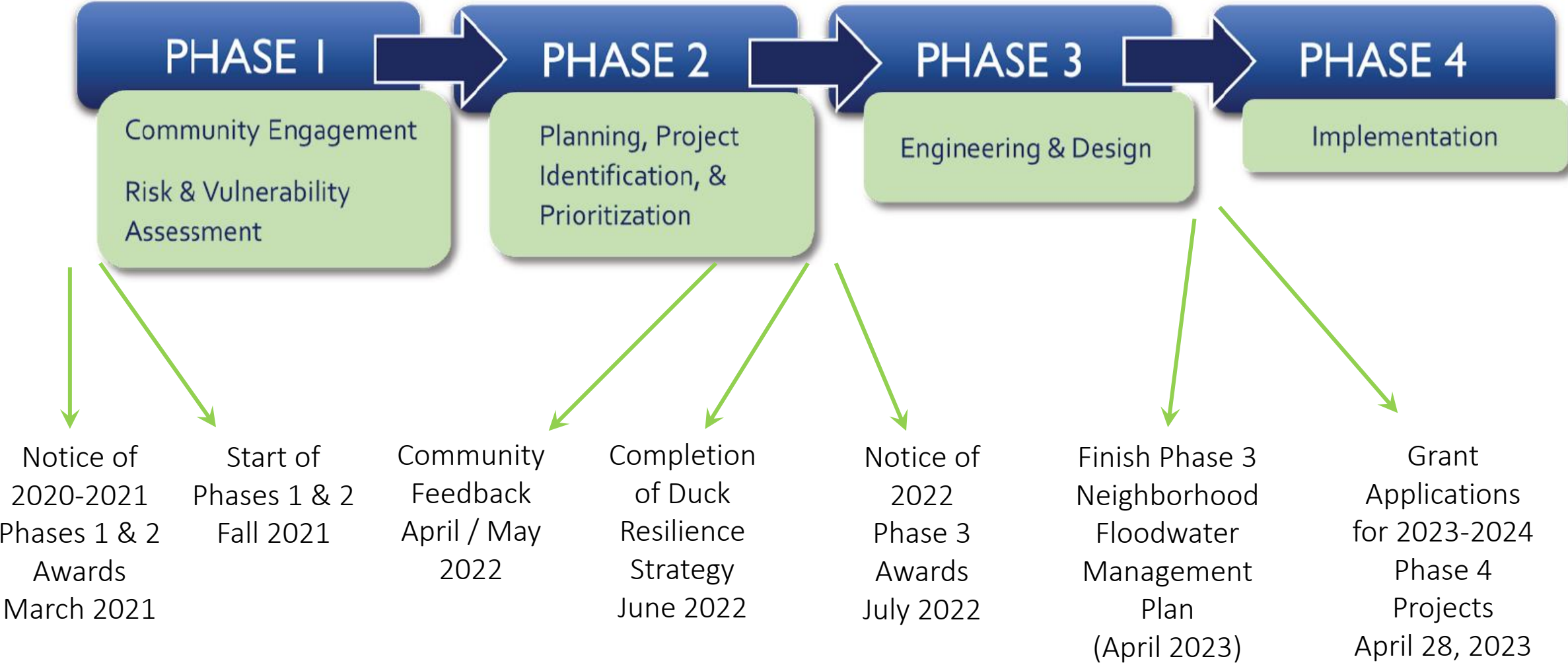


RCCP Program - Handbook

- Facilitate a community-driven process for:
 - Setting coastal resilience goals
 - Assessing existing & needed capacity
 - Identifying & prioritizing projects to enhance community resilience to coastal hazards



