CLIMATE RESILIENCE PROJECTS

for the

Kerr-Tar Region

December 2022

NC RURAL CENTER

Kerr-Tar Regional Council Of Governments

NCORR
NORTH CAROLINA OFFICE OF RECOVERY AND RESILIENCY

KLEINFELDER

RISE
Regions Innovating for Strong Economies and Environment

EQUAL HOUSING OPPORTUNITY

Land Acknowledgement

We wish to acknowledge and honor the Indigenous communities native to this region and recognize that this project portfolio covers communities and structures that are built on Indigenous homelands and resources. We recognize the Haliwa-Saponi and Sappony people as past, present, and future caretakers of this land. We also recognize the unnamed tribes that once oversaw these lands and have since relocated or been displaced.

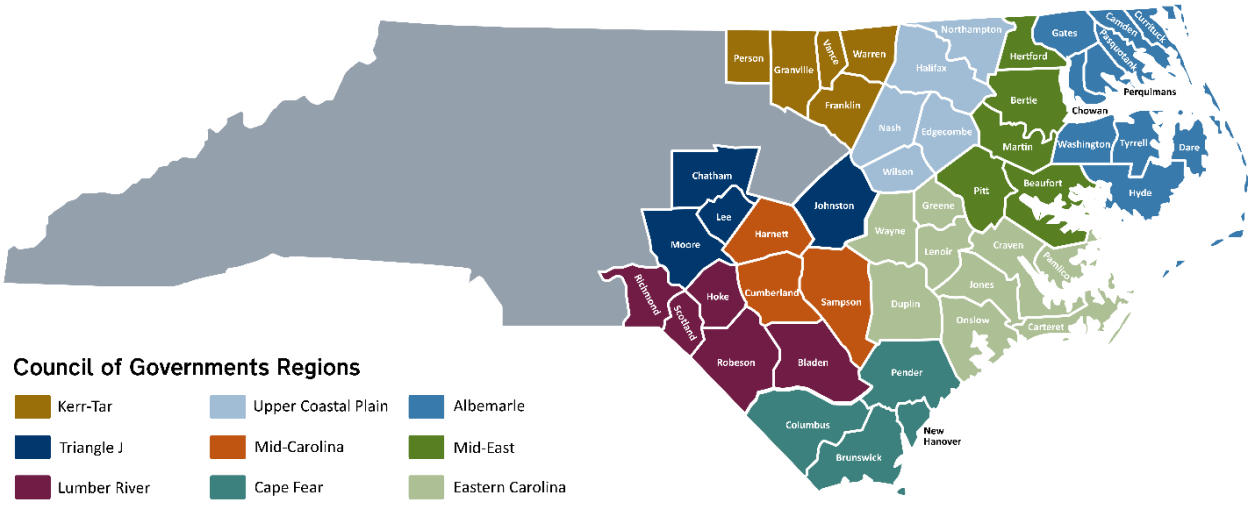
About NCORR

In the wake of Hurricane Florence in 2018, the State of North Carolina established the Office of Recovery and Resiliency (NCORR) to lead the state's efforts in rebuilding smarter and stronger. At that time, eastern North Carolina communities were still recovering from Hurricane Matthew, which had impacted the State in 2016. NCORR manages nearly a billion dollars in U.S. Department of Housing and Urban Development (HUD) funding in two grant types, Community Development Block Grant – Disaster Recovery (CDBG-DR) and Community Development Block Grant – Mitigation (CDBG-MIT). These are aimed at making North Carolina communities safer and more resilient from future storms. Additional funding is provided through the State Disaster Recovery Acts of 2017 and 2018, the Storm Recovery Act of 2019 and Economic Development Administration Disaster Supplemental Funds. NCORR manages programs statewide that include homeowner recovery, infrastructure, affordable housing, resilience, and strategic buyouts. To learn more about NCORR programs, visit ReBuild.NC.Gov. NCORR is a division of the Department of Public Safety.

About RISE

Developed in partnership with the North Carolina (NC) Rural Center, NCORR's Regions Innovating for Strong Economies and Environment (RISE) program supports resilience in North Carolina. There are nine regions participating in the RISE program, all are grouped by their designated Council of Government's (COG) coverage area. See Figure 1.

Figure 1. Participating Regions in the RISE Program



The RISE program aims to support resilience primarily in the storm-impacted regions of North Carolina by:

- Facilitating the Regional Resilience Portfolio Program, which provides coaching and technical assistance to regional partners in the eastern half of the state to build multi-county vulnerability assessments;
- Identifying priority actions to reduce risk and enhance resilience in their region;
- Developing paths to project implementation;
- Developing the North Carolina Resilient Communities Guide, a statewide resource that will provide tools, guidance, and opportunities for building community resilience, and
- Hosting the Homegrown Leaders program, a NC Rural Center leadership training workshop, which operates in the eastern half of the state, which emphasizes resilience as a tool for community economic development.

RISE is funded by the U.S. Economic Development Administration and the U.S. Department of Housing and Urban Development's Community Development Block Grant – Mitigation funds, with in-kind support from NCORR and the NC Rural Center. In addition, the Duke Energy Foundation committed $600,000 in grant funding to support the Regional Resilience Portfolio Program.

Kerr-Tar
Regional Council
Of Governments

Diane Cox
Executive Director

Member Governments

COUNTIES
Franklin
Granville
Person
Vance
Warren

MUNICIPALITIES
Bunn
Butner
Creedmoor
Franklinton
Henderson
Kittrell
Louisburg
Macon
Middleburg
Norlina
Oxford
Roxboro
Stem
Stovall
Warrenton
Youngsville

December 20, 2022

Dear Residents of the Kerr-Tar Region:

The Kerr-Tar region, consisting of Franklin, Granville, Person, Vance, and Warren Counties, is a dynamic region uniquely positioned to meet the needs of its residents, employees, and visitors. However, natural hazards continue to challenge and impact the State of North Carolina and thus, our region's social, environmental, economic, and infrastructure systems. This region has been working diligently for over a year through collective action and proactive planning efforts to reduce the impacts of future natural hazard occurrences.

The Kerr-Tar region has developed a *Regional Resilience Project Portfolio* in response to climate exacerbated natural hazards. The actions proposed in the portfolio address the major concerns identified in the Kerr-Tar region's Vulnerability Assessment. The Resilience Project Portfolio provides an in-depth project overview and implementation pathway for each proposed project. The projects identified in the portfolio represent needs identified through numerous meetings and input from residents, elected officials, Emergency Management personnel, and local leaders.

This process was achieved with the assistance of a collective partnership involving: The North Carolina Office of Recovery and Resiliency, The North Carolina Rural Center, Kleinfelder, and Kerr-Tar Regional Council of Governments.

As you read through the contents of the Kerr-Tar Portfolio of Projects, think about how, if implemented, these projects will improve the quality of life in our communities and better prepare our region for the immediate and long-term future. The Kerr-Tar Regional Council of Governments was proud to have served as a valued community partner throughout this process.

Sincerely,

Patricia S. Cox

Patricia S. Cox
Executive Director

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Introduction

Purpose of Project Portfolio

The Regional Resilience Portfolio Program's partners provide technical assistance to help communities collectively reduce risk from climate hazards (also referred to as natural hazards) and increase resilience across the region. The two main deliverables for each region participating in the Program include:

- A Vulnerability Assessment that can be a standalone document but is also appropriate for integration into regional and local plans, grant applications, public presentations, educational opportunities, and other planning tools. The Vulnerability Assessment documents the findings from climatological information, reports, and statistical data for the targeted communities to determine potential risks due to climate change; and,
- A Project Portfolio of five to ten projects identified through community input and expert consultation. Utilizing the information obtained from the Vulnerability Assessment, the Project Portfolio is a separate document that outlines funding opportunities and pathways to project implementation.

The Project Portfolio (Portfolio) was developed by the Kerr-Tar region's stakeholder group, public input, and technical expertise. The Portfolio is a comprehensive report that provides a description of each project and the foundational steps for implementation. The Portfolio includes information about potential funding sources, cost estimates, partnership collaborations, and "project champions" who can manage the project through implementation and completion.

Portfolio Development Process

The Kerr-Tar region's Portfolio aims to advance climate resiliency planning work in the region, comprised of Franklin, Granville, Person, Vance, and Warren counties. The RISE project team in the Kerr-Tar region includes staff from NCORR, the NC Rural Center, and the Kerr-Tar Regional Council of Governments (COG). Facilitators John Parker and Chalis Henderson supported community engagement and discussion at meetings, and the Kleinfelder team (Kleinfelder) served as the technical consultants. The stakeholder partnership for the Kerr-Tar region, including local leaders from inside and outside of government, provided regular input and guidance on projects.

The Portfolio is a compilation of projects that provide regional benefits to address the impacts of climate change. These projects respond to critical issues highlighted in the recently conducted 2022 Vulnerability Assessment and reflect local priorities identified during the planning process. The number of projects in the Portfolio is limited to allow for greater depth in scoping the project and identifying pathways to implementation, including funding sources. Additional projects considered for the Portfolio during the planning process are listed in **Appendix A**.

The project team worked with stakeholders to establish a list of broad project ideas that later evolved into the final Portfolio. The project team collected feedback through multiple stakeholder meetings, surveys, and two Open House sessions held on September 20, 2022. One was held at the Kerr-Tar COG office in Henderson, NC and the other at Vance-Granville Community College in Louisburg, NC. As the technical consultants, Kleinfelder recommended potential projects based on data analysis, subject matter expertise, and findings from the Vulnerability Assessment. Kleinfelder also identified climate-related projects listed in Hazard Mitigation Plans (HMP) and Hurricane Matthew Resilient Redevelopment Plans for inclusion in the Portfolio.

Once the working list of projects (15 in total) was approved by stakeholders, a project Prioritization Tool, also known as the 'Resilience Scorecard,' was used to rank projects in an unbiased, objective, and consistent fashion. The Resilience Scorecard ranked projects across three categories—Effectiveness, Implementation, and Benefits:

- The Effectiveness category considers the project's ability to withstand shocks and stressors, its ability to provide long-term benefits, and its ability to be replicated or expanded.
- The Implementation category considers the feasibility of the project's implementation, alignment with other planning initiatives, and potential obstacles.
- The Benefits category assesses the project's ability to provide overall benefits to the region including quality of life for residents, environmental quality and protection, and economic growth.

After evaluating all potential projects via the Resilience Scorecard, collecting additional stakeholder and State feedback, the Portfolio was finalized to five projects. Table 1 provides a summary of each project. Detailed descriptions of each project will be discussed in later sections.

The 14-day public comment period of the draft Portfolio opened November 2022 and the final Portfolio is expected to be released by spring 2023.

