N.C. Division of Coastal Management

Coastal Resilience Initiatives and the Resilient Coastal Communities Program

Tancred Miller, *Policy & Planning Section Chief*

North Carolina
RESILIENT COASTAL COMMUNITIES PROGRAM

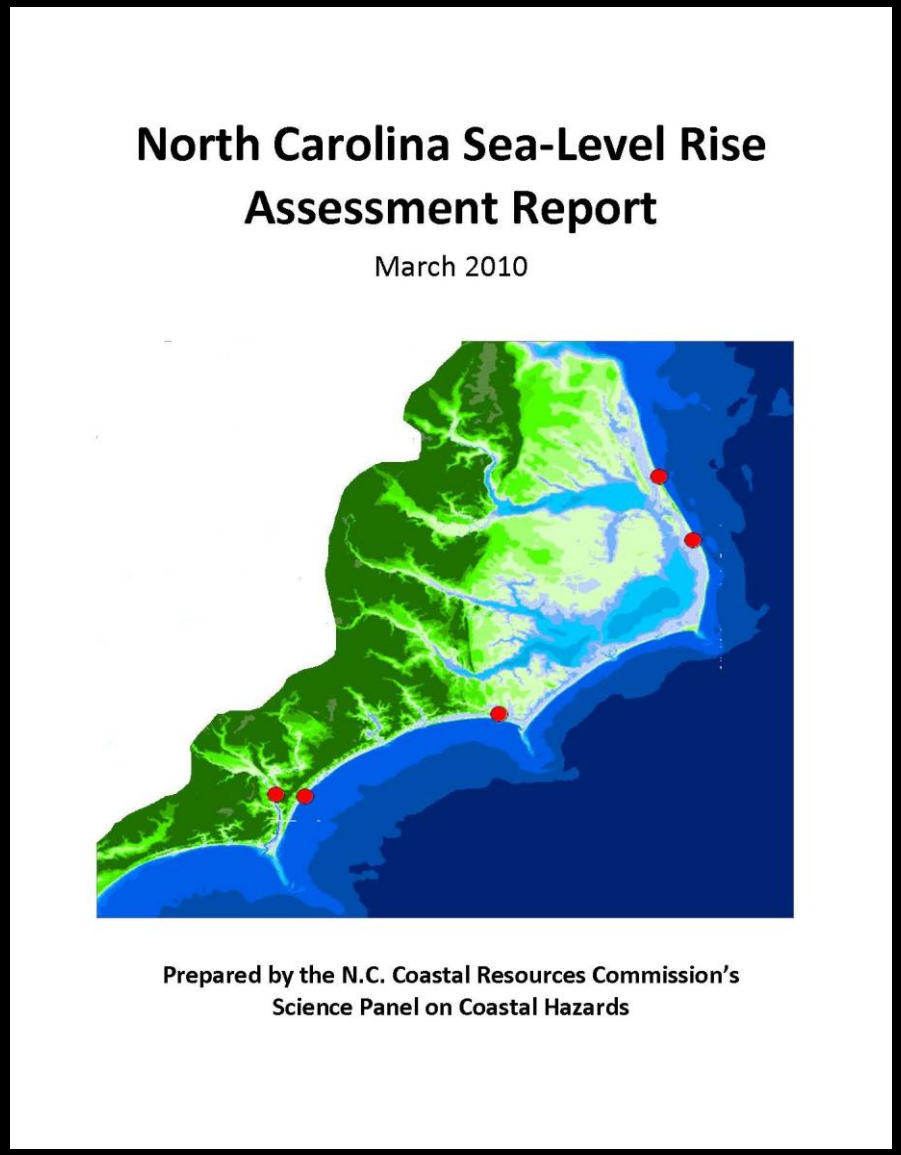
N.C. DIVISION OF COASTAL MANAGEMENT

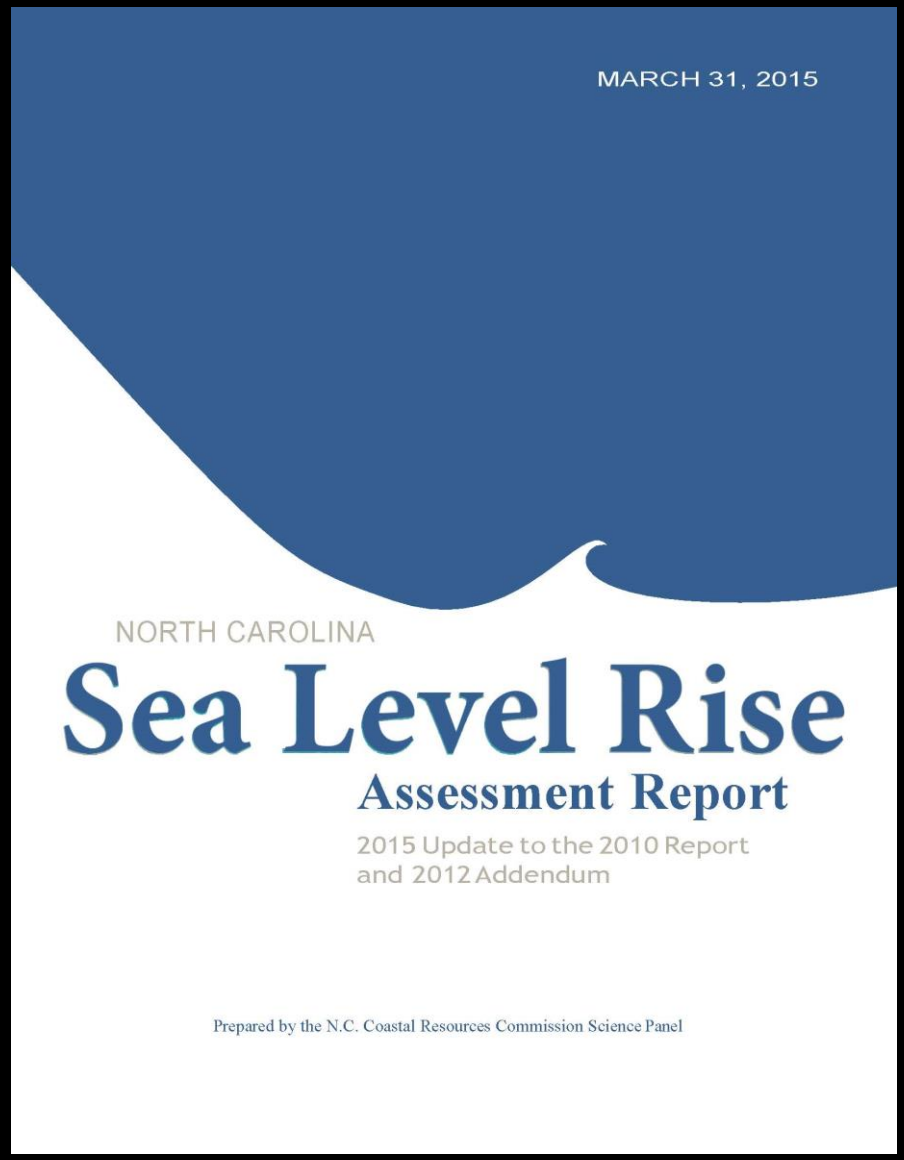
February 16, 2022

Outline – DCM Coastal Resilience Initiatives

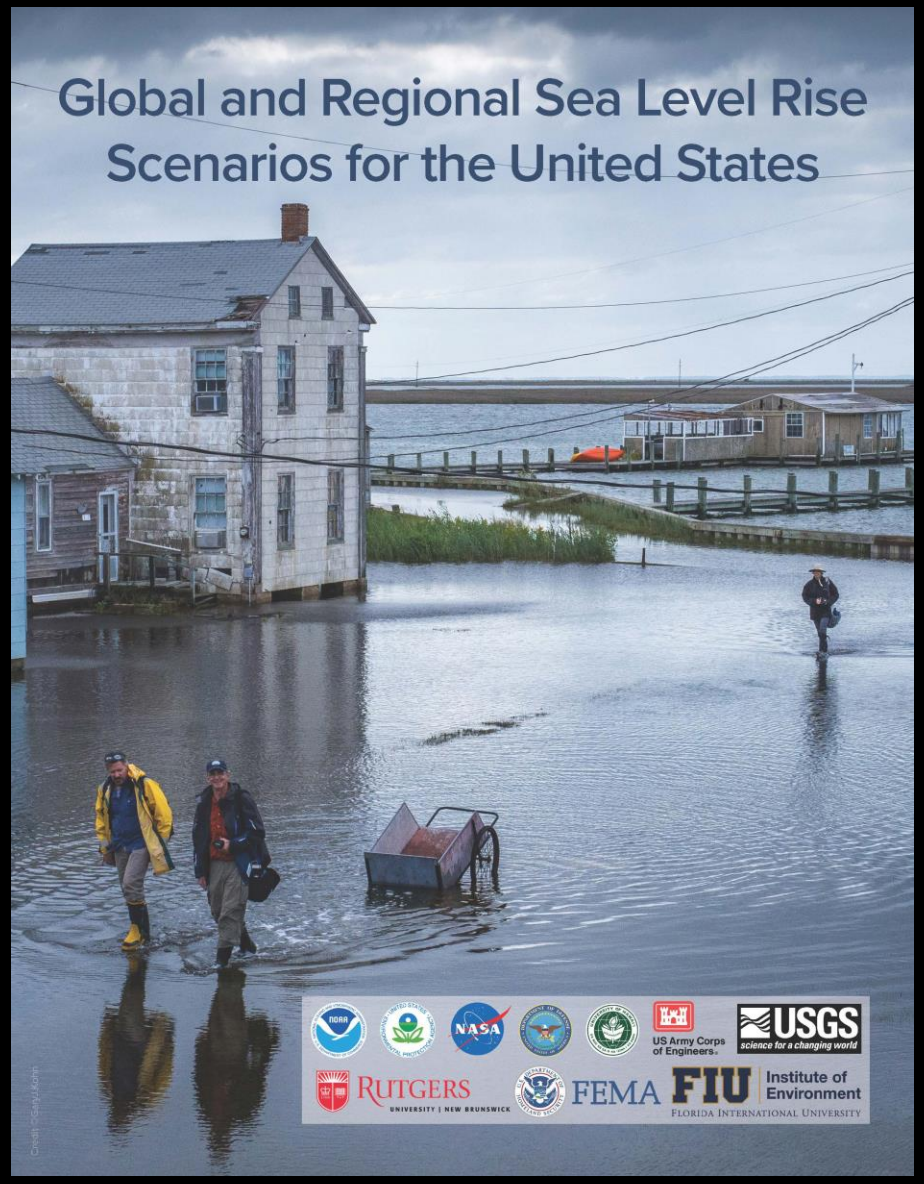
- Sea Level Rise Assessments
- DCM Coastal Resilience Pilot Project
- DCM Coastal Community Resiliency Guide
- Regional Resilience Workshops
- N.C. Climate Risk Assessment & Resilience Plan *(Executive Order 80)*
- State Legislature and NFWF Funding
- Resilient Coastal Communities Program

CRC Science Panel SLR Assessment Reports





Sweet *et al* 2022: Global and Regional Sea Level Rise Scenarios for the United States. NOAA Technical Report NOS 01



Key messages:

1. Increased confidence in a narrower range of projected average sea level rise by 2050 (roughly 9 – 11 inches)

2. Major and moderate high tide flood events increasing from 3x per year, to 10x per year by 2050

3. Low confidence in projected average sea level rise by 2100 (roughly 2 – 7 ft)


Building Coastal Resilience in North Carolina
Pilot Communities
Duck
Edenton
Hatteras
Oriental
Pine Knoll Shores
Roanoke Rapids
Henderson
Greensboro
Burlington
Durham
Rocky Mount
Tarboro
Chapel Hill
Raleigh
Wilson
Asheboro
Apex
Greenville
Winterville
Washington
Goldsboro
Kinston
Pinehurst
Southern Pines
Fayetteville