Program Phases

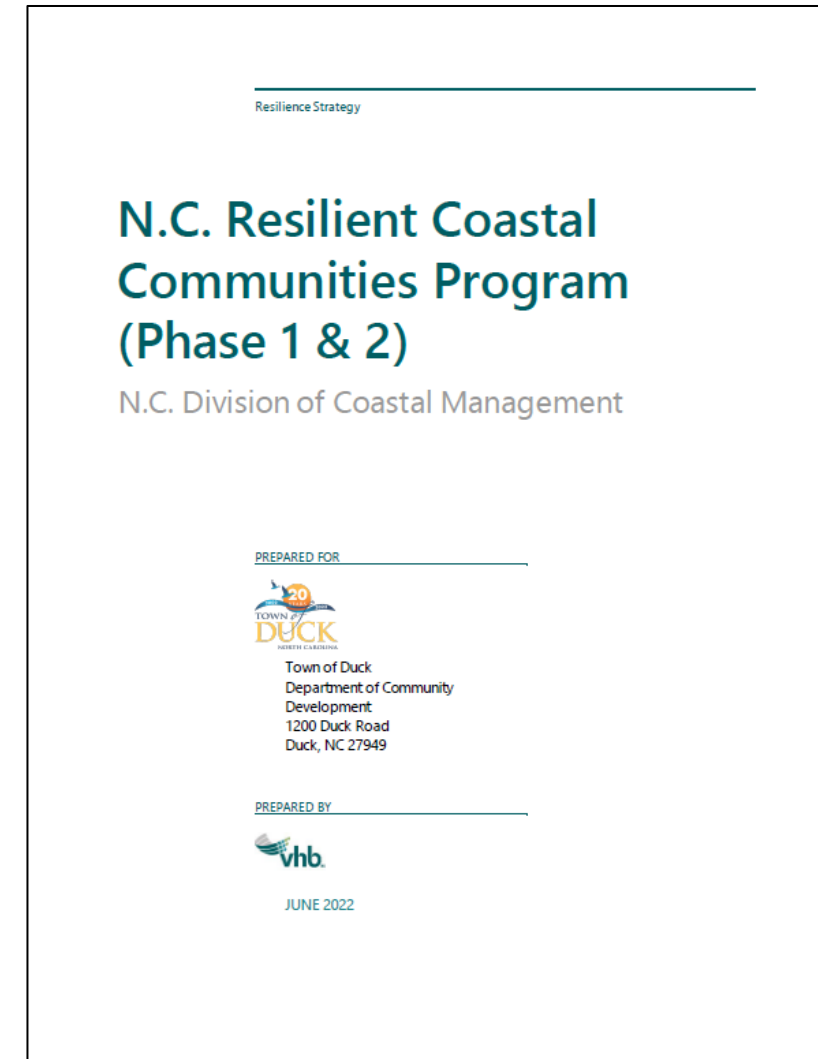


Goals of the Resilience Strategy

In addition to the **Goals** established in the Towns *Land Use Plan* and the **Goals** of the *Outer Banks Regional Hazard Mitigation Plan*, the **Resilience Strategy** includes the following 5 **Goals**:

- Preserve our community's unique lifestyle.
- Protect our critical natural resources and coastal ecosystem
- Build and promote a sustainable economy that supports residents and visitors
- Plan for orderly and sustainable growth and redevelopment
- Maintain a well-run and efficient government that provides high quality and cost-effective services

1. **Risk & Vulnerability Assessment Report:** Describes the risk assessment performed, which included the evaluation of vulnerability of critical assets, natural infrastructure, and vulnerable populations to hazards.
2. **Project Portfolio:** Outlines options aimed at reducing exposure, reducing sensitivity, and increasing adaptive capacity to flooding and other hazards. A combination of policy, nonstructural, hybrid, and structural approaches should be considered.