Table 1. Summary of Portfolio Projects

Prioritized Projects	Major Themes	Project Type
Project A – Building Inventory and Sustainable Business Opportunities	Sustainable Materials, Building Efficiency, Economic Development and Opportunity	Inventory and Materials
Project B – Dam Safety Plan	Public Safety, Emergency Management, Hazard Mitigation	Field Testing and Plan
Project C – Emergency Shelters and Facilities Needs Assessment	Public Safety, Emergency Management, Disaster Planning, Basic Needs, Extreme Weather	Assessment
Project D – Well Water Assessment in Environmental Justice Communities	Environmental Justice, Basic Needs (Drinking Water), Equity	Assessment
Project E – Environmentally-Friendly Farming Practices to Improve Soil Health	Adaptation, Food Security and Access, Agriculture, Environmental Sustainability	Capacity-Building and Research Study

Summary of Vulnerability Assessment

Over the next 30 years, the Kerr-Tar region must adapt to changing climate conditions due to projections of increased severe weather events, precipitation volumes, and flooding; and conversely a transition to a more arid climate resulting in increased drought conditions and wildfires.[1] Although the scientific projections are less certain for other hazards facing the region, such as high winds and ice storms, residents should expect increases in the intensity and frequency of extreme weather events due to climate change. Therefore, proactive measures to address climate change are crucial because inaction may lead to serious consequences threatening the livelihood of people, communities, buildings, and the environment.

To address these concerns, the Kerr-Tar region participated in the Regions Innovating for Strong Economies and Environment (RISE) program administered by NCORR. The RISE program helps advance resiliency efforts in North Carolina by supporting multi-county vulnerability assessments and regional solutions that reduce risk from climate change and natural hazards. The program is a collaboration between NCORR, the NC Rural Center, the Kerr-Tar COG, and Kleinfelder. This collaboration facilitated the development of a stakeholder partnership that had representation from Franklin, Granville, Person, Vance, and Warren counties. From January 2022 through September 2022, the stakeholder partnership group met six times with conversations focused on developing a regional approach with priority actions to reduce risk and enhance resiliency.

The Kerr-Tar Region

The Kerr-Tar region is characterized by its plentiful natural resources and small-town charm with strong community bonds. Land uses range from rural residential, agricultural, lakeside housing, recreational areas, forestland, and urban/suburban development in and around the larger towns. Several parts of the region, especially those closer to the Raleigh-Durham area, experience population growth due to new economic opportunities, in-migration from adjacent counties, and residential development.[2]

[1] Kunkel, Kenneth E.; Easterling, David E.; Ballinger, Andrew; Bililign, Solomon; Champion, Sarah M.; Corbett, D. Reide; Dello, Kathie D.; Dissen, Jenny; Lackmann, Gary M.; Luettich Jr., Richard A.; Perry, L. Baker; Robinson, Walter A.; Stevens, Laura E.; Stewart, Brooke C.; Terando, Adam J. (2020). North Carolina Climate Science Report. North Carolina Institute for Climate Studies.

[2] Franklin Next, Franklin County Comprehensive Plan 2020

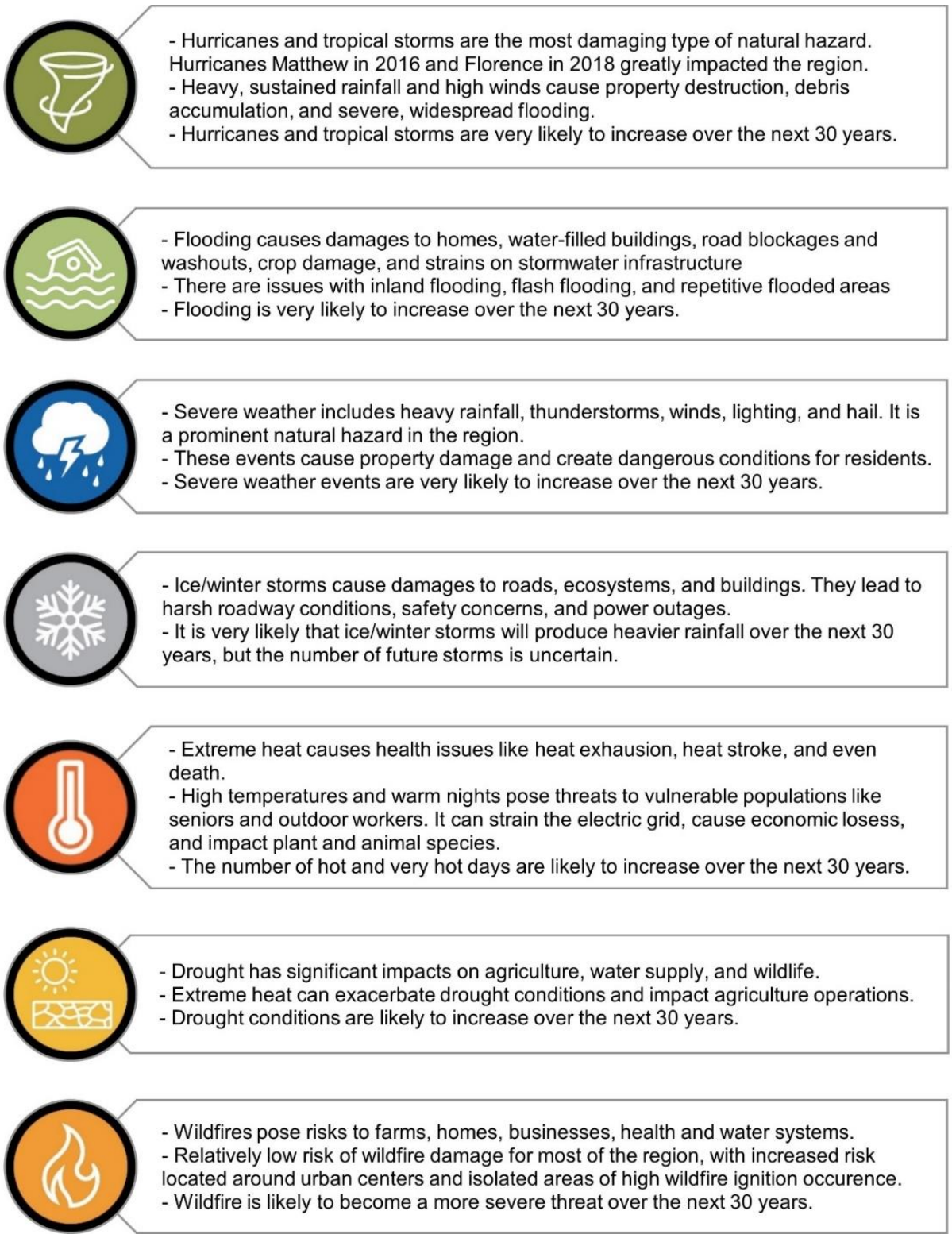
Non-climate vulnerabilities of the region include rapid population growth-related issues (i.e., water supply resources and water quality), slow growth-related issues (i.e., stagnant economic activity and employment), aging or inadequate infrastructure, vulnerable populations, and the local governments limited financial resources. Climate change is likely to aggravate these regional challenges. Through participation in the RISE program, the region will drive objectives to create a more resilient region that can withstand the impacts of climate hazards, preserve its character, and address its challenges.

Summary of Findings

Based on research from scientific reports, regional planning documents, and local knowledge obtained from the stakeholder partnership group, the most prominent, high-impact climate hazards identified in the Kerr-Tar region today are severe weather (specifically heavy rainfall and winds), hurricanes, and ice/winter storms. Other high-risk hazards include wildfire and flooding. Extreme heat and drought are lower-risk hazards seen in selected areas across the region. However more communities will experience heat and drought effects over the coming years. The Vulnerability Assessment for the Kerr-Tar region deeply explores each of these climate hazards, explains present-day and future risks for the region, and depicts their impacts upon the population, resources, buildings, and environment.[3] Summary points for each hazard of concern are shown in Figure 2 (as described in the Vulnerability Assessment**NCORR to insert link**.)

[3] The Vulnerability Assessment for the Kerr-Tar Region (2022) is located on the RISE website- Kerr-Tar Regional Resilience Portfolio | RISE | ReBuild NC. The final version's expected posting date is January 2023. **NCORR to insert correct link**.

Figure 2. Summary of Climate Hazards in the Kerr-Tar Region



In addition to describing the region's climate hazards and their present-day and future risks, the vulnerability assessment explains how these hazards impact major sectors including:

- Housing
- Critical Facilities[4]
- Regional Economy
- Historical and Cultural Resources
- Natural Environmental Systems[5]
- Public Health
- Social Vulnerability[6]

Summary points for each sector of concern are shown below.[7] All findings are located in the recently conducted Vulnerability Assessment **NCORR to insert link**for the region.

[4] Critical facilities consist of assets, systems, and networks, both physical and virtual, that impact security, economic security, public health, and safety.

[5] Natural environmental systems, or ecosystems, are defined as a community of organisms living in a particular environment and the physical elements in which they interact.

[6] Social Vulnerability refers to the resilience of communities (the ability to survive and thrive) when confronted by external stresses on human health, stresses such as natural or human-caused disasters, or disease outbreaks. Reducing social vulnerability can decrease both human suffering and economic loss. Socially Vulnerable Populations include those who have special needs, such as, but not limited to, people without vehicles, people with disabilities, older adults, and people with limited English proficiency. Learn more here

[7] Full details and references are located in the Vulnerability Assessment.

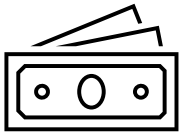
Housing

- The Kerr-Tar region's housing stock is particularly vulnerable to climate hazards due to its concentration of aging homes, mobile homes, inadequate insurance protection, and houses with inefficient heating and/or cooling systems. These traits can be detrimental to residents during extreme heat events or cold spells.
- Mobile and manufactured homes are less structurally capable of withstanding high wind events and hurricanes.
- 135 housing structures across the region lie in the 100-year or 500-year floodplain, mostly in Franklin County.
- Low risk of wildfire currently has little impact on homes but future increases in risk will impact densely developed neighborhoods.

Critical Facilities

- Critical facilities that are susceptible to severe weather and flooding cause business, school, and road closures, downed trees and powerlines, and structural damage
- Extreme heat causes road surfaces to soften, impacting transportation.
- Extreme heat overloads the electric power grid with excess demand for cooling
- Critical facilities lying within the 100-year floodplain include a dialysis center and two wastewater treatment plants

Regional Economy



- The primary industries in the Kerr-Tar region are manufacturing, healthcare and social services, agriculture, and retail trade. Disruptions to the supply chain, logistics, and transportation routes caused by hazards like flooding, hurricanes, and severe weather can affect these industries and the regional economy.
- Power outages and property damage heavily impact retail and farming activities.
- During disaster events, business owners experience financial and workforce losses, and may lack insurance coverage or fail to qualify for emergency loans to fully recover their operations.