Hope Mills
Clinton
Rockingham
Laurinburg
Wallace
Jacksonville
Lumberton
Elizabethtown
Dillon
Darlington
Florence
Whiteville
Wilmington
Surf City
Carolina Beach
Plymouth
Nags Head
Kill Devil Hills
Swanquarter
Avon
Buxton
Ocracoke
New Bern
Cedar Island
Havelock
Emerald Isle

Coastal Community Resilience Guide

Home | Divisions | Permits & Rules | Outreach & Education | Energy & Climate | News | About

Coastal Adaptation and Resiliency

What is coastal resilience and why does it matter?

Building coastal resilience in a community generally means ensuring all members and systems within it can better withstand major events and long-term stressors in a way that helps meet larger community goals. There is no one-size fits all answer because every community is unique. Learn more by exploring the Frequently Asked Questions (FAQs).

- N.C. Resilient Coastal Communities Program →
- N.C. Coastal Community Resiliency Guide →
- Coastal Resilience FAQs →
- EO 80: NC Climate Change Interagency Council →
- Coastal Resilience Projects →

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Hazard Forecasts

Explore short-term (e.g., tides, river flooding, coastal storm surge) and long-term (e.g., sea level rise) predictions for your region.

Adaptation Examples

Discover new ideas and types of structural and non-structural adaptations being implemented in North Carolina and beyond.

Tools

Understand hazards risk, conduct a community-wide assessment or planning process, and use mapping applications to aid decision-making.