Town of Duck
Resilience Strategy

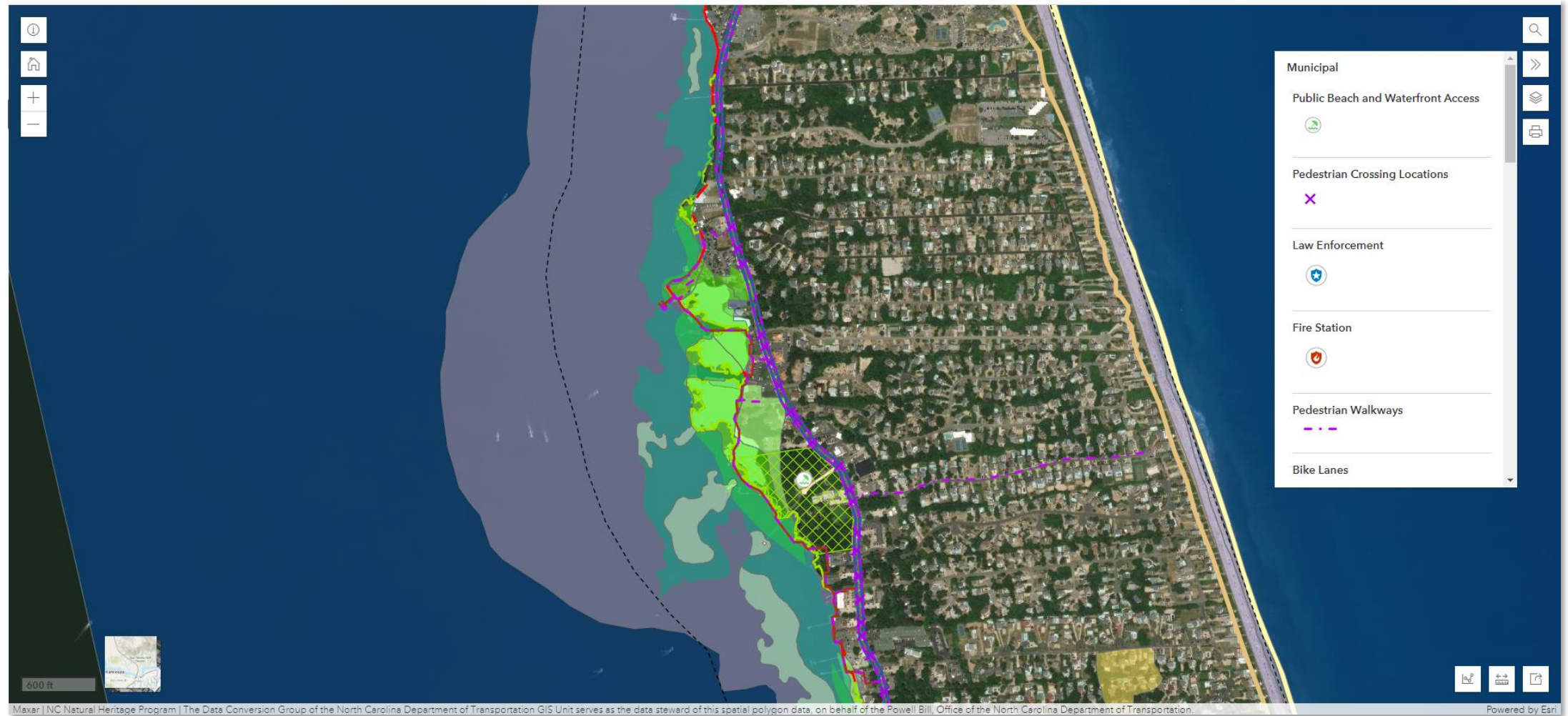
Evaluating Hazards

Type of Hazard That Concern You the Most	# of Respondents Concerned	% of Respondents Concerned
Beach or Soundside Erosion	36	85.7%
Sea Level Rise	27	64.3%
Hurricanes and Tropical Storms	25	59.5%
Ocean or Soundside Flooding	23	54.8%
"Rainy Day" Flooding (freshwater/rainwater/stormwater flooding)	18	42.9%
Rising Groundwater Table	8	19.0%
Extreme Heat	4	9.5%
Severe Weather (thunderstorms, lightning, tornadoes)	2	4.8%
Other Hazards (specified by the individual surveyed)	1	2.4%
Wildfires	1	2.4%
Total of 42 Respondents		