Historical and Cultural Resources

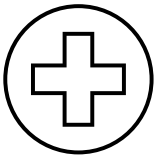
- Flooding poses the most significant climate risk to historical and cultural resources
- 23 sites on the National Register of Historic Places are located in the 100-year floodplain (of 147 sites total)[8]
- Lower risk hazards in the region (e.g., wildfire) currently have no impact on these assets

Natural Environmental Systems

- The region's vast amount of natural and working lands reduce disaster-related impacts to communities. They provide natural solutions for flood control, filtering pollutants, and air quality improvements.[9]
- Numerous animal and plant species are listed as endangered, threatened, or of special concern in the region.[10] They are vulnerable to climate impacts that can permanently change their habitat, such as higher temperatures.

[8] National Register of Historic Places (NRHP), https://www.ncdcr.gov/media/541/download
[9] Overview: Natural and Working Lands in North Carolina, Duke University
[10] Natural Heritage Program of North Carolina (ncnhp.org)

Public Health

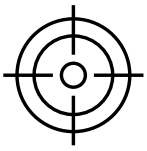


- Natural hazards, particularly hurricanes, flooding, and extreme heat, can have direct impacts on physical and mental health.
- A high percentage of residents in the Kerr-Tar region report poor physical and mental health. People in poor health are likely to suffer the impacts of climate change more intensely than others.
- The region has a high number of elderly residents who are very susceptible to heat-related illnesses.
- Climate change may worsen water quality, water supply, and land use. There are polluted water bodies, confined animal feeding operations, and contaminated waste sites within the region that, if disrupted by hazard events, may cause public health concerns.

Social Vulnerability

- Social vulnerabilities are the individual characteristics that make it harder for a person to withstand and quickly recover from natural hazards and other stresses.
- The region has moderate to high levels of social vulnerability. Vance county residents, especially those living in the central portions of the county, are the most vulnerable group in the region, consistently reporting the highest vulnerability scores for all social indicators.
- Individuals living in poverty (17% of the region's population) will face increased hardships during hazardous events.
- Storm preparedness, evacuation, and recovery is more difficult for persons with disabilities (13% of the population) and elderly persons (19% of the population).
- The presence of inhabited senior facilities and mobile home parks indicate areas with vulnerable populations.
- Planners can target their resiliency efforts in areas with high vulnerability levels where residents may require additional resources and support.

Hot Spots



- Census tract 603.02 southwest of Louisburg in Franklin County, tract 9707.03 southwest of Butner towards Falls Lake, tract 9707.02 northeast of Butner to I-85 and tract 9706.03 from I-85 east around Creedmoor in Granville County, and tracts 9605, 9607, and 9608 around Henderson in Vance County are climate hazard hot spots. These locations are within proximity to the 100-year floodplain, have a greater number of high heat days, have more impervious surface areas, and have a greater number of mobile homes and nursing homes compared to other areas in the region.

Next Steps

The Vulnerability Assessment's analysis of the potential impacts of climate change in the Kerr-Tar region is an essential step in prioritizing efforts to increase regional resilience. Using the Assessment, along with stakeholder input and consultation, the Kerr-Tar region will identify regional-scale projects that address climate change in a formal Project Portfolio. Each potential project will include a clear plan towards its implementation with potential funding sources and calculated regional benefits. The Project Portfolio is expected to be completed by January 2023.

Project A – Building Inventory and Sustainable Business Opportunities

Project Overview

This project would establish a regional inventory of buildings (businesses, offices, and industrial spaces) and identify opportunities to modify them with more sustainable elements. The inventory would consist of building attributes such as location, public access, age, opportunity for upgrades, construction materials, and physical site features. One component of the project is creation of materials, scorecards, and/or certification of sustainable buildings and business practices. Certain benchmarks will have to be met to achieve a "Highly Sustainable Business" rating. Benchmarks may include solar panel installation, green infrastructure elements on site, energy efficient lighting, heating, and cooling systems, bicycle racks to support non-vehicular travel, permeable pavement, participation in the Electric Cities program, shade trees, wind-resistant building materials, weatherization components, among others. All of these benchmarks address the potential impact of at least one climate hazard and help prepare the economic sector for future climatic changes.

Supporting new and existing businesses that incorporate sustainability into their everyday practices is a proven method to attract companies and talent into the region, whether it's in smaller flex spaces or anchor institutions in industrial parks. This will drive tax revenue and increase employment opportunities. In the Kerr-Tar region there is nothing in place related to best practices for sustainable buildings or local government tax incentives for "green" buildings. Developing a regional building inventory and supplemental materials is an important first step for the region to move towards a more sustainable future. Incorporating the region's anticipated growth and projected economic development activity into the project is also a critical element of ensuring long term resiliency.

This project may be considered Phase One of a multi-phase project. Future phases could include retrofitting buildings that were identified as high-priority in the inventory and, providing incentives or fee waivers to promote sustainable building usages (e.g., inspection fees waived if business owner meets certain criteria). It is likely that each phase will have different funding sources. Phase One will be a targeted effort that will lay the foundation for future phases.

Project A aligns with the goals set forth in the region's most recent 2020 Comprehensive Economic Development Strategy (CEDS) Plan. Two ongoing strategies related to Project A are: "Develop and implement an outreach campaign to attract targeted manufacturing businesses to

the region with an emphasis on the Triangle North Industrial Parks and the Person County Mega Site" and, "Develop marketing materials based on research and feedback." Implementing Project A is a positive step towards achieving the region's economic development goals.

Additional Elements of the Project may include:

- Pairing an inventory with a marketing and communications plan to help recruit developers and businesses (suggested by local economic development staff). Marketing materials may include information on LEED Certification.
- Create an opportunity to pull more individuals from across the region into this effort (suggested by local planner).
- Opportunities to integrate solar practices into businesses.
- Identify opportunities to use this project's deliverables into upcoming funding opportunities to help with "greening" existing buildings
- Discuss how business owners, developers, and others can implement green infrastructure techniques at site(s) across the region and the benefits of doing so.

Optional/potential elements of the Project may include the items below. Note that these options may also be considered for inclusion in future phases of the Project.

- Consider the process of siting businesses near suppliers, alternate electricity generation sources, parking lots with permeable surfaces, LEED standards for new buildings all in an effort to improve efficiencies in travel time, delivery times, and costs
- Consider holding a focus group to gather feedback around greening "shell buildings." Building shell retrofits are a proposed measure in the NC Deep Decarbonization Pathways Analysis as part of the Executive Order No. 246 that includes goals to reduce statewide greenhouse gas (GHG) emissions.
- Partner with the State Department of Commerce to contribute to a list of available spaces to the public and re-evaluate hub zones for economic benefits.

Vulnerabilities or Needs to be Addressed

This project addresses climate hazards including extreme heat, drought, flooding, heavy rainfall, high winds, and tornadoes. Buildings will need to be fortified with adaptive materials and practices to endure the impacts of climate change. For example, businesses with alternative energy sources are most likely to continue operations if the electric grid fails due to extreme temperatures.

Furthermore, buildings with green infrastructure elements on-site can mitigate floodwaters that can disrupt operations too. This project addresses vulnerabilities including energy efficiency, alternative energy sources, employment opportunities, economic growth, projected population growth and land use, and small businesses.

Potential Impact

This project would benefit the regional economy and provide greater employment opportunities. Businesses that have sustainable practices are in demand and are supported by the State, as expressed in the 2019 North Carolina Clean Energy Plan. Once businesses employ sustainable measures they can experience cost savings, improved efficiencies, and attracting and retaining talent. Solar panels and permeable pavements are examples that can have a deep impact on businesses. For example, North Carolina's Certified Sites Program provides a statewide inventory of industrial sites that have undergone a rigorous prequalification process to ensure they are "shovel ready" for immediate development. It could serve as a model for Project A. Additional information for the Certified Sites Program, a NC Department of Commerce program, can be found here.

Population(s) Served

This project would benefit existing business owners and their employees, unemployed persons, prospective businesses, municipalities, counties, and developers. Discussion of woman- and minority-owned businesses are to be woven into the project.

Relevant Context

State Priority - Sustainability and "greening" buildings is one of the State's priorities in becoming more energy efficient to reach its sustainability and decarbonization goals, as stated in its Clean Energy Plan.

State Priority - In addition, there are several State programs that support this type of project including 1) Golden LEAF Foundation's SITE Program, Economic Catalyst Program, Open Grants Program, 2) Duke Energy Foundation's Hometown Revitalization Grant Program, and 3) programs through the NC Department of Commerce.

State Priority - The State's Strategic Economic Development Plan's strategies support Project A's objectives.[11] Here is a link to the 2021 plan: First in Talent: Strategic Economic Development Plan for the State of North Carolina.

Regional Priority - Elements of this project have been identified in several Economic Development Plans in the region including, but not limited to, the following:

- The Kerr-Tar Regional Council of Governments (COG)'s 2017-2022 Comprehensive Economic Development Strategy (CEDS) Plan[12]
- "Building Economic Resilience in the Kerr-Tar Region" released in 2015

Regional Priority – The Golden LEAF Foundation has supported previous regionwide efforts, in the broader economic development space, with the Person County North Park Site and the Louisburg Commerce Park

Municipal Priority - Elements of this project have been identified in the Town of Louisburg's 2022 Economic Development Strategic Plan's three strategic goals: Expand the Economy by Growing Jobs and Tax Base; Continue Investments in Downtown to Expand its Businesses and Amenities; and, Use Placemaking, Activities and Spaces to Grow the Sense of Community and Attract Visitors and New Residents.[13]

Location and Service Area

This project will be conducted on a regionwide scale. Commercial and industrial buildings will be targeted using the Site Search and Location Data tool.[14] Furthermore, individuals from areas with rapid population growth and economic growth will be encouraged to provide further consultation (e.g., Louisburg, Roxboro, etc.).

[11] "Strategy 12: Support local efforts to expand physical infrastructure needed to attract residents, workers, entrepreneurs, and businesses; "Strategy 13: Foster the local leadership and expertise needed to build vibrant communities that attract talented businesses and workers;" and, "Strategy 14: Strategically identify investment and growth opportunities to maximize their regional reach."
[12] The "Kerr-Tar Regional Council of Governments Comprehensive Economic Development Strategy 2017-2022, Annual Update FFY 2020" was adopted by the Kerr-Tar Regional Council of Governments' Board of Directors in August 2017
[13] Access the 2022 Plan here: Economic Development - Town of Louisburg
[14] Site Search and Location Data tool, NC Department of Commerce

Project Examples from Other Communities

Rural Transformation in Mount Olive, NC

The Town of Mount Olive (Wayne County) received a $175,000 Rural Transformation grant through the NC Department of Commerce to support the engagement of a qualified planning and economic development firm. The firm will work with the town and its businesses and residents, to gather data through focus groups, surveys, and other tools to produce a downtown streetscape and a development master plan that can be implemented with future funding sources.[15] Elements of the Mount Olive project are similar to some Project A elements.