Data

Explore and download data to guide

Planning and Policy

Learn from others and ensure

Funding and Assistance

Find out how to fund adaptation


Building stronger communities across NC
Building Coastal Resilience in North Carolina
A pilot project by the North Carolina Division of Coastal Management

Coastal Community Resilience Guide

N.C. Coastal Community Resiliency Guide

A Story Map

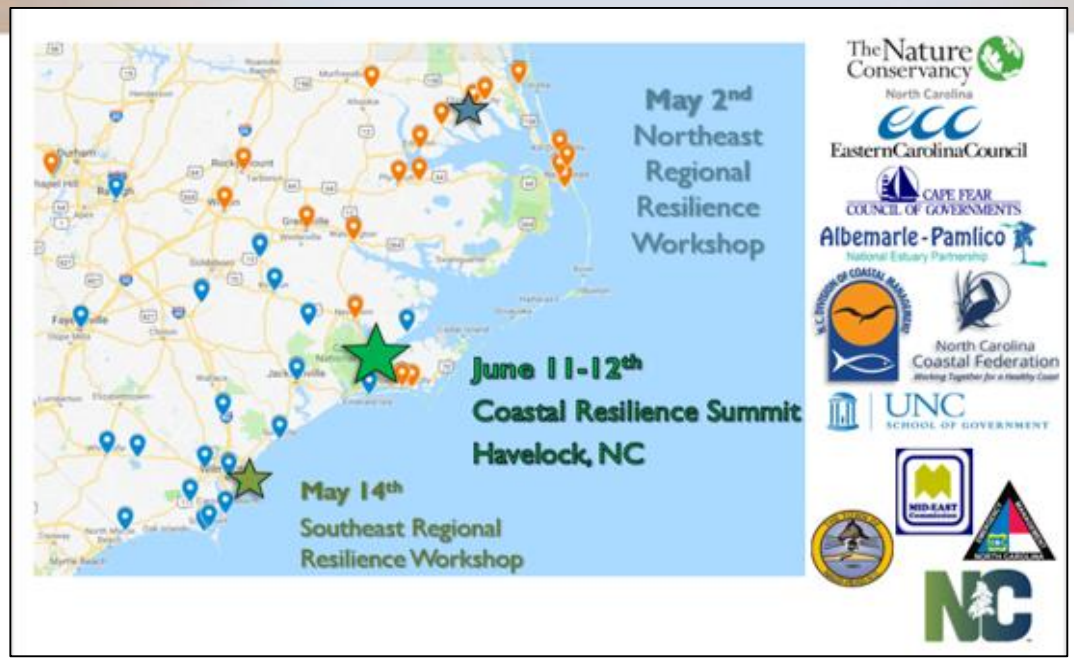
Introduction | Resilience Overview | 1) Establish Context & Expectations | 2) Assess Vulnerability & Risk | 3) Identify Adaptation Strategies

Introduction

Welcome to the North Carolina Coastal Communities Resilience Guide! To get started, please scroll down to view or select the sections below that further describe how to use this interactive guide:

- Navigating the guide
- Purpose
- Intended audience
- What to look for
- About this guide

2019 Workshops and Summit



North Carolina Coastal Resilience Summit

June 11-12th at the Havelock Tourist & Event Center

Keynote Address

A Post-Event Review of Hurricane Florence in North Carolina: Lessons Learned

Rachel Norton, Researcher & Lead Author
ISET International & Zurich Flood Resilience Program