Ranking Community Assets

Rank the following community assets in Duck from MOST IMPORTANT to LEAST IMPORTANT	Ranking
Fire Station/Police Stations/Emergency Medical Services	1
Infrastructure (roads, bridges, stormwater conveyance [ditches])	2
Small Businesses	3
Parks & Town Recreation Sites/Facilities	4
Town Municipal Facilities	5
Food Markets	6
Gas Stations	7
Cultural Landmarks	8 - Tied
Pharmacy	8 - Tied
Total of 41 Respondents	

Interactive Critical Infrastructure & Hazards Map

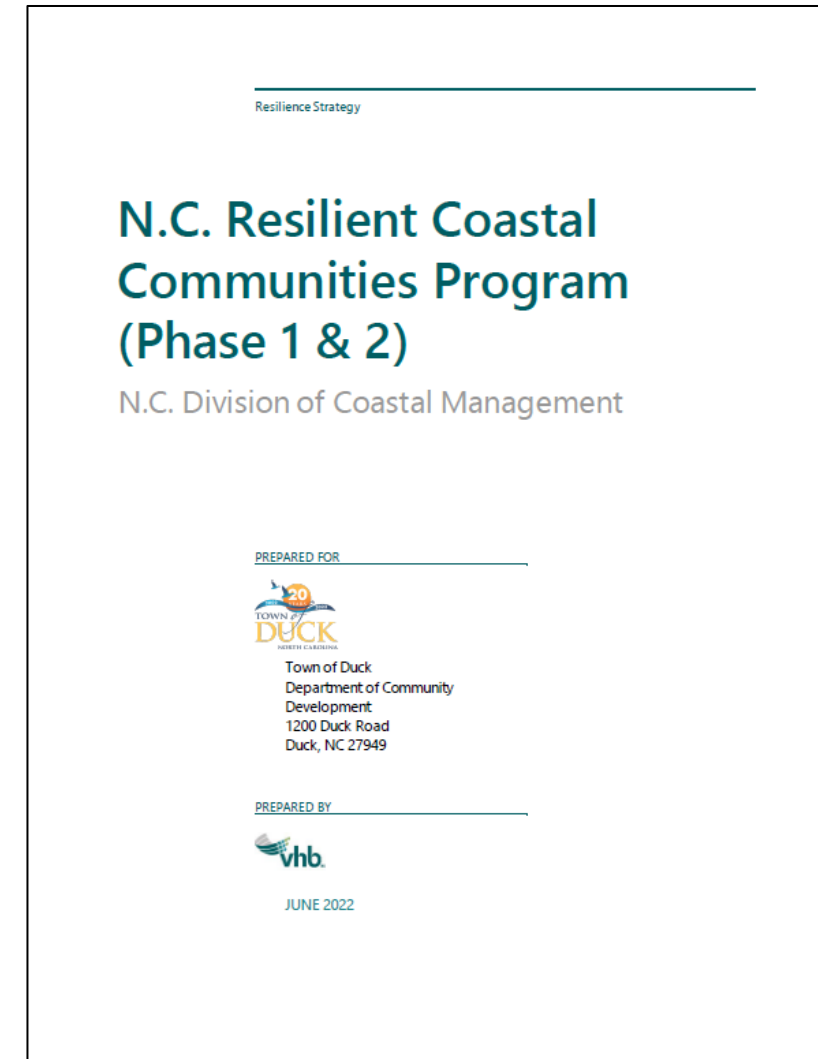


Town of Duck

Resilience Strategy

Addendum A – Phase 2 Update

- Original Project Portfolio only included 5 projects – General Concepts
- Hurdles in project implementation the ability to secure future grant funding
- Town and NC DCM partnered to update the Project Portfolio
 - Expand the number of initiatives that will meet the goals of the Resilience Strategy
 - Develop a greater level of detail for each project identified
 - Re-prioritize the Project Portfolio



Town of Duck

Resilience Strategy

Expanded List of Projects

Non-Structural Projects:

- Soundside Shoreline Management Study
- Dune Maintenance Education Program
- Townwide Stormwater Management Study
- Sea Level Rise Analysis and Climate Adaptation Plan
- Townwide Beach Management Program
- Septic System and Drain Field Planning
- Establishment of Resilience Review Team
- Post-Hazard Event Assessments

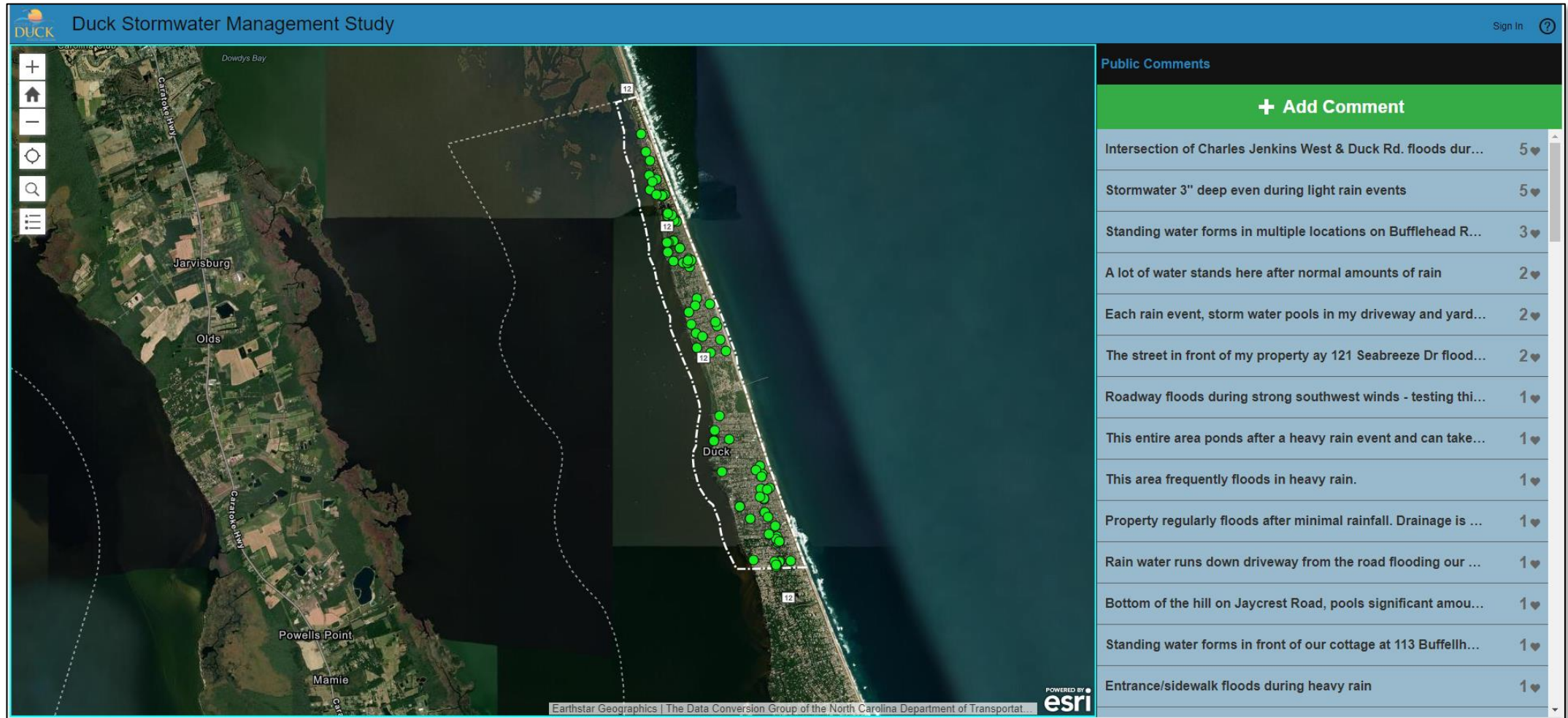
Structural Projects:

- Central Reach Beach Nourishment Program
- Acquire Oceanfront Property to Support Future Beach Maintenance
- Town Park Shoreline Protection Project
- NC-12 Coastal Resiliency Project
- Flooding and Stormwater Management Along Duck Road
- Soundside Erosion Mitigation and Storm Damage Reduction Project
- Stormwater Outfall/Pond Retrofits

Re-Prioritizing Project Portfolio

Prioritization Measures	
Cost-Benefit	<p>Low – Benefits exceed cost in the short term (1 to 5 years); however, future sea level rise over the 30-year planning horizon may significantly decrease the project benefits</p> <p>Medium – Benefits entirety of the Town</p> <p>High – Benefits exceed cost in the short term (1 to 5 years) and continue to provide additional benefits over the 30-year planning horizon.</p>
Social Equity	<p>Low – Benefits are limited to location of project</p> <p>Medium – Benefits entirety of the Town</p> <p>High – Directly benefits vulnerable populations</p>
Internal Capacity	<p>Low – Significant outside expertise needed, and current Town staff may not be able to support the effort</p> <p>Medium – Considerable outside expertise needed, and existing Town staff are able to support the effort and perform some tasks</p> <p>High – Minimal outside expertise needed, and Town staff can support the effort and perform most tasks</p>
Co-Benefits	Other benefits the project may bring that are not directly related to resiliency.

Non-Structural Projects:



Soundside Shoreline Management Study



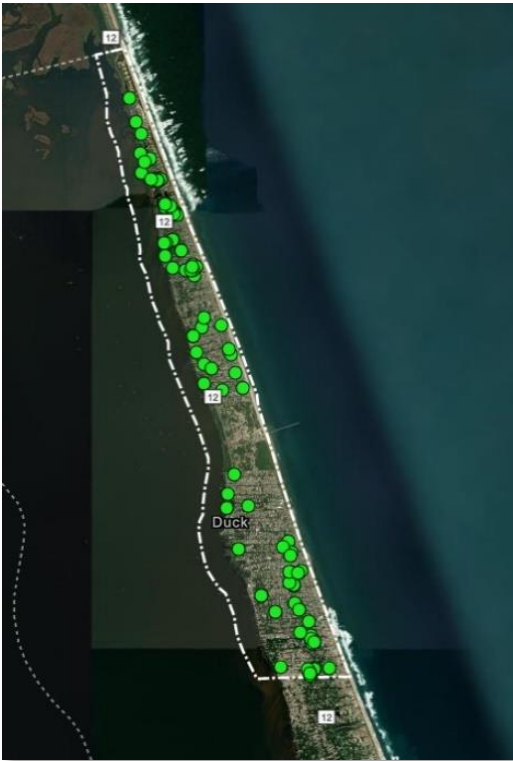
Hazard(s) Addressed	Soundside Erosion and Flooding
Type of Solution	Planning Document
Estimated Cost	\$100,000 - \$500,000
Estimated Timeline	1 year
Potential Funding Sources	Town, National Fish & Wildlife Foundation, National Coastal Resilience Fund, NC Department of Environmental Quality
Map/Location	Town-wide along the sound
Prioritization Measures	
Cost-Benefit	High
Social Equity	Medium
Internal Capacity	Medium
Co-Benefits	Educated/informed public and staff, and will serve as a resource for the Currituck Sound Coalition

Dune Maintenance Education Program



Hazard(s) Addressed	Oceanfront Storm Surge Flooding / Sea Level Rise Flooding / Oceanfront Erosion
Type of Solution	Education Program
Estimated Cost	<\$10,000
Estimated Timeline	Ongoing
Potential Funding Sources	Town and Dare County
Map/Location	Townwide along the oceanfront
Prioritization Measures	
Cost-Benefit	High
Social Equity	Medium
Internal Capacity	High
Co-Benefits	Educated/informed public