Business District Assessment in Fitchburg, MA

The City of Fitchburg was awarded $25,000 through the fiscal year (FY) 2023 Community One Stop for Growth program to hire a consultant to undertake a business district assessment and market analysis of the Downtown Business District to reduce commercial vacancies and attract new small business and economic activity. This project will build on the City's 2018 Economic Development Strategic Plan and ongoing work to leverage state and federal resources, local stakeholders, and regional employers.[16] Elements of the Fitchburg project are similar to some of Project A elements (i.e., assessment, analysis, attracting businesses).

Implementation Pathway

Steps to Implementation

Step 1 – Project A will begin with the formation of a project team consisting of individuals from organizations listed in the Resources Needed section, as well as the identified local champions. These champions could provide expertise and assistance that will guide the project. The project team would procure a technical consultant to perform the work, coordinate the team, and manage the steps described below to carry out the project.

Step 2 - The project team collects data of building attributes in each county using known sources beginning with county and municipal economic development staff, the NC Department of Commerce's North Carolina Zoom Prospector tool, and the state's building database, to initiate a regional inventory of buildings (in an electronic format). Examples of building attributes include

[15] Rual Transformation Grant Fund, Round 1 Awards, Project Descriptions
[16] FY23 Community One Stop for Growth Awards | Mass.gov

location, public access, age, opportunity for upgrades/redevelopment, construction materials, zoning designation, and physical site features.

Step 2A – The project team may review inspection records in each jurisdiction to provide additional details or characteristics on the current status of the structure that may include occupancy, viability, vacancy, abandoned (estate ownerships), uninhabitable/distressed property touted for removal, etc. The project team may collect and review building data from additional sources including, but not limited to, county property tax records, building permits, building plans, and other records.

Step 2B – Due to the potentially large inventory of properties, each county should be bisected into smaller areas to manage the inventory of identified properties.

Step 3 - Assess collected data and develop a visually appealing “building sustainability” scorecard for building/property owners in digital and/or print format. At minimum, the scorecard would contain benchmarks needed to achieve a “Highly Sustainable Business” rating including: alternate energy sources, sustainable materials, energy efficiency practices, green infrastructure, multi-modal transportation access, proximity to open space and critical resources, and potential for building retrofits that align with sustainability principles. Additional benchmarks may be included per the team’s recommendations.

Step 4 - The team may choose to select a few buildings to pilot the “building sustainability” scorecard. Should the building meet its criteria, it may be certified as a “Highly Sustainable Business.” Print materials, such as the scorecard and/or certification, may be created to signify sustainable buildings and business practices to attract companies and talent into the region.

Step 5 - Once data collection and building evaluations are finished, the project team will complete the regional inventory. They may consider identifying buildings that are the ‘best,’ or highly suitable for introducing sustainability elements into the deliverable. However, the project team shall create the regional inventory for various purposes, as they see fit.

Resources Needed

Recommended Implementers

Several persons are available to support the project: Monique Wilkins (Economic Development Coordinator, Town of Louisburg), Lauren Johnson (Director of Planning, Person County), McKinley Perkinson (Director, Henderson Vance EDC), Michelle Burgess (President, Henderson Chamber of Commerce), Michael Kelly (Kerr-Tar COG), and Grace Lawrence (NC Department of Commerce).

Additional expertise will be required to align with and access existing funding programs. For example, projects scoping may include input from staff at the North Carolina Wildlife Resources Commission (NC Wildlife).

Recommended Partners

- North Carolina Department of Commerce connects businesses to site locations, workforce and infrastructure needs, and local communities to grant and funding opportunities
- Henderson-Vance County Chamber of Commerce
- Greater Franklin County Chamber of Commerce
- Warren County Chamber of Commerce
- Granville County Chamber of Commerce
- Roxboro Area Chamber of Commerce
- Centre for Homeownership and Economic Development Corporation (CHOEDC)
- North Carolina Office of Historic Preservation
- Kerr-Tar Regional COG

Funding Opportunities

Project A is currently scoped as a 'Phase One' project of a multi-phase project. It is likely that different types of funding will be used for different phases so the total cost can be broken into smaller pieces for each phase. Phase One is essential in carrying out future phases, however Phase One's end-products can stand on their own as-is. Table 2 shows several funding opportunities. Additional funding opportunities are listed in **Appendix B**.

Table 2. Funding Opportunities for Project A

Fund	Source	Brief Description	Amount
Rural Business Development Grants- link here	USDA	Technical assistance and training for small rural businesses.	No max amount, smaller amounts are prioritized
Golden LEAF SITE Program- link here	Golden LEAF	Identify potential sites for economic development; due diligence; public infrastructure and clearing and rough grading	$15 million (total FY23)
Golden LEAF Open Grants Program- link here	Golden LEAF	Economic development projects	$200,000 or less
Rural Transformation Grants- link here	NC Department of Commerce	Improve economic vitality and overcome the unique challenges facing rural communities	Varies depending on grant category
Southeast Sustainable Communities Fund (SSCF)- link here	Southeast Sustainability Directors Network and the Kendeda Fund	Implement local sustainability solutions	$300,000, ~5 grants awarded each year

The project costs are variable depending on the level of detail in the inventory (to be determined by the project team during the data collection steps). The Duke Energy Foundation Accelerator Grant could sufficiently fund data collection efforts for the regional building inventory, the major component of the project. Potential costs, based on examples from other communities, are estimated at $25,000-$150,000 although more definitive estimations are needed.

Barriers to Implementation + How to Overcome Them

Potential challenges that may arise for the project team include how many buildings to collect data for, and their attributes, given the numerous buildings in the region. The project team will decide how to address these issues during the data collection steps and as the project evolves.

Project A could be integrated into municipalities' economic development plans and programs, which all acknowledge the importance of strengthening economic development activities in the region. For example, the project could be incorporated into the Kerr-Tar Regional COG's CEDS

plan, as some of its elements align with the plan's existing goals, should the recommended implementers decide to pursue coordination with the COG.

The inventory and supplemental materials are designed to have minimal operational and maintenance needs. Updates could occur every two years or at another time interval, depending on advice from local economic development staff on the project team.

Project B - Dam Safety Plan

Project Overview

The Kerr-Tar region lies within three river basins, the Tar-Pamlico, Neuse, and Roanoke, and lies at the headwaters of two major rivers: the Neuse and the Tar rivers.[17,18] The region's water resources serve as storage, recreation, and supply for millions of North Carolinians. Throughout the Kerr-Tar region, there are 227 dams located on public and private lands regulated and inspected by state and federal agencies.[19] Some of the structures are certified by the North Carolina Department of Environmental Quality (NC DEQ) under the Dam Safety Laws (Dam Safety Law of 1967. [1967, c. 1068, s. 1.] and G.S. 143-215.24) due to these dams having the potential to cause property damage, personal injury, and loss of reservoir storage.[20] Working in partnership with NC DEQ's Division of Energy, Mineral, and Land Resources (DEMLR) and local officials, the Kerr-Tar region will develop a plan that addresses dam safety and mitigation actions across the region. The project would include inspection of existing structures and their appurtenant features,[21] components of geotechnical and structural investigations to establish data for risk analysis, evaluation of the design life of a dam to ensure that it continues to perform effectively, and developing recommendations to address potential risks factors, repairs, and funding for repairs. One type of geotechnical and structural investigation needed, as expressed by a regional stakeholder, focuses on earth embankment areas where dam failures can originate.[22] This entails the testing of soils surrounding the dam using a piezometer, an instrument designed to measure water levels or pore water pressures in embankments, foundations, abutments, soil, rock, or concrete.[23] Piezometers provide essential quantitative information for understanding basic site conditions; determining the safety factor for filling; predicting slope stability; evaluating the effectiveness of the drainage plan; and, checking operations of

[17] North Carolina Department of Environmental Quality, Division of Water Resources, Neuse River Basin Water Resources Plan, July 2010, p. 1-2.
[18] North Carolina Department of Environmental Quality, Tar-Pamlico River Basinwide Water Resources Management Plan, 2014 Summary, p. 1.
[19] North Carolina Department of Environmental Quality, Dam Inventory, Update October 4, 2022; dam inventory may not be all inclusive due to § 143-215.25A. Exempt dams. See here; Number of dams per county: Franklin- 98, Granville- 55, Person- 34, Vance - 33, Warren-7.
[20] NC DEQ, Division of Energy, Mineral, and Land Resources (DEMLR).
[21] Compliance with the requirements of 15A NCAC 02K and related requirements will be ensured
[22] Dam Failures and Incidents | Association of State Dam Safety
[23] Piezometers | USSD | United States Society on Dams

containment systems.[24] Piezometers help to calculate soil and rock performance, which is critical in ensuring dam safety.

Dams will be selected for inclusion in Project B based on classification level, high-risk potential, and/or location. It is critical that Project B is tailored to meet the needs of the region and complement existing state and federal programs. As an example, FEMA provides grants to states through the National Dam Safety Program (NDSP) State Assistance Grant Program for financial assistance to strengthen dam safety programs.[25] This project could likely be Phase One of a multi-phase project. Future phases may include hydrologic analyses, land use studies, water quality components, and outreach programs. The proposed Dam Safety Plan project may support officials in:

- Updating Emergency Action Plans (EAP) for all high- and intermediate-hazard dams in the region. EAPs require annual updates and submittals.[26]
- Identifying properties for potential acquisition in inundation areas below dams
- Implementing warning systems to alert downstream areas of potential dam failure
- Identifying funding sources (FEMA High Hazard Dam Repair Program, USDA Natural Resources Conservation Service (NRCS) Watershed programs, etc.) for safety and mitigation efforts

Vulnerabilities or Needs to be Addressed

This project addresses climate hazards including flooding, heavy rainfall, and other severe weather. This project addresses vulnerabilities including aging and undersized infrastructure, water quality, public safety, and information gaps such as lapsed records, misclassified dams, and inspection statuses.

Potential Impact

This project is a first step in preventing loss of life and property due to dam failures. Table 3 shows the impacts of dam disruptions in quantitative terms. Developing a regionwide plan and

[24] What Are Piezometers?- Types, Functions, And Working | Engineering Choice
[25] Grant Assistance to States | FEMA.gov
[26] The Coal Ash Management Act of 2014 (Session Law 2014-122) requires that all owners of High and Intermediate hazard dams in North Carolina submit a proposed Emergency Action Plan. Required elements of an EAP can be found here, revised September 2022

conducting testing at selected dams provides a baseline for eventually assessing the conditions of all dams in the region. It will also support emergency action planning efforts for the area.