Register: www.nccoastalmanagement.net

2019 North Carolina Coastal Regional Resilience Workshops

Summary Report

North Carolina Department of Environmental Quality

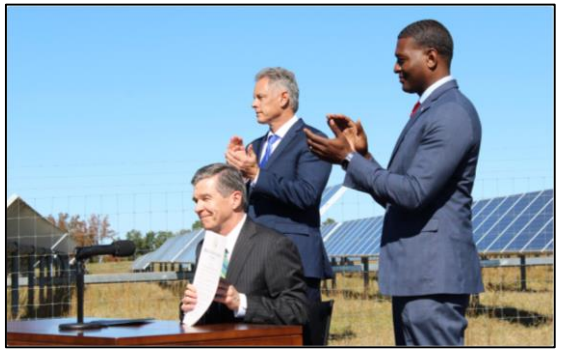
Division of Coastal Management

September 2019

DEQ North Carolina Department of Environmental Quality

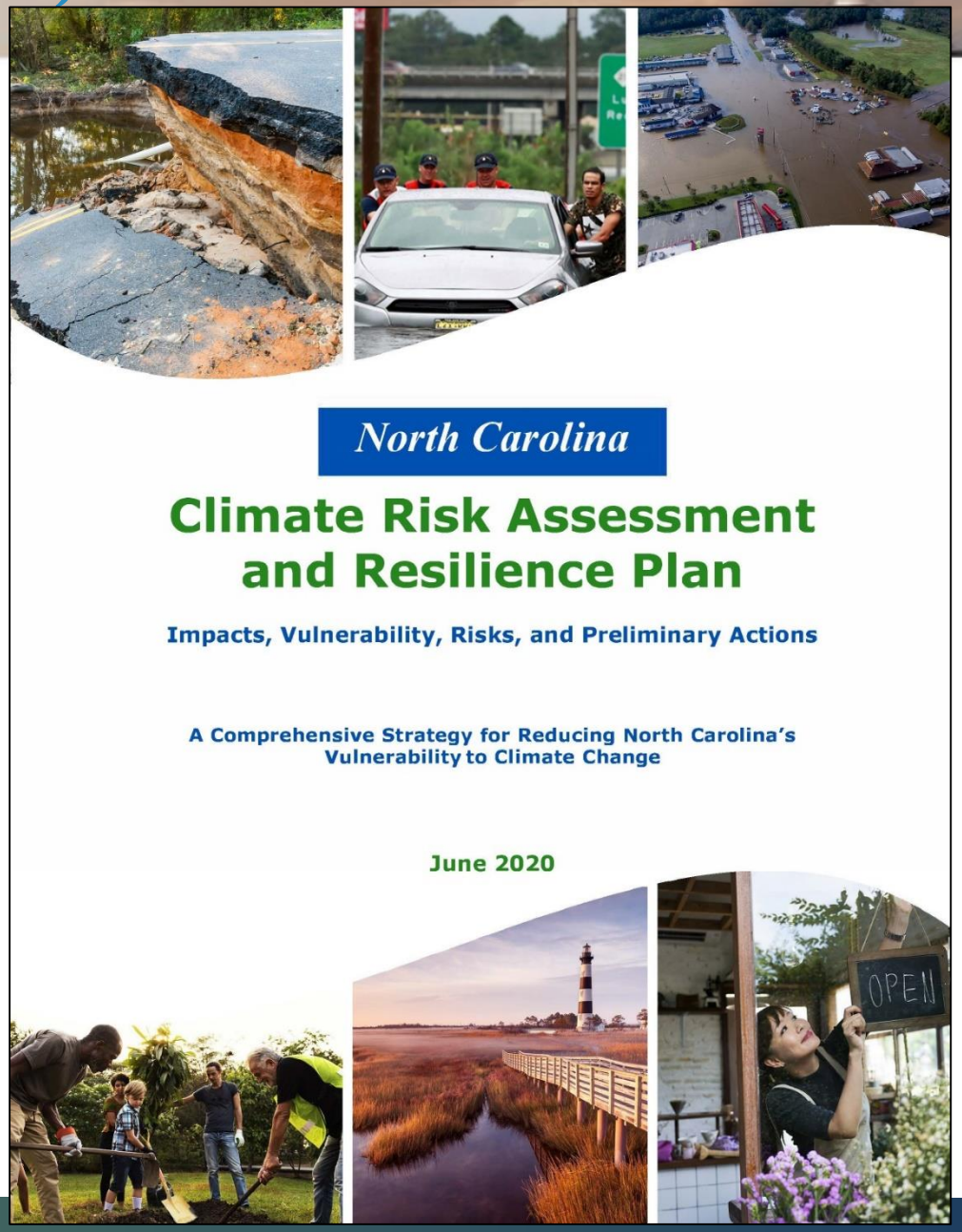
N.C. Division of Coastal Management

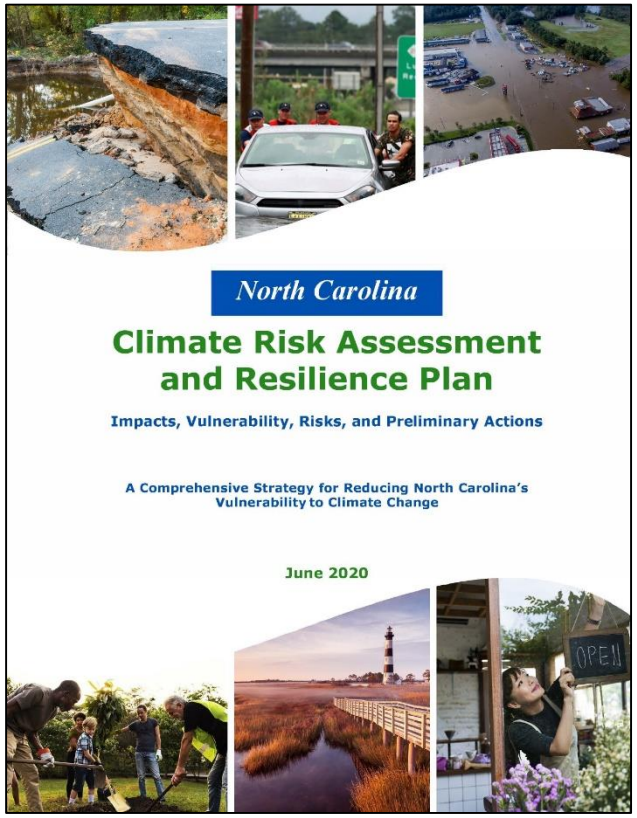
Executive Order 80 (October 2018)



North Carolina

Climate Science Report





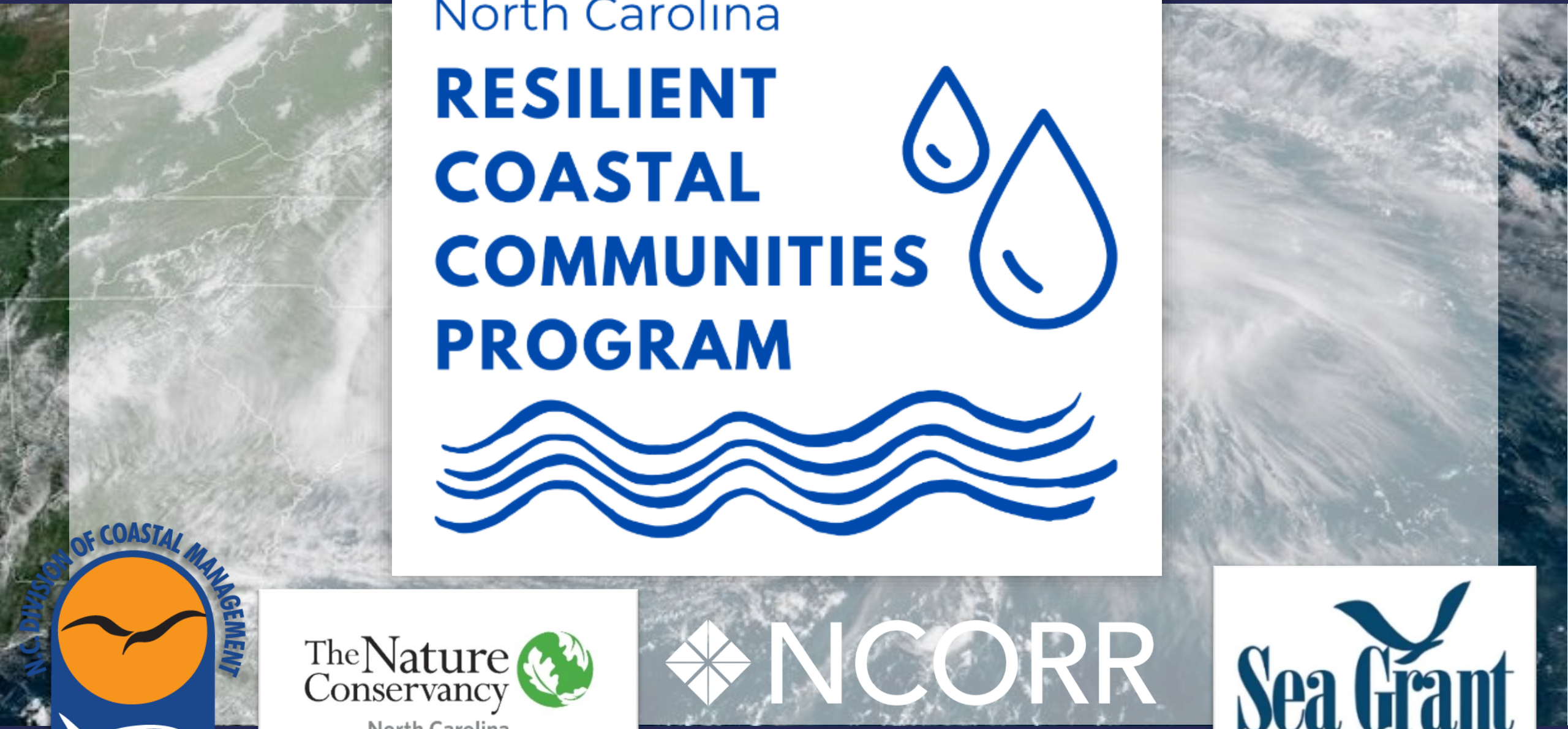
Chapter 7(E). Priority Resilience Initiatives

- 1. Manage and coordinate statewide resilience
- 2. Convene a dedicated Interagency Resilience Team
- 3. Continue resilience efforts through the NC Climate Change Interagency Council
- **4. Establish the North Carolina Resilient Communities Program**

Build local capacity for vulnerability assessments, planning and project development, and implementation

Provide technical assistance for resilience planning, vulnerability assessments, and project/program identification and design

Supply funds to plan and implement resilience projects and programs



North Carolina

RESILIENT COASTAL COMMUNITIES PROGRAM

N.C. DIVISION OF COASTAL MANAGEMENT

The Nature Conservancy
North Carolina

NCORR
NORTH CAROLINA OFFICE OF RECOVERY AND RESILIENCY

Sea Grant
North Carolina

Program Objectives:

- Address barriers to coastal resilience at the local level
- Assist communities with risk & vulnerability assessments
- Help communities develop portfolio of well-planned and prioritized projects
- Advance priority projects to "shovel-ready" status
- Link communities to funding streams for project implementation.