Townwide Stormwater Management Study



Hazard(s) Addressed	Rainfall flooding, sea level rise flooding, contaminated surface waters
Type of Solution	Planning Document
Estimated Cost	<\$100,000
Estimated Timeline	1 Year
Potential Funding Sources	Town and NC Department of Environmental Quality
Map/Location	Townwide
Prioritization Measures	
Cost-Benefit	High
Social Equity	Medium
Internal Capacity	Medium
Co-Benefits	Public education, and improved water quality

Sea Level Rise Analysis and Climate Adaptation Plan

Hazard(s) Addressed	Oceanfront and storm surge flooding and sea level rise flooding
Type of Solution	Planning Document
Estimated Cost	<\$100,000
Estimated Timeline	1 year
Potential Funding Sources	Town, NOAA Resilience Grants, FEMA, NC Department of Environmental Quality, USACE, NGOs
Map/Location	Townwide
Prioritization Measures	
Cost-Benefit	High
Social Equity	Medium
Internal Capacity	Low
Co-Benefits	Public health and safety, will serve as a resource for the Currituck Sound Coalition and scientific community, Climate Adaptation Plan will serve as a model for other coastal communities in the State

Townwide Beach Management Program



Hazard(s) Addressed	Oceanfront erosion, Storm surge flooding, and Sea level rise flooding
Type of Solution	Planning Document
Estimated Cost	<\$100,000
Estimated Timeline	Ongoing
Potential Funding Sources	Town, County, NC Division of Water Resources
Map/Location	Townwide
Prioritization Measures	
Cost-Benefit	Medium
Social Equity	Medium
Internal Capacity	Medium
Co-Benefits	Provides extensive recreational opportunities, provides shorebird and nesting sea turtle habitat

Septic System and Drain Field Planning

Hazard(s) Addressed	Septic System and Drain Field Hazards
Type of Solution	Planning Document
Estimated Cost	<\$100,000
Estimated Timeline	1 year
Potential Funding Sources	Town, Division of Water Resources, NC Department of Environmental Quality, Coastal Studies Institute
Map/Location	Townwide
Prioritization Measures	
Cost-Benefit	Medium
Social Equity	Medium
Internal Capacity	Medium
Co-Benefits	Homeowner education, health, water quality

Establishment of Resilience Review Team

Hazard(s) Addressed	ALL
Type of Solution	Planning
Estimated Cost	<\$10,000
Estimated Timeline	Continuous
Potential Funding Sources	Town
Map/Location	Townwide
Prioritization Measures	
Cost-Benefit	Medium
Social Equity	Medium
Internal Capacity	High
Co-Benefits	Provides internal accountability

Post-Hazard Event Assessments

Hazard(s) Addressed	ALL
Type of Solution	Planning Document
Estimated Cost	<\$10,000
Estimated Timeline	Continuous in response to natural hazard events
Potential Funding Sources	Town and FEMA
Map/Location	Townwide
Prioritization Measures	
Cost-Benefit	High
Social Equity	Medium
Internal Capacity	High
Co-Benefits	Provides internal accountability

Structural Projects:



Central Reach Beach Nourishment Program



Hazard(s) Addressed	Oceanfront erosion, Storm surge flooding, and Sea level rise flooding
Type of Solution	Nature-Based/Green Infrastructure
Estimated Cost	>\$5 Million
Estimated Timeline	Every 5-7 years
Potential Funding Sources	Town, NC Division of Water Resources, Dare County, and FEMA
Map/Location	Include a Map for this project.
Prioritization Measures	
Cost-Benefit	High
Social Equity	Medium
Internal Capacity	High
Co-Benefits	Provides extensive recreational opportunities, provides shorebird and nesting sea turtle habitat

Acquire Oceanfront Property to Support Future Beach Maintenance

Hazard(s) Addressed	Erosion, Tidal Flooding, Sea Level Rise, Storm Surge
Type of Solution	Low-Impact Development
Estimated Cost	\$1,000,000 to \$5,000,000
Estimated Timeline	2 years
Potential Funding Sources	Town
Map/Location	Townwide
Prioritization Measures	
Cost-Benefit	Medium
Social Equity	Medium
Internal Capacity	Medium
Co-Benefits	Ocean Rescue access