Table 3. North Carolina Dam Hazard Classifications

Hazard Classification	Description	Quantitative Guidelines
Low	Interruption of road service, low volume roads	Less than 25 vehicles per day
	Economic damage	Less than $30,000
Intermediate	Damage to highways, Interruption of service	25 to less than 250 vehicles per day
	Economic damage	$30,000 to less than $200,000
High	Loss of human life*	Probable loss of 1 or more human lives
	Economic damage	More than $200,000
	*Probable loss of human life due to breached roadway or bridge on or below the dam.	250 or more vehicles per day

Source: NC DEQ, Division of Energy, Mineral, and Land Resources

Population(s) Served

Depending on which dams are selected and their precise location, the project directly supports individuals living downstream of them, who would be most impacted by a failure or breach. Especially individuals from socially vulnerable groups, such as young children, elderly, and disabled, where it is harder for that person to withstand and quickly recover from any hazard event.

Relevant Context

Regional Priority - Dam safety measures are listed as recommended actions in the Tar River Regional HMP for Franklin, Granville, and Vance counties and aligns with several hazard mitigation projects in it. The HMP identifies priority needs for additional funding to perform geotechnical investigations, property acquisition, EAPs, and other elements to improve dam safety programs across the region.[27]

State Priority - Ensuring dam safety is a priority of North Carolina. The NC Office of Dam Safety Program provides oversight of dams in the state and is charged with certifications and inspections.

[27] AECOM. (2021). *Tar River Regional Hazard Mitigation Plan*. Tar River HMP 2021

The program exists, in part, to reduce the risk of dam failure, and prevent property damage and personal injury.[28]

Federal Priority - FEMA's National Dam Safety Program (NDSP) is committed to protecting lives and property from the risks associated with dams and has several grant programs to ensure its objectives are carried out. Furthermore, the Federal government has several standards in place for dam site investigation, design, construction, operation and maintenance, and emergency preparedness where "it is hoped that they will also influence state dam safety agencies and public and private dam owners to be more safety conscious where programs are now weak."[29]

Location and Service Area

The project proposes that testing be conducted at at least one dam in each county. The NC Dam Safety Program maintains a Dam Inventory available on their website that would be utilized to determine priority locations, in addition to input from local officials. In the Kerr-Tar region's five counties, there are 227 dams listed in the inventory: 33 are classified as a High Hazard Potential, 21 are Intermediate Hazard Potential and 173 are Low Hazard Potential.

Project Example from Another Community

Culmback Dam Safety in Snohomish County, Washington

The Snohomish County Public Utility District (PUD) is a publicly owned utility in the Pacific Northwest that has instated independent obligations for dam safety and security, all of which are overseen by the Federal Energy Regulatory Commission (FERC), of the Culmback Dam. One obligation directly relates to Project B: the Dam Safety Surveillance Monitoring Plan. The Plan details how the PUD will monitor and evaluate the performance of Culmback Dam and its structures, including frequency of readings and inspections. On a continuous basis, piezometers are used to monitor groundwater phreatic surface changes within the dam, and cameras monitor for intrusion and changing conditions. On a monthly basis, staff collect piezometer readings to confirm Supervisory Control and Data Acquisition (SCADA) values and non-continuously monitored points. The PUD has an EAP in place that identifies potential emergency conditions and inundation areas, specifies pre-planned actions for mitigating a problem, and issuing early

[28] North Carolina Department of Environmental Quality Office of Dam Safety
[29] Federal Guidelines for Dam Safety, April 2004. FEMA.

warning notifications.[30] Furthermore, the PUD works closely with city officials from communities located in the floodplain below Culmback Dam, including Sultan, Monroe, Snohomish, and Everett.

Implementation Pathway

Steps to Implementation

Step 1 – The project team will be composed of representatives from agencies including but not limited to the NC Office of Dam Safety, State and local engineers, emergency management officials, and the USDA NRCS County Districts. The project team would procure a technical consultant to perform the work, coordinate the team, and manage steps 2-6 described below to carry out the project. As this is a regionwide project, it is recommended that all Kerr-Tar counties are equally represented on the team and are provided with recommendations for further action upon the project's completion.

Step 2 – The project team will collect data on private dams in the region from public sources containing detailed inventories and previous actions undertaken. The NC Office of Dam Safety would be most familiar with the type of data available and could support with collection and dissemination efforts.

Step 3 – The project team would identify which dams may qualify for an updated EAP. The team may prioritize dams based on their classification (regardless of location in the region), spatial distribution across the region, or other factor(s) at the discretion of dam safety experts on the project team.

Step 4 – The project team would identify which dams need geotechnical investigations for a risk analysis and development of engineering solutions via an earth embankment analysis. Dams will be selected based on Step 3's prioritization. A geotechnical investigation would entail testing of soils surrounding the dam using a piezometer, a commonly used method that provides significant quantitative data.[31] This type of testing and analysis are essential for public safety as dam failures

[30] Culmback Dam Safety - Snohomish County PUD
[31] Piezometers: Types, Functions, & How it Works? - Encardio Rite

can often be attributed to factors such as insufficient soil stability, settlement, seepage, among others.[32]

Step 5 – The technical consultant is to identify a pilot location to prepare either an EAP or a geotechnical analysis of the dam. These findings, whether it is a geotechnical analysis or an EAP, will be included in the final Dam Safety Plan along with recommended next steps.

Step 6 – Based on the conclusions and actions performed for Steps 2-5, the technical consultant will provide a Dam Safety Plan for the Kerr-Tar region. The Plan will include a summary of findings of the pilot, determine priority actions, incorporate data collection efforts, and provide recommended next steps. Some recommended actions may include further soil/structural testing, EAP guidance, land acquisition, open space conservation, among others. Lastly, the Dam Safety Plan shall also identify funding sources to help steer and implement additional projects related to dam safety.

Resources Needed

Recommended Implementers

No implementers have been identified yet. However, John Boyer with the Town of Creedmoor could play an advisory role.

Recommended Partners

- NC DEQ's Division of Energy, Mineral, and Land Resources (the Office of Dam Safety [ODS])
- Local/county emergency management officials
- USDA NRCS County District Offices
- NC Rural Center
- United States Army Corps of Engineers
- FEMA
- NC Soil Conservation District Conservation Offices

[32] Dam Failures and Incidents | Association of State Dam Safety

Funding Opportunities

The primary source of funding would be the NC Dam Safety Program for projects for the rehabilitation of dams. The funding criteria states that the dam must be declared as a high hazard dam by Dam Safety and must have an EAP that is approved by Dam Safety or conforms to their requirements. In addition to the dam safety requirements, the community in which the dam is located must participate in and comply with all the requirements of the National Flood Insurance Program. Another likely source of funding is the Watershed Rehabilitation Program (REHAB) that funds rehabilitation of end-of-design life dams or dams that no longer meet federal or state safety criteria or performance standards.[33] Table 4 shows likely funding sources. Additional funding opportunities are listed in **Appendix B.**

Table 4. Funding Opportunities for Project B

Fund	Source	Brief Description	Amount
Hazard Mitigation Assistance Grants- link here	FEMA	For eligible mitigation measures that reduce disaster losses.	Various types of programs, various amounts
High Hazard Potential Dam (HHPD) program in North Carolina- Link here	NC DEQ; NC Dam Safety Program; FEMA	Technical, planning, design, and construction assistance for eligible rehabilitation activities	$22M nationwide (in FY22), no award ceiling or floor. Approximately half designated to planning and design and half for construction ready projects.
Watershed and Flood Prevention Operations (WFPO) Program- Link here	USDA's NRCS	Technical and financial assistance to help plan and implement authorized watershed projects for various purposes	Not listed
Watershed Rehabilitation Program (REHAB)- Link here	USDA's NRCS	Rehabilitate aging dams and/or build or augment existing water supplies based on current and future water supply demands.	Not listed

[33] Watershed Rehabilitation | Natural Resources Conservation Service, USDA

The potential cost range of the Dam Safety Plan project is estimated approximately at $75,000-$100,000 to perform the geotechnical analysis of the earth embankment (i.e., piezometer testing) at one identified dam or one EAP, as well as developing the full Plan.

Barriers to Implementation + How to Overcome Them

There are some barriers to implementing this project and ways to overcome them are described below:

- Identifying local technical leaders with dam safety experience and EAP knowledge. Additional outreach to local leaders for their participation may be necessary.
- Coordination with private dam owners is needed. Support from the state or from on-the-ground municipal or county staff to facilitate coordination with private dam owners is imperative.
- Leveraging the state's resources to work with local key individuals
- The US Army Corps of Engineers, NRCS, and other governmental agencies may oversee local dams in the Kerr-Tar region so coordination with these federal agencies on roles and responsibilities is essential to the success of the project.
- Additional information on the State and Federal role in dam safety measures is required. Working with the point of contact(s) between towns/counties and the state will be essential.

Project C - Emergency Shelters and Facilities Needs Assessment

Project Overview

A Needs Assessment of Emergency Shelters and Facilities in the region is an important issue for emergency management officials. In Granville and Vance counties, emergency managers indicate that the current hard copy filing system can be burdensome during times of emergencies and needs to be updated to a system that protects the information, and is accurate, duplicative, and accessible. While the State (and counties) monitor documented emergency shelters via electronic recordkeeping systems, undocumented/unofficial shelters are not included in those systems. During times of emergencies, schools, churches, and government facilities act as shelters. Of the documented shelters, many lack backup generators, transfer switches, heating and cooling capabilities, modern wiring, adequate capacity, ability to be used for special medical needs, equipment storage, and various supplies. A Needs Assessment provides the region with high-quality documentation to supplement grant applications for funding opportunities. The main elements that will be captured in a Needs Assessment of current emergency facilities at minimum include:

- All facilities used as emergency shelters, especially ones that are currently undocumented or are used on a more informal or temporary basis
- Facilities that require upgrades, improvements, and/or relocation to withstand current and future climate hazards
- The needs of each shelter including generator availability, capacity (for use when in county or out of county demands are required), and alternative power and heat sources, among others

Vulnerabilities or Needs to be Addressed

This project addresses climate hazards including extreme heat, flooding, hurricanes, severe weather (ice/winter storms, high winds, hail, thunderstorms), wildfire, and drought. This project addresses vulnerabilities including shelter availability, public safety, emergency response, modern recordkeeping, data collection, and pre-planning for hazard response.

Potential Impact

A Needs Assessment for Emergency Shelters and Facilities provides a resource that benefits the region during hazardous events and dangerous conditions. Based on Hurricane Matthew Resilient

Redevelopment Plans' analysis, it is expected that this effort could begin in less than a year and have a high return on investment. As a local benefit, emergency management personnel would overwhelmingly favor this endeavor, that ultimately benefits the entire region and areas beyond.