NCORR
NORTH CAROLINA OFFICE OF RECOVERY AND RESILIENCY

Guiding Principles

- Increase local capacity and capability for resilience planning and implementation
- Incentivize a data and community-driven process
- Provide tools to support vulnerable populations
- Reduce costs to communities
- Meet communities *where they are*

NCORR
NORTH CAROLINA OFFICE OF RECOVERY AND RESILIENCY

N.C. DIVISION OF COASTAL MANAGEMENT

2021 Local Government Participants

(26 total)

Counties (8)

- Beaufort
- Bertie
- Craven
- Currituck
- Dare
- Hertford
- Hyde
- Pamlico

Municipalities (18)

- Aurora
- Beaufort
- Belhaven
- Cape Carteret
- Duck
- Hertford
- Leland
- Nags Head
- Navassa
- Pine Knoll Shores
- Sunset Beach
- Surf City, Topsail Beach, North Topsail Beach (joint)
- Swansboro
- Vandemere
- Washington
- Windsor

2021 Contractors

Dewberry

Kimley-Horn

Kleinfelder

Mid-East Commission

Moffatt & Nichol

Rummel, Klepper & Kahl

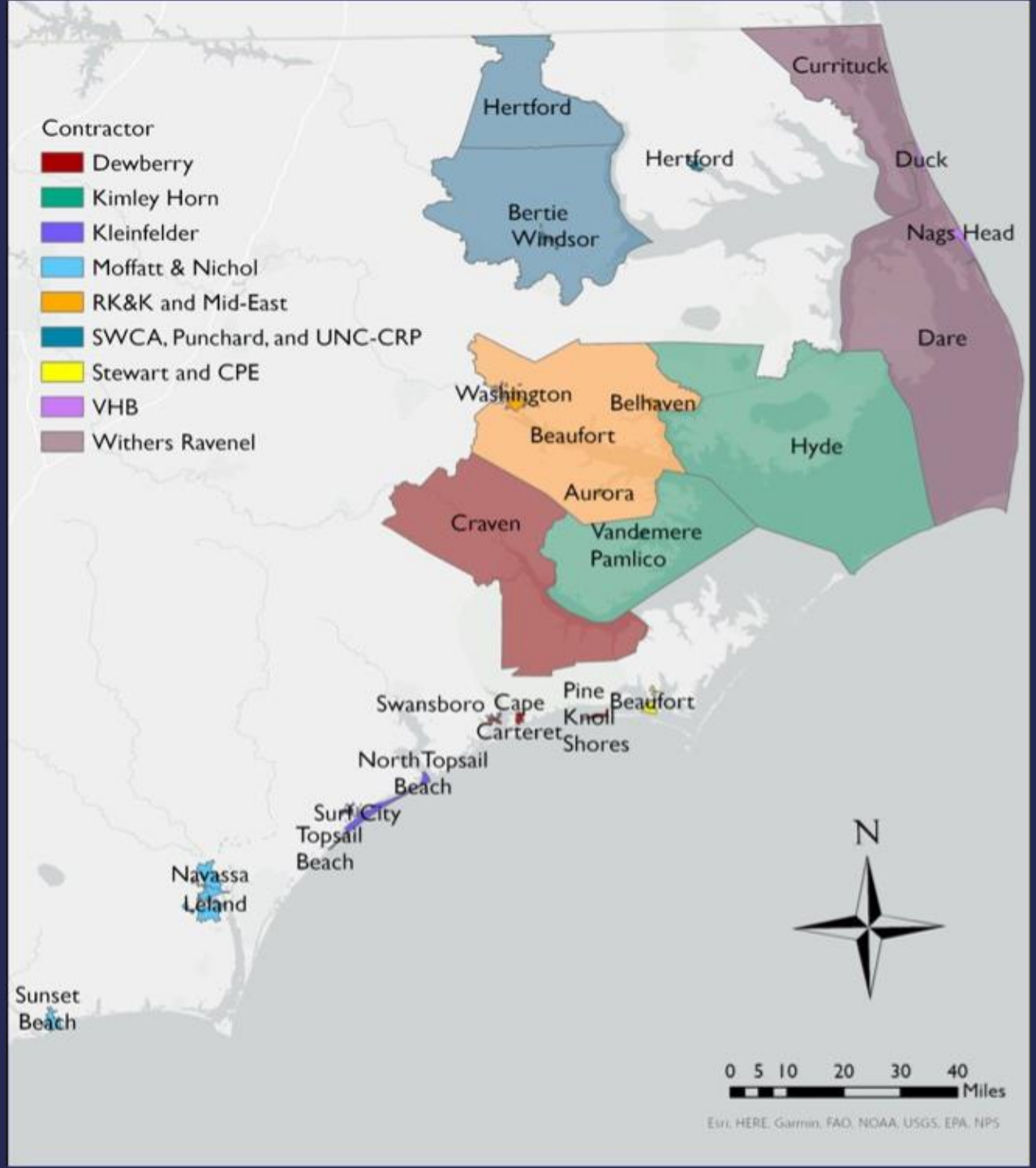
Stewart, Inc., with Coastal Protection Engineering