Town Park Shoreline Protection Project



Hazard(s) Addressed	Low-Impact Development
Type of Solution	\$100,000 - \$500,000
Estimated Cost	2 years
Estimated Timeline	Town, NC Department of Environmental Quality, FEMA, and NC DPS
Potential Funding Sources	Currituck Sounds shoreline along the Town Park
Map/Location	Low-Impact Development
Prioritization Measures	
Cost-Benefit	High
Social Equity	Medium
Internal Capacity	High
Co-Benefits	Educated and informed public/staff, habitat conservation, supports efforts of the Currituck Sound Coalition

NC-12 Coastal Resiliency Project



Hazard(s) Addressed	Flooding, Storm Surge
Type of Solution	Grey Infrastructure, Nature-Based/Green Infrastructure
Estimated Cost	\$1 Million - \$5 Million
Estimated Timeline	2 years
Potential Funding Sources	Town, FEMA, NC DPS, NFWF, and CCAP
Map/Location	Barrier Island Station to Dune Road
Prioritization Measures	
Cost-Benefit	High
Social Equity	Low
Internal Capacity	Low
Co-Benefits	Habitat restoration, water quality, traffic continuity, serves as model for other coastal communities in the State.

Flooding and Stormwater Management Along Duck Road



Hazard(s) Addressed	Grey Infrastructure, Grey Infrastructure Retrofit
Type of Solution	\$100,000 - \$500,000
Estimated Cost	2 - 3 years
Estimated Timeline	Town, FEMA BRIC, NC DOT, and NC DPS
Potential Funding Sources	Site-specific
Map/Location	Grey Infrastructure, Grey Infrastructure Retrofit
Prioritization Measures	
Cost-Benefit	Low
Social Equity	Medium
Internal Capacity	Low
Co-Benefits	Water quality and traffic continuity

Soundside Erosion Mitigation and Storm Damage



Hazard(s) Addressed	Erosion, Storm Surge, Storm Damage
Type of Solution	Grey Infrastructure, Grey Infrastructure Retrofit
Estimated Cost	TBD
Estimated Timeline	5 – 10 years
Potential Funding Sources	Town
Map/Location	Site-specific
Prioritization Measures	
Cost-Benefit	Medium
Social Equity	Medium
Internal Capacity	Low
Co-Benefits	Implement goals of the Currituck Sound Coalition

Stormwater Outfall / Pond Retrofits


Hazard(s) Addressed	Tidal flooding, saltwater intrusion/sea level rise
Type of Solution	Grey Infrastructure Retrofit / Nature-Based/Green Infrastructure
Estimated Cost	\$100,000 - \$500,000
Estimated Timeline	2-5 years
Potential Funding Sources	Town, NC DEQ / EPA Section 319 Watershed Restoration Fund, Golden Leaf Flood Mitigation Program, neighborhood Associations, NC DOT, and NC DWR
Map/Location	Site-specific
Prioritization Measures	
Cost-Benefit	Low
Social Equity	Medium
Internal Capacity	Medium
Co-Benefits	Water quality and traffic continuity

VOTE ON YOUR PRIORITY PROJECTS!

Click [Here](#) For The Survey

Or...

Scan the QR Code



The graphic features a red header with three logos: the Town of Duck logo (a sun and birds), the North Carolina Resilient Coastal Communities Program logo (a water drop and waves), and the Coastal Protection Engineering logo (a stylized coastline). Below the logos, the text "ENVIRONMENTAL RESILIENCY SURVEY" is displayed in white. A large QR code is centered below the header. At the bottom, a paragraph explains the purpose of the survey.

ENVIRONMENTAL RESILIENCY SURVEY

Scan the QR code to be taken to the Environmental Resiliency Survey where you can rank your top studies/ priorities. Your feedback will be used by the Town to prioritize a more comprehensive set of future projects and initiatives as we strive to boost our environmental resiliency.

QUESTIONS

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