Population(s) Served

Critical facilities like emergency shelters protect residents from the impacts of climate hazards. They are essential in meeting basic needs for shelter and safety. This project would serve the following populations: all persons living in the region including socially vulnerable populations like elderly persons; persons living outside the region that seek refuge further inland; emergency management personnel; and first responders.

Relevant Context

County Priority – The 2017 Hurricane Matthew Resilient Redevelopment Plan (HMRRP) for Warren and Franklin counties identified several priority projects related to emergency shelters and critical facilities (Note: Granville, Person and Vance counties were not included in that planning effort). In Warren County for example, officials identified critical facilities, emergency shelters, and buildings that can be used as alternate shelters and that require backup generators in the event of a long-term power outage.[34] In Franklin County, officials identified several facilities including two County buildings in Louisburg adjacent to the Tar River, that require improvements to withstand climate hazards and require floodproofing measures.[35]

Regional Priority - Access to the NCSPARTA shelter data system is limited to emergency management officials within their respective county. Not being able to access or view shelter data of neighboring counties is needed for regionwide planning efforts.

Location and Service Area

Conducting a Needs Assessment on a regional scale is most appropriate for this project. There are few documented emergency shelters in the Kerr-Tar region but many more undocumented ones. Details of each documented shelter are listed in the internal NCSPARTA system available only to designated staff persons. Exact locations of all shelters will be confirmed by county

[34] Hurricane Matthew Resilient Redevelopment Plans | Resiliency | ReBuild NC
[35] Hurricane Matthew Resilient Redevelopment Plans | Resiliency | ReBuild NC

emergency management staff. The NC OneMap identifies 70 'Potential Emergency Shelters,' which may also be used as a resource when identifying shelters.[36]

Implementation Pathway

Steps to Implementation

Step 1 – Team formation: Project C's team will consist of individuals from emergency management-related agencies including, but not limited to, county emergency management departments, American Red Cross, Federal Emergency Management Agency (FEMA) Region 4, and NC Emergency Management (NCEM). As this project applies to the entire region, it is recommended that an equal distribution of county emergency management officials oversee the project. The project team would procure a technical consultant to ensure the scope of work is carried out.

Step 2 - Collect data about the documented (provided by agencies such as NCEM and the American Red Cross) and undocumented shelters in the region (provided by local emergency management officials across the Kerr-Tar Region). Undocumented shelters refer to shelters that are not listed in the NCSPARTA System but have been used as shelters in the past.

Step 3 – Conduct a field survey of each shelter facility, both documented and undocumented, within the region to validate building occupancy, classification, use, capacity, square footage, fixture count, power sources, electrical components, physical address, point of contact, and other characteristics as the project team sees fit.

Step 3A – The field survey may include collection of data about the physical site and its external features including parking, accessibility options, ADA accommodations, the capacity and resiliency of the existing road network serving the shelter, among others as determined by the project team.

Step 4 – Develop the Needs Assessment based on the findings of Steps 1 through 3. Key components will include shelter details, suggested recommendations and improvements, regionwide needs, information gaps, and next steps for action. The main goal of the Assessment

[36] Potential Emergency Shelters, NC OneMap

is to provide the region with a comprehensive report that aligns with funding/grant opportunities to improve sheltering across the Kerr-Tar region.

Resources Needed

Recommended Implementers

Several emergency management officials throughout the region have expressed interest in this project including Jason Reavis (Granville County Emergency Management Director), Nicholas Thorpe (Franklin County Emergency Management Director), Chris Tucker (Warren County Emergency Management Coordinator), Thom Schwalenberg (Person County Emergency Services Director), and others.

Recommended Partners

To successfully implement the identified project, relevant partners beyond the lead implementer(s) are necessary to carry out the project. Organizations such as American Red Cross, NCEM, and the FEMA Region 4 should be engaged for expertise related to shelters. NCEM staff will be knowledgeable about available data resources. The American Red Cross is knowledgeable of the standards and criteria for building requirements. Other partnering organizations that may provide assistance include the Community Emergency Response Team (CERT) and the NC Voluntary Organizations Active in Disaster (VOAD).

Funding Opportunities

One of the primary targets for funding this project is the Capacity Building Competitive Grant (CBCG) program, which was passed by North Carolina State Legislature in FY 2022. Grants shall be used to ensure local emergency management agencies (EMAs) are adequately equipped, trained, and prepared for all hazards and emergencies. CBCG grants assist with the development of additional local emergency management capacity and provides up to $400,000 to eligible county EMAs. Warren County recently received a Capacity Building Competitive Grant for $383,500 for improvements at John Graham gym, which will become the county's central emergency shelter.[37] This project may be suitable for the Duke Energy Foundation Accelerator Grant as the regional assessment could be completed in less than a year and may fall within its

[37] Warren County Emergency Management receives $383,500 grant | News | warrenrecord.com

cost range. Table 5 shows likely funding sources. Additional funding opportunities are shown in **Appendix B.**

Table 5. Funding Opportunities for Project C

Fund	Source	Brief Description	Amount
Capacity Building Competitive Grant (CBCG) - Link here	NC Department of Public Safety (DPS), North Carolina Emergency Management (NCEM)	Ensures county emergency management agencies (EMAs) are adequately equipped, trained, and prepared for all hazards and emergencies	Up to $400,000 of funding to eligible county EMAs.
State Homeland Security Program (SHSP) - link here	FEMA; NC DPS/ NCEM	For homeland security and emergency operations equipment, exercises, training, and planning	$5.28 million (FY21 state allocation)
Emergency Management Performance Grant (EMPG) - link here	FEMA; NC DPS/ NCEM	To sustain and enhance all-hazards emergency management capabilities	$9.4 million (FY21 state allocation)
NCEM Disaster Relief and Mitigation Grant (DRMG) - link here	NC DPS/ NCEM	Predevelopment assistance to provide small and underserved communities with technical assistance to identify and design shovel-ready projects related to disaster relief and flood mitigation	$15 million total

Given that no similar projects from other communities were identified, it is difficult to estimate the potential cost range. However, it is estimated that data collection efforts are unlikely to exceed $65,000.

Barriers to Implementation + How to Overcome Them

Accessing the NCSPARTA shelter data system may be necessary for this project, as well as coordination with NCEM and counties for their facilities databases. NCSPARTA system is only

available to county emergency management officials, but they are unable to view shelter data of neighboring counties. This type of project may encourage NCEM to share NCSPARTA data at a regional level, not on an individual county-basis. Additional barriers may include obtaining data from county GIS (Geographic Information Systems) departments, building inspections, building permits, architectural plans, field surveys, and other pertinent documents for existing buildings being utilized as shelters. Project team members, along with local partners, can support with data collection of public records.

It is recommended that emergency management officials for each county, preferably the same ones on the project team, meet annually to discuss planned actions, 'as needed' updates or amendments to the assessment. Although annual meetings and updates are recommended, emergency management officials may decide on another time interval as to when to perform necessary updates to the assessment. Emergency management officials across the region should continue their ongoing information-sharing efforts via their monthly Local Emergency Planning Committee (LEPC) meetings.

Project D – Well Water Assessment in Environmental Justice Communities

Project Overview

In September 2022, Warren County commemorated the 40-year anniversary of the birth of the environmental justice (EJ) movement in the United States.[38] With a renewed focus on the topic of environmental justice and public health in the Kerr-Tar region, this project would undertake an analysis of well water issues related to environmental justice in the region. The project focus will be on assessing private drinking water wells and water quality in EJ communities to develop a final report with findings and recommendations. Accessing current information about private drinking water wells is limited and it is understood that private drinking water wells are not routinely inspected for water quality by regulatory agencies or health departments. Instead, private well owners in North Carolina are responsible for testing their own water to ensure it is safe to use.[39] These information gaps have major impacts on populations who rely on the wells as the primary potable water source.

The final report could be used as supplemental material in grant applications for water infrastructure project funding. It could also be used for EJ-related funding programs, such as those offered through the EPA. Additional elements of the project could include:

- Using the project as an educational and capacity-building opportunity for non-profit organizations and community colleges
- Assessment of agricultural farmland runoff which can impact drinking water wells through the use of fertilizers, herbicides, and animal waste
- Assessment of algal blooms in the region's rivers and water bodies

Vulnerabilities or Needs to be Addressed

This project addresses climate hazards including drought, flooding, and severe weather. Flooding from severe storms and hurricanes can result in increased pollution and surface runoff, which can inundate wells and cause groundwater contamination. This project addresses vulnerabilities including water quality, agricultural farmland impacts, contaminated lands, algal blooms, aging infrastructure, and the use of fertilizer and herbicides.

[38] Warren County marks 40 years of environmental justice work | NC Health News
[39] NCDHHS, DPH: Private Well Water Testing FAQs

Potential Impact

More than 2.3 million people in North Carolina rely on private groundwater wells as their primary source of drinking water.[40] Many people in the Kerr-Tar region rely on them too.[41] Despite the large number of private wells in the state, fewer than 200,000 were tested for contaminants in the last decade (2000-2010).[42] As such, more testing and research is needed to ensure safe drinking water in the Kerr-Tar region.

Population(s) Served

The project supports historically underrepresented and marginalized populations in the Kerr-Tar region who rely on private drinking water wells.

Relevant Context

Public Health - While public water systems must meet the federal Safe Drinking Water Act and the National Primary Drinking Water Regulations' legal standards, there is no mandated oversight of private well water quality. As such homeowners are ultimately responsible for monitoring the quality of their private well water. Federal and state agencies recommend regular testing of wells.

State Legislation - The Bernard Allen Memorial Emergency Drinking Water Fund was created in 2006 by the NC General Assembly in G.S. 87-98 to improve the state's response to water supply well contamination and provide low-income households with a safe drinking water supply.[43] The Program continues to provide critical services for many qualifying residents through well testing, providing emergency bottled water and assisting in permanent waterline connections or point-of-entry treatment systems for households. 57 wells have been tested across the Kerr-Tar region (except for Granville county) through the program since 2016.

Historic Event / Environmental Movement – This project aligns with the 40-year anniversary of the EJ movement in Warren County and aims to show the arc of environmental and civic progression.

[40] Private Well Protection - UNC Institute for the Environment
[41] The exact number is unknown; county health officials may be able to provide an estimation
[42] NCDHHS, DPH: Private Wells- Facts and Figures, last modified November 2021
[43] Bernard Allen Emergency Drinking Water Fund, NCDEQ 2022

National Context – The recent Infrastructure Investment and Jobs Act (IIJA) legislation package includes over $60 billion in environmental justice priorities to drive investments in disadvantaged communities, which includes safe drinking water.

Location and Service Area

Well contamination is more likely to occur in areas with certain activities nearby including flooding; surface run-off that carries pollutants through the soil and into underground water supplies (such as rainwater that washes off of parking lots and roadways); agricultural activities; erosion of mineral deposits; decomposing waste; construction activities; toxic spills; leaking storage tanks and landfills; industrial discharges into surface waterways; and, underground injection of waste products.[44] Of these areas in the Kerr-Tar region, reside socially vulnerable populations who will be the target population of this project.