SWCA Environmental Consultants

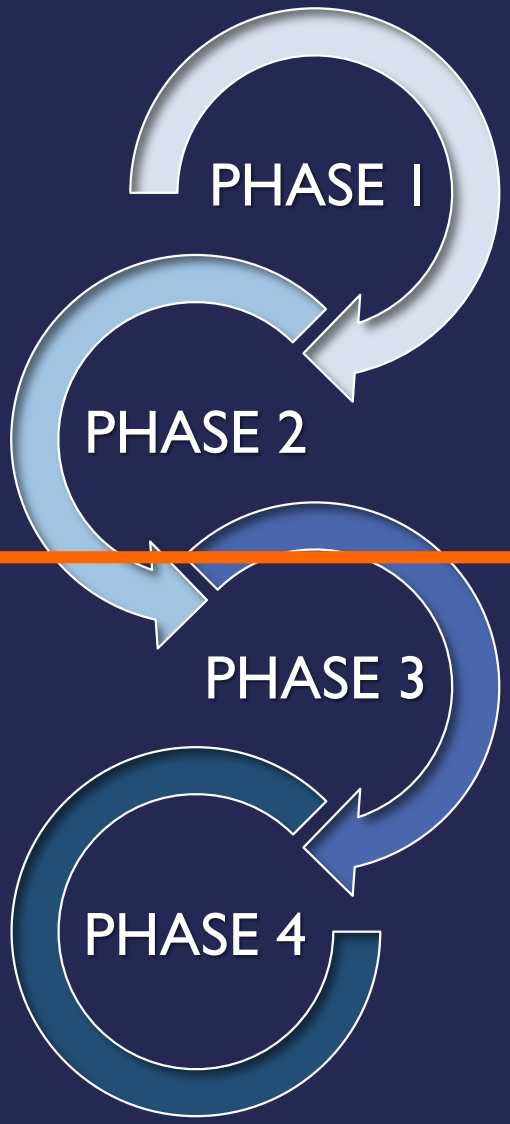
VHB

WithersRavenel

2021 Participants



Program Phases



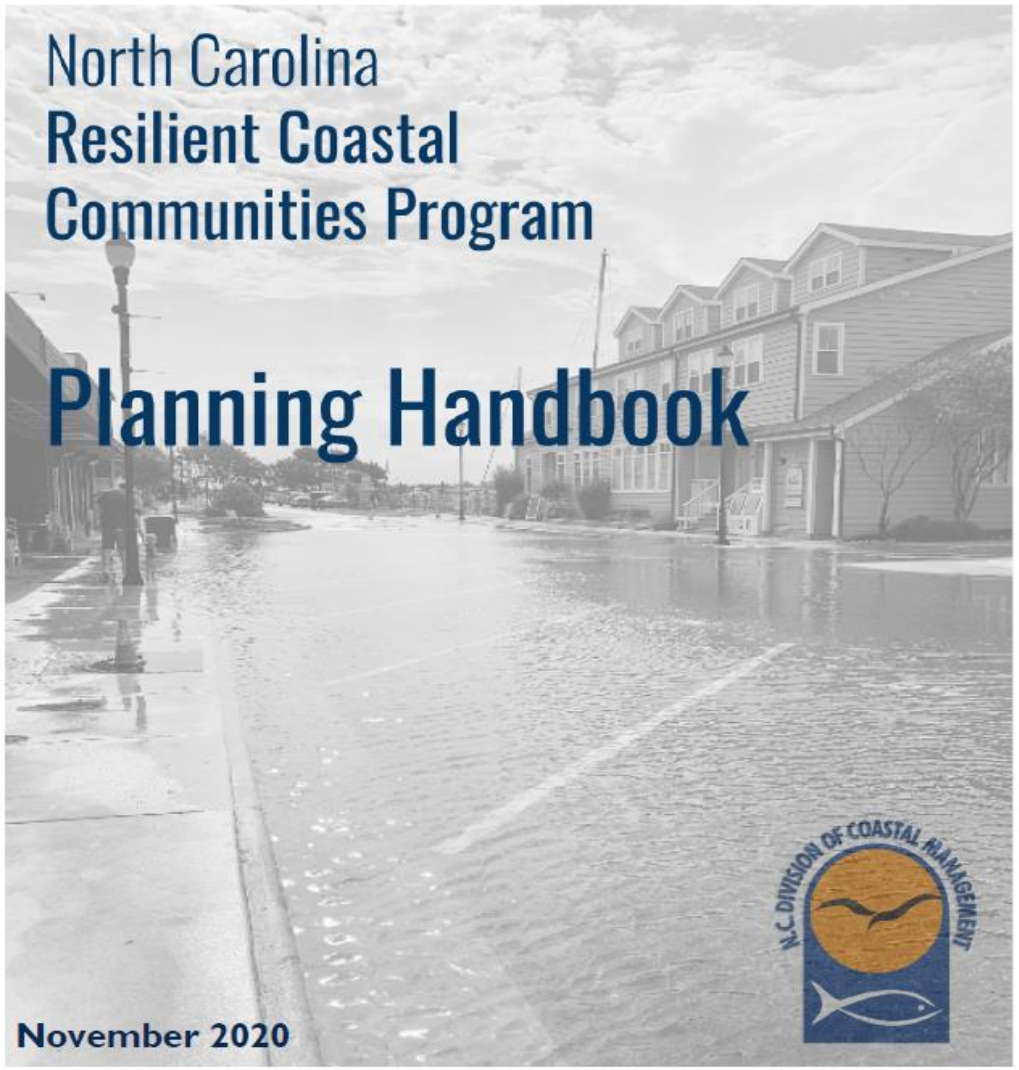
Community Engagement & Risk / Vulnerability Assessment

Planning, Project Selection, and Prioritization

Engineering & Design

Implementation

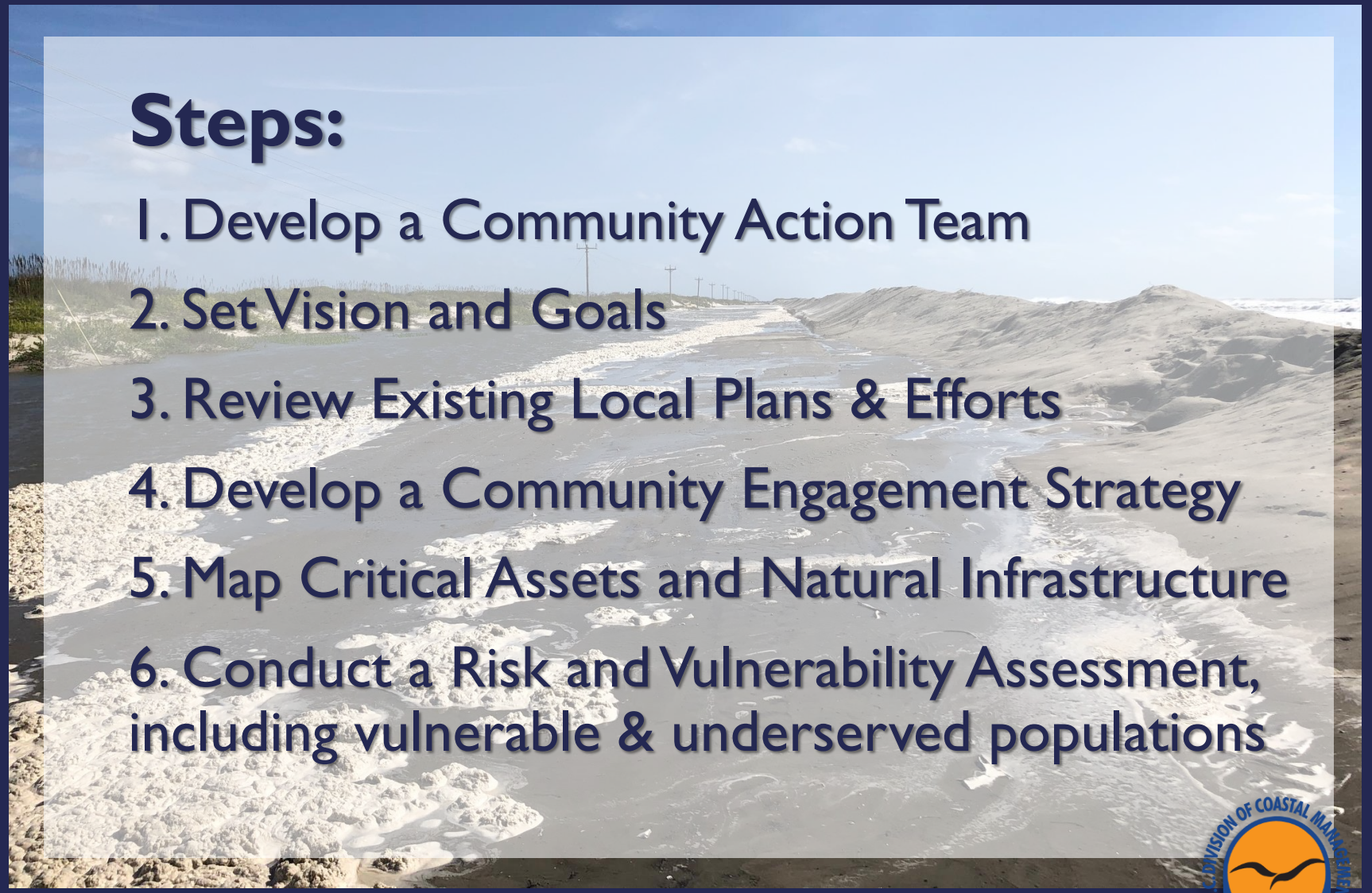
Program Planning Handbook



Find it here

PHASE I

Community Engagement & Risk / Vulnerability Assessment



Steps:

1. Develop a Community Action Team
2. Set Vision and Goals
3. Review Existing Local Plans & Efforts
4. Develop a Community Engagement Strategy
5. Map Critical Assets and Natural Infrastructure
6. Conduct a Risk and Vulnerability Assessment, including vulnerable & underserved populations

PHASE 2

Planning, Project Identification, & Prioritization

➢ Develop a Project Portfolio

Steps:

1. Identify a Suite of Potential Solutions, including Natural and Nature-Based
2. Consolidate and Prioritize Projects, and Characterize Feasibility
3. Consolidate Steps to Produce a *Resilience Strategy*

PHASES 1 & 2

Outputs & Products

- ✓ Resilience Strategy
  - ✓ Vision and Goals
  - ✓ Community Action Team Report
  - ✓ Stakeholder Engagement Strategy
  - ✓ Review of Existing Efforts
  - ✓ Risk and Vulnerability Assessment Report
  - ✓ Project Portfolio
- ✓ GIS Products

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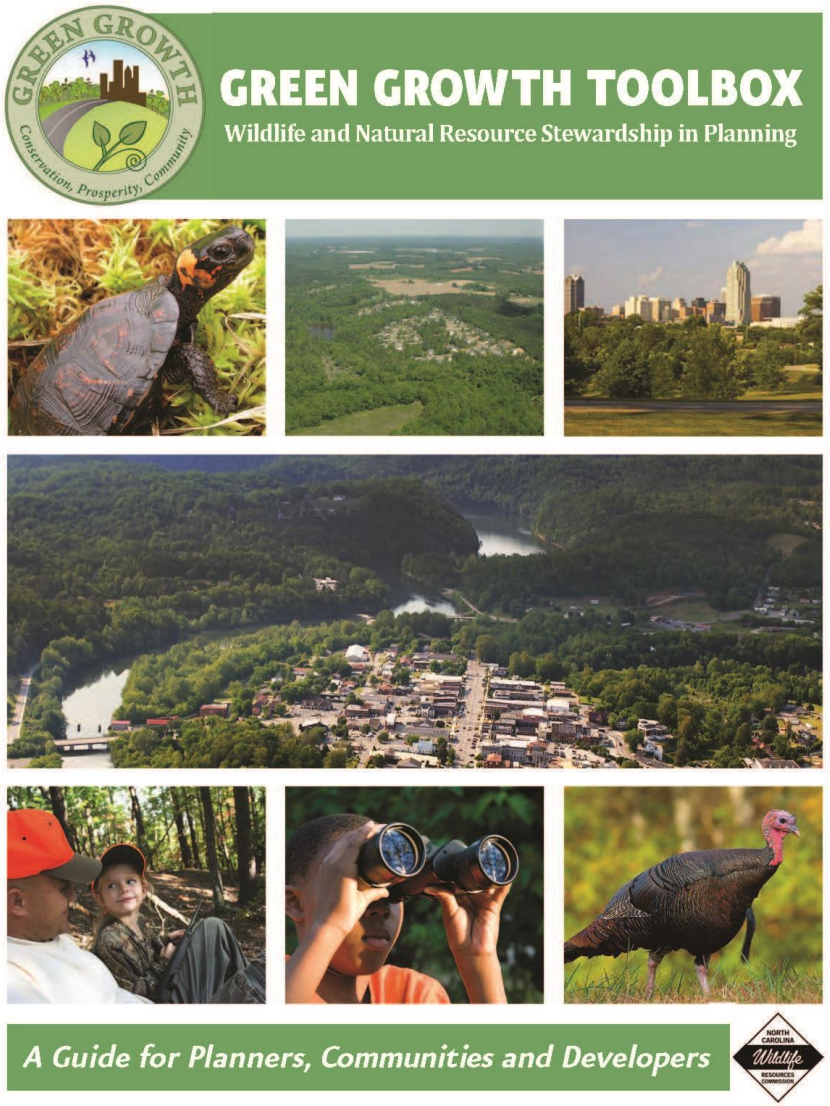
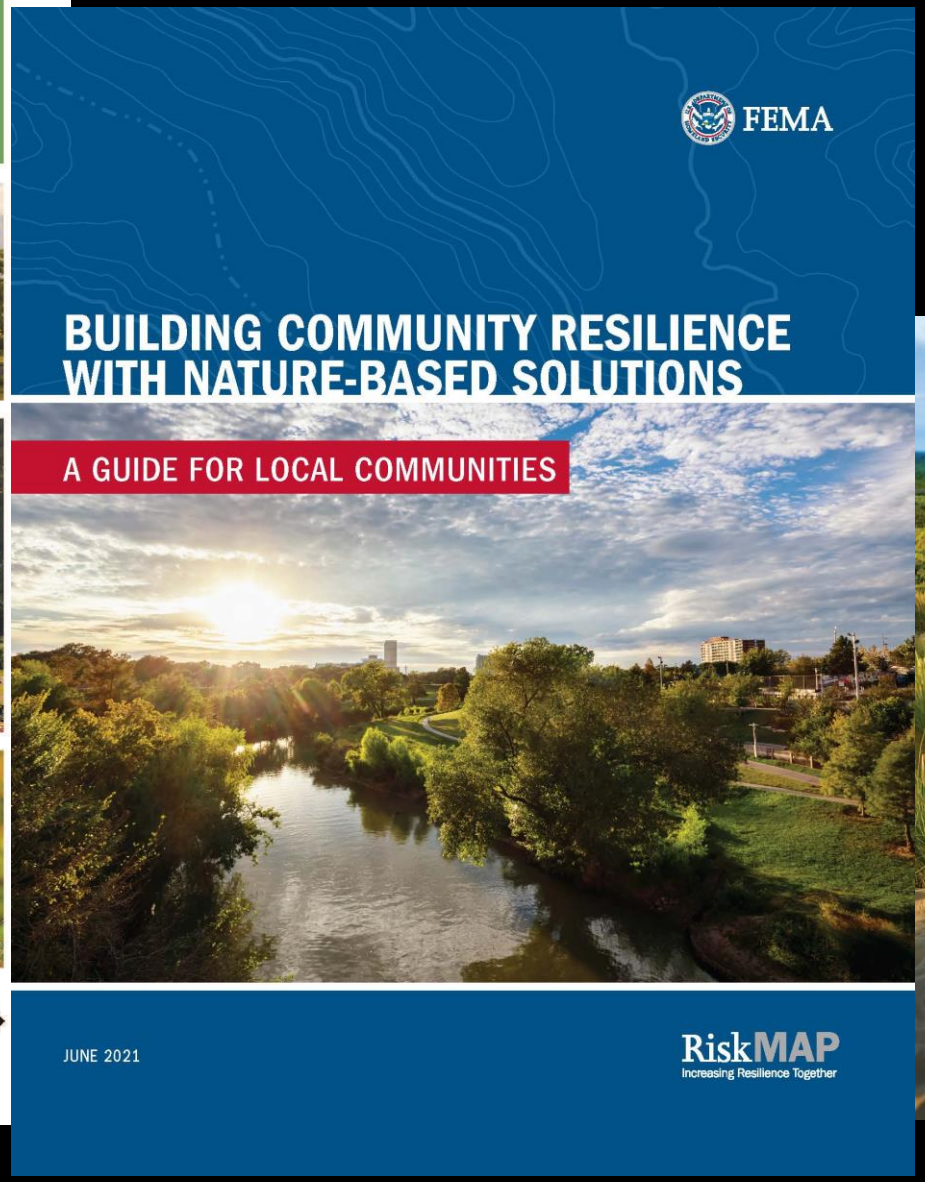
PHASES 3 & 4