Project Examples from Other Communities

Eastern Shore Water Quality Improvement Project

In 2020, the Southeast Rural Community Assistance Project (SERCAP), a Virginia-based non-profit organization, received $120,000 through the EPA's Environmental Justice Collaborative Problem-Solving Cooperative Agreement Program (EJCPS) for water sampling and testing of private wells and septic systems.[45] The Eastern Shore requested funding because of its rural location, low-income status, aging housing stock, and shallow well systems which are prone to becoming contaminated from failed septic systems. The project targets unincorporated residential properties with contaminated well water, failing septic systems and homes in need of repair. SERCAP and its partners will assist in addressing these problems through education, environmental media testing, and financing programs that either SERCAP manages, or other agencies provide. After several online training sessions, SERCAP's technical assistance providers and community volunteers took water samples and conducted well assessments for the 34 participating households. The water samples were taken to a local lab for analysis. Learn more about the project here.

[44] NCDHHS, DPH: Private Well Water Testing FAQs, last modified November 2021
[45] 2020 EJCPS Project Summaries, EPA

'Well Empowered' in Union County, NC

Well Empowered is a pilot study to assess the presence of toxic metals in private wells used for drinking water in Union County, NC. Researchers from UNC are focusing on areas where high concentrations of arsenic have been found in private wells and with Black and Indigenous People of Color (BIPOC) and/or low-income populations. The pilot study provides well water tests to residents, which are then analyzed for presence of toxic metals. Residents are provided with the results and low-cost treatment options. The project is led by UNC Superfund Research Program (UNC SRP) with support from the local county health department and Clean Water for NC (CWFNC). Learn more about the 'Well Empowered' program here.

Implementation Pathway

Steps to Implementation

Step 1 – Assemble a project team from organizations listed as Recommended Partners. Key team members are from county health departments, public works departments, and UNC researchers. The project team would procure a technical consultant to help perform the work and to ensure the scope of work indicated below is performed.

Step 2 – Identify and Select a Study Area. The project team will identify potential study areas across the region and then determine a specific area(s) to perform the project. The project team may consider bisecting the county into quadrants and then scaling down to the census tract-level to initiate data collection. It is recommended that census tracts with high social vulnerability scores (i.e., containing high numbers of persons from vulnerable population groups) are prioritized. Based on the findings of the recently conducted Vulnerability Assessment for the Kerr-Tar region *NCORR to insert link*, the following census tracts scored highest in terms of social vulnerability and should be considered as part of this project. These areas include parts of Butner and Creedmoor (9707.03, 9707.02, 9706.03), Louisburg (603.02), and Henderson (9605, 9607, 9608).

Step 3 – Data collection of private drinking water wells using the recommended steps below:

a. Confirm the availability of private drinking water well data from the county health department (e.g., single and community drinking water wells).

b. If private drinking water well inventory and the associated locations are not available from the county health department, obtain utility service information from the county or local governments' engineering, planning, and/or utility departments.
c. Obtain county property tax records and identify designated residential parcels/lots (single family homes).
d. Overlay the public utility maps and contrast it to the county's residential parcel information using GIS data.
e. Identify residential parcels located outside of the public utility service area.

Step 4 –Testing and analysis of private drinking water wells. The project team will need to develop an action plan on procedural ways to perform the testing on the property. Legal counsel or property acquisition experts may need to be consulted on how to execute this step. A recommended approach may be disseminating notices to identified properties through certified mailings to inform of testing activities. After agreement by all parties to enter the premises, the technical consultant is to perform field reconnaissance to confirm the utility-residential parcel information and identify the existence of the private drinking water wells. If a private drinking well exists and can be tested, the technical consultant takes samples to determine contaminants that may exist in drinking water. A State-certified lab will analyze the samples.

Step 5 – Write an Assessment with the findings performed in Steps 2-4 and provide potential next steps. Further actions that may emerge include public utility improvements within EJ communities, additional testing, educational and outreach programs, or other actions. Lastly, the Assessment shall identify funding sources to help steer and implement additional projects related to safe drinking water in EJ communities.

Resources Needed

Recommended Implementers

None identified yet although there are several potential partnering agencies.

Recommended Partners

Coordination with the North Carolina Department of Health and Human Service (DHHS) Division of Public Health's Environmental Health Section, NC DEQ, and County health departments is needed to implement Project D. These entities can provide permitting information, private well

water sampling and testing resources, available documentation of private drinking water wells, and septage field information.[46] Septage fields are often associated with properties on private drinking water wells.[47]

Additional partners may include researchers from UNC Chapel Hill's Institute for the Environment's Center for Public Engagement with Science (CPES), UNC Superfund Research Program (UNC SRP), NCDEQ's Environmental Justice Program, Clean Water for North Carolina, North Carolina Environmental Justice Network (NCEJN), Granville Vance Public Health (GVPH), Warren County African American History Collective (WCAAHC), and the Warren County Environmental Action Team.

The EPA recommends consulting local expert(s) to find out the physical and chemical properties of the groundwater and the presence of any potential drinking water contaminants. Such experts, who may be potential project partners, include agricultural extension agents, nearby public water system officials, and professional geologists and civil engineers.[48]

Learn more about the Kerr-Tar region's County Health Departments below:

- Franklin County Environmental Health Services
- Granville Vance Public Health
- Person County Environmental Health Department's Well and Water Quality Program
- Warren County Environmental Health Division

Funding Opportunities

The recent IIJA legislation package includes over $60 billion in EJ priorities to drive investments in disadvantaged communities. One highlight is the Environmental and Climate Justice Block Grants, funded at $3 billion through several individual grant programs, that invest in community-led projects in disadvantaged communities to address disproportionate environmental and public health harms related to pollution and climate change. Table 6 shows likely funding sources. Additional funding opportunities are listed in **Appendix B.**

[46] Rules Governing the Permitting and Inspection of Private Drinking Water Wells, NC DHHS
[47] Well Siting & Potential Contaminants, CDC 2009
[48] Protect Your Home's Water | US EPA

Table 6. Funding Opportunities for Project D

Fund	Source	Brief Description	Amount
EJ Collaborative Problem-Solving Cooperative Agreement (EJCPS) Program	EPA	For community projects that address local environmental and/or public health issues	up to $200,000
Training and Technical Assistance to Improve Water Quality and Enable Small PWSs to Provide Safe Drinking Water grant - link here	EPA	Training and technical assistance for small public water systems (PWSs) and wastewater systems, communities served by onsite / decentralized wastewater systems, and private drinking water well owners.	$25.7 million total FY22; ranges $500K-$22 million
Environmental Justice Small Grants (EJSG) Program – link here	EPA	For solutions to local environmental and public health issues. Helps communities understand and address exposure to environmental harms and risks.	Up to $100K; typically, $30K
Community Development Block Grant (CDBG) funds- link here	US Dept of Commerce	To enhance the vitality of communities by providing decent housing and suitable living environments and expanding economic opportunities.	Varies

The potential costs of carrying out this project depend on the number of wells tested and analyzed along with the size/geography of the area to perform the work. The cost of testing alone can range from $25 to several hundred dollars.[49] Additional cost considerations include drafting the final report and developing materials. If the project is limited to one census tract, the approximate costs to perform Steps 1-5 may range approximately between $15,000 to $20,000.

Barriers to Implementation + How to Overcome Them

Access and entry to properties (and obtaining permission) to perform testing of private drinking water wells may be a likely challenge for Project D. If selected properties are used for rental purposes, the lessee would likely be unable to grant permission to perform necessary testing of that well(s). If barriers such as these occur, the team may consider imploring county health officials to coordinate with the technical consultant to communicate with the property owner/tenant

[49] Well Water Fact Sheet, NCDHHS

to perform the work. It will be up to the project team to determine the operational and maintenance needs of this project. Reliance on state officials from NCDEQ will be needed to make such decisions.

Project E – Environmentally-Friendly Farming Practices to Improve Soil Health

Project Overview

This project includes recruitment of a diverse set of farmers (minority and small-scale operators) to participate in a regenerative farming program aimed at increasing soil health and reducing utilization of fertilizers. One to three farmers per county will be selected to participate in the project. There will be a total of 10-15 participating farmers across the region. There will be an emphasis on methods that also address overcoming drought, flooding, increased heat risks and/or risks to agricultural and transient workers. The study builds upon an existing pilot project. At the start, funding will be used for soil testing, soil processing and sampling, and equipment. Positive outcomes include greater opportunities for advancement for smaller farms, contribution to the field of soil health and soil science, and reduced usage of fertilizers.

Vulnerabilities or Needs to be Addressed

Project E addresses climate hazards including extreme heat, drought, flooding, heavy rainfall, severe weather, and hurricanes. This project addresses vulnerabilities including poor soil health; reduction of runoff and fertilizer use in headwaters of watersheds, where increased rainfall is likely to contribute to impaired waters; and small farms and minority farmers that may have fewer resources than larger, non-minority farming operations. Smaller farming operations may not be as equipped as larger operations to withstand climate shocks leading to poor soil health and reduced yields.

Potential Impact

Potential impacts include better yields, greater economic stability for regional farmers and reduction in food insecurity across the project area. If soil health can be improved to increase crop yields while reducing fertilizer use, the project will improve small farmers' businesses and livelihoods. Project E can likely be replicated in other regions of North Carolina. There will be no cost to the farmers who participate in the study.

Population(s) Served

The project will support farm workers and transient workers who are an important component of North Carolina's agricultural economy. It will prioritize recruitment of minority farmers and small-

scale farms. Working Landscapes, the proposed project lead, currently has a directory of farming operations in the region that will aid this project.

Relevant Context

Agricultural Sector Priority – The main hypothesis is that by using the multispecies cover crop it can result in increased crop yields with less inputs. Understanding soil health in the region's agricultural areas is the first step in doing so, which is the main goal of Project E. Overall goals for regenerative agriculture include ecological benefits (e.g., improvements in soil health and fertility, reduced soil erosion and water pollution), personal and regional economic benefits (e.g., cost savings from reduced use of antibiotics and chemical fertilizers), community benefits (e.g. networks of growers who exchange information, learn from one another, and build community), and mental and physical health benefits (e.g., health of farmers, farmworkers, and downstream communities all benefit from reduced use of and exposure to harmful chemicals).[50]

Ongoing Work - Working Landscapes is currently undertaking a pilot study of four farms that began in early 2022. Project E seeks to expand this study in an effort to verify the findings in this area of regenerative agriculture.

Regional Priority - This project is consistent with the principles set forth by the Kerr-Tar COG's Regional Food Policy (adopted in 2020).[51] The priority of "Effectively managing waste streams and environmental impacts of the region's food system" includes the strategy of "Advancing farming practices that benefit our region's soils, climate, and environment."

Location and Service Area

The focus will be on one to three farmers per county across the region to participate in the project.

Project Examples from Other Communities

Financing Climate Smart Agriculture in Ohio's Miami Valley

In 2022 the 'one.two.five Benefit Corporation' received $2.9 million from the USDA NRCS's Regional Conservation Partnership Program (RCCP) for the 'Financing Climate Smart Agriculture

[50] Regenerative Agriculture 101 | NRDC
[51] Kerr-Tar Regional COG Food Policy Final (September 2020)

in Ohio's Miami Valley' project. It shares elements with Project E. The project summary states that, targeting an urban and rural network of BIPOC farmers as well as non-BIPOC farmers, the project will spur the adoption of NRCS-based conservation practices and systems designed to enhance soil quality and soil carbon storage. This project will advance the most pressing issues for climate smart agriculture, including soil carbon capture and retention by establishing a pay-for-performance compensation approach for farmers who adopt climate-smart agriculture practices and systems. The project area encompasses a diverse landscape of urban and rural and small and large farms and is home to over one million inhabitants, 5,000 farms and 8,000 producers spread across six counties. Learn more about the project here.

Cultivating Champions for Healthy Soil and Clean Water for Long Island Sound

American Farmland Trust received nearly $84,000 from the EPA to conduct five on-farm pilots of soil health practices, document the crop, economic and environmental results, and share information about the practices farmer-to-farmer in Suffolk County, New York. The project will catalyze the use of soil health practices among Suffolk County's 140 vegetable farms and reduce nitrogen from farms in the Long Island Sound drainage area. Learn more about the project here.

Promoting Adoption of Cover Crops in Southeastern Farming Systems in the Coastal Plain, Piedmont, and Blue Ridge Regions of North Carolina

In 2018 the NC Foundation for Soil and Water Conservation received $48,000 through the USDA's Sustainable Agriculture Research & Education (SARE) program to fulfill the following objectives: 1) Engage North Carolina producers in soil health benefits of multi-species cover crops, 2) Quantify short-term changes in soil chemical, physical, and biological properties as a result of using multi-species cover crops in various no-till and reduced till production systems across the three physiographic regions of North Carolina, 3) Refine best management practices for multi-species cover crops in production systems common to North Carolina and neighboring states in the region, and, 4) Promote soil health improvement from use of multi-species cover crops in North Carolina and the Southeast to increase agricultural sustainability. Research methods included conservation districts partnering with producers, demonstration plot requirements, and lab analysis. Learn more about the project here.

Implementation Pathway

Steps to Implementation

Step 1 – Form the project team consisting of individuals familiar with agricultural practices in the region, including Recommended Partner agencies. The team will be guided by the project's intended champion, Working Landscapes staff. This team will initially develop project materials to inform the public and potential participants with an overview of the project goals and objectives. Project materials will be in various forms such as project brochures and applications, and online tools such as public surveys or a project website.

Step 2 – The project team will identify a target audience to disseminate materials to and develop a communications strategy. A target audience may be formed through existing rural community networks within the project team, public portals such as listservs, records of agricultural operations, or other available data resources. Once the target audience has been identified, the project team will develop a plan for disseminating materials to solicit input and interest from potential project participants. When developing the communications strategy, the team should consider an approach that encourages participation among people from diverse backgrounds.

Step 3 – Once the team obtains feedback and interest from the public, they will select approximately 10-15 participants across the Kerr-Tar region. During the selection process the project team will ensure a diverse group of participants including farmers from minority and/or underserved groups, small and mid-scale farming operators, and/or farmers who may have experienced impacts of climate hazards to their land.

Step 4 – The project team will administer procedures of how to perform regenerative agricultural techniques (e.g., multispecies cover crops) to each plot of land (ideally 10-acre plots). At the end of the growing season, the team would gently clean up the land and spread cover crop seed across it. Over an 18-month timespan, the project team would monitor the land and perform periodic soil testing and analysis (by a qualified party) to measure changes in soil's chemical, physical, and biological properties as a result of using multispecies cover crops. It is recommended that four soil samples be taken for this project. The first soil test/analysis will be performed during the spreading of cover crop seeding and the final one, at the end of the project. The project team will decide the intervals in between.

Step 5 – For the project's duration, the project team may consider informing the public about regenerative farming practices by coordinating with 4-H, school field trips, higher education, and governmental agencies with educational and research opportunities.

Step 6 – At the conclusion of the 18-month testing and analysis period, the project team is to document findings of the soil characteristics for each project location into a final report. It is anticipated that the nutrient levels and soil characteristics will improve from use of multi-species cover crops.

Resources Needed

Recommended Implementers

Working Landscapes, an organization based in Warren County, NC, has been identified to champion this project. The organization's staff have the expertise, relationships, local presence, and demonstrated experience to carry this project forward.

Recommended Partners

Additional support, expertise, and resources for this Project may be provided by:

- Kerr-Tar COG
- Local 4H Programs
- Co-op Extension Services (e.g., NC Cooperative Extension)
- County Department of Agriculture programs
- District Fish and Wildlife offices
- Local Soil and Water Conservation District (SWCD) staff
- NC Department of Agriculture and Consumer Services Division of Soil and Water Conservation and Agronomics Division staff. The Department's Office for the Small and Minority Farm Program may help.
- North Carolina State University (NC State) and NC A&T State University's land-grant educational and research entities
- Staff from the Land Loss Prevention Project, based in Durham, NC that focuses on assisting the preservation of family farms
- USDA Rural Development staff
- NC Foundation for Soil and Water Conservation
- Farm Bureau organization

- First Fruits Farm, a local entity

Funding Opportunities

Existing federal resources are offered through the United States Department of Agriculture (USDA) to support a diverse range of farmers, ranchers, and private forest landowners through various grant programs. For example, the USDA invested $2.8 billion in 70 selected projects under the first pool of the Partnerships for Climate-Smart Commodities funding opportunity. Ultimately, the USDA's anticipated investment will triple to more than $3 billion for climate-smart production practices. Additional grant programs suitable for Project E are listed in Table 7. These are the most likely funding sources for the project.

Table 7. Funding Opportunities for Project E

Fund	Source	Brief Description	Amount
Regional Conservation Partnership Program (RCCP) - link here	USDA, NRCS	Address climate change, enhance water quality, and address other critical challenges on agricultural land.	Varies, Contact local NRCS field office
Sustainable Agriculture Research and Education (SARE) program - link here	USDA, National Institute of Food and Agriculture (NIFA)	Funds research and education projects that advance sustainable agricultural practices	Depends on the type of SARE grant type
Conservation Stewardship Program (CSP) - link here	USDA, NRCS	Technical and financial assistance to help farmers, ranchers and forest landowners improve conservation systems	Varies, Contact local NRCS field office
Partnerships for Climate-Smart Commodities - link here	USDA	Implement climate-smart production practices	$5 million to $100 million (large-scale pilot projects); $250,000 to $4,999,999 (particularly innovative pilot projects)

Based on conversations with the project's lead implementer who has prior experience on this project, the testing of soils at 10-15 sites in the region would likely cost less than the Duke Energy

Foundation Accelerator Grant award size. The cost per site is approximately $1,500 for initial land clearing, $1,500 to seed the 10-acre plot, and $500 for four soil samples. Remaining costs include initial mailings, informational materials, and project management costs. Two projects similar to Project E described above cost $48,000 and $84,000, which can serve as a baseline cost estimation.

Barriers to Implementation + How to Overcome Them

Barriers may include knowledge gaps in cover crop methods, although the implementers will create educational materials for participants. Once the project is implemented, maintenance needs include testing and reporting of soil conditions. It is recommended that the team maintains the inventory of yields from the farms based on reporting and documentation over the next two years.

Appendix A

Below is the first draft of potential projects that were discussed for initial inclusion in the project portfolio. They are not listed in any particular order.

Table 8. Initial Projects Considered for Project Portfolio

Projects Under Consideration	Description
Dam inspection and action plan	Work with NC Office of Dam Safety to inspect high-hazard dams
Food network and agriculture resilience plan	Enhance the local food network across the region to address food insecurity issues; Build redundancy into food systems; Protect agricultural assets that are not climate-resilient; Study soil health conditions; support agricultural workers
Update planning and zoning documents	Address floodplain management and land use planning; incorporate climate resiliency planning and planning for future conditions
Regional analysis of emergency shelters	Regional, year-round emergency shelter (new build, retrofit); Identify public facilities to act as shelters for hazards. Upgrade current shelters to serve greater capacity. Provide Alternative power/heat sources at shelters
Critical facilities assessment	Identify at-risk facilities and potential mitigation measures; Retrofit existing critical facilities. Assets identified in STIP (or other State plans), local plans, regional plans, by MPOs / RPOs, by highway districts and/or by residents as problematic or challenging may require additional analysis and study.
Community emergency preparedness plan	Pre-hazard event preparation - create plan to treat residential roads; post-hazard event cleanup - create plan to clear downed trees; Maintenance programs (i.e., debris removal program)
Guide for backup generators	Supply backup generators (possibly solar and/or battery powered)
Regional culvert analysis and improvements	Study needed. Assets identified in STIP (or other State plans), local plans, regional plans, by MPOs / RPOs, by highway districts and/or by residents as problematic or challenging may require additional analysis and study.

Projects Under Consideration	Description
Address flooding issues in key spots	Potential sites include: US 501 in Roxboro Project ID is U-5969; River Bend Park, Hwy 158, segments of US-15, Long Ave / US-501, Morehead Street/US-501 (N Madison Blvd), Hwy 58 flooding in Warren County (Submitted a BRIC app-waiting to hear back); DOT working on Rt. 501 project in Creedmoor; Study needed. Transportation assets identified in STIP (or other State plans), local plans, regional plans, by MPOs / RPOs, by highway districts and/or by residents as problematic or challenging may require additional analysis and study.
Address aging stormwater infrastructure	US 501 in Roxboro Project ID is U-5969 in STIP - Study needed. Assets identified in STIP (or other State plans), local plans, regional plans, by MPOs/RPOs, by highway districts and/or by residents as problematic or challenging may require additional analysis and study.
Regional watershed assessment	Conduct watershed study and develop a watershed model; hydrologic study; Develop watershed restoration plans; Study needed
Integrated water resources management plan	Address water supply and demand issues and projected growth, Elements include Conduct analysis of the water table and an investigation of well water; Align with the State's pollution discharge and stormwater mandates
Housing analysis	Advance affordable housing building efforts (workforce housing/not low income); Ensure housing is safe and up to building code
Environmental justice and health vulnerability assessment	Identify at-risk, vulnerable populations - work with community organizations on