Engineering, Design, & Implementation

No-match grants directly to local governments

- PHASE 3: Engineering and Design
- PHASE 4: Implementation


GREEN GROWTH
Conservation, Prosperity, Community
GREEN GROWTH TOOLBOX
Wildlife and Natural Resource Stewardship in Planning
A Guide for Planners, Communities and Developers
NORTH CAROLINA Wildlife RESOURCES COMMISSION


FEMA
BUILDING COMMUNITY RESILIENCE WITH NATURE-BASED SOLUTIONS
A GUIDE FOR LOCAL COMMUNITIES
JUNE 2021
RiskMAP
Increasing Resilience Together


OVERVIEW
NNBF
International Guidelines on Natural and Nature-Based Features for Flood Risk Management

Estimated Need

80 Municipalities + 12 Counties = 92 communities remaining

- Phase 1 & 2 Planning and Vulnerability Assessment: $30k per community = $2.8 million
- Phase 3 Engineering & Design: $50k per community = $4.6 million
- Phase 4 Implementation: $250,000 to $2 million per community = $23 - $184 million

Program Scope

20 Counties
98 Municipalities
118 Communities

32 applied in 2020
26 funded

A Few Numbers

Communities selected (2021):	26
Contractors hired (2021):	10 (incl. one COG)
Community Action Team members engaged:	200 +
NC General Assembly Funding (SL 2019-224):	$1,350,000
(SL 2021-180):	$1,150,000 +3 FTEs
NFWF ECRF Funding:	$1,060,000
NFWF NCRF Funding	$545,000
HUD (via NCORR) Funding (pending):	$500,000
NOAA/CZMA Funding:	$60,000
• Phase 1 & 2 Funding per community:	$30,000
• Total Phase 1 & 2 Funding:	$705,000
• Total Phase 3 Funding:	$1,200,000 +
• Total Phase 4 Funding (anticipated):	TBD *($300k?)*

DCM Principles & Guidelines for Resiliency Funding

ROY COOPER
Governor
ELIZABETH S. BISER
Secretary
BRAXTON DAVIS
Director

NORTH CAROLINA
Environmental Quality

Principles and Guidelines for Financial Support of Coastal Resiliency Projects

These principles and guidelines are intended to promote a consistent approach to project funding across organizations that provide grants or make direct investments in resilience projects in coastal North Carolina. Funding programs should consider incorporating these principles and project guidelines into Requests for Proposals and scoring criteria used in project selection. These principles should also guide programs in providing technical assistance, pre-application support, and other advice to local, private, and other participating entities, when applicable. Programs are also encouraged to reach out to the NC Department of Environmental Quality's Division of Coastal Management for early feedback on federal and state permitting requirements and any potential regulatory concerns.

Coastal resiliency projects should include methods that provide both community and ecosystem resilience benefits, with the overall goal of measurably decreasing a community's or region's vulnerability to social, economic, and environmental disruptions caused by acute and chronic natural hazards, particularly those exacerbated by climate trends and weather extremes. Public investments in coastal resiliency projects should provide the greatest possible environmental and public benefits. In many cases, public investments can promote long-term resilience by relying on natural features and processes to protect a community's built and natural environments. Natural habitats can help to mitigate the impacts of natural hazards on communities, including impacts amplified by climate change impacts such as sea-level rise, flooding, frequency and intensity of storms, and other environmental stressors.

Principles for Coastal Resilience Funding Programs

The highest prioritized projects should be those that:

A. *have been identified through a local or regional long-term resilience planning process that included a vulnerability assessment for current and future conditions, robust stakeholder engagement, prioritized projects, and long-term strategies for addressing coastal storms, flooding, sea level rise, and other environmental changes;*

B. *ensure equitable consideration of socially vulnerable and historically disadvantaged and underserved populations (e.g., low-income and minority) in investment decisions;*

C. *utilize natural or nature-based components as the preferred approach. Applicants should document why natural or nature-based strategies are/are not proposed in a project's design;*

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252.808.2808

D. *avoid adverse impacts to the environment or that exacerbate flood risk, and that meet or exceed land use and environmental regulations, permitting programs, best management practices and engineering and design standards; and*

E. *provide multiple benefits that increase the resiliency of natural ecosystems, residents, and the built environment, accounting for environmental conditions and cost-effectiveness throughout the project's life cycle.*

Project-Specific Guidelines for Natural and Nature-Based Strategies

1. Shoreline stabilization proposals should document erosion trends and threatened infrastructure or habitats. "Living shorelines" using biodegradable, natural, and inert materials and vegetation should be prioritized over gray (hard) approaches (bulkheads, revetments, breakwaters) where they can be successfully used given site conditions.
2. Where practical, flood control projects should prioritize nature-based strategies that protect, restore, or replicate the natural capacity of the landscape to store and treat flood waters.
3. Stormwater control projects should focus on reducing the volume and rate of runoff caused by land uses by providing for natural infiltration and other best management practices that restore, enhance, or replicate natural hydrology. Projects may include strategic land or easement acquisition to provide space for wetland restoration or creation, riparian buffer protection or restoration, and redirection of runoff to green space or natural infiltration areas; as well as the use of stormwater management measures (as outlined the in DEQ Stormwater Manual), such as disconnecting impervious surfaces, rain gardens, bioswales; vegetation, stormwater wetlands and permeable pavement.
4. Coastal wetland and oyster reef restoration projects should analyze habitat trade-offs that may result (e.g., conversion of existing shallow-bottom habitat), and document historical deterioration or loss of wetland or oyster habitats. Proposed oyster reef restoration projects should document early coordination with the NC Division of Marine Fisheries with respect to site selection and materials.
5. Beneficial use of dredged materials proposals should document early coordination with federal and state regulatory agencies, describe any seasonal restrictions that may be required to limit impacts to sensitive coastal and marine resources, and evaluate the compatibility and suitability of the dredged materials for the proposed use. The disposal of dredged materials on coastal wetlands will require more intensive regulatory reviews, and likely would require a Variance from the NC Coastal Resources Commission.
6. Land acquisition proposals should reference and align with existing coastal land conservation, local or regional resilience, and/or watershed management plans. Priority should be given to proposals that provide tangible long-term resilience benefits; for example, those that allow for upland migration of coastal wetlands over time, provide infiltration areas for stormwater or floodwaters, or provide natural protection of public or private infrastructure.
7. All projects proposed on (or impacting) federal, state, local, or private lands should include participation or written support of the relevant management or ownership entity.

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Timeline and Next Steps

- Phases 1 and 2 wrap up by April 2022
- Phase 3 application period early 2022
- Potential second round of Phases 1 and 2 in Spring/Summer 2022
- Phase 4 application period late 2022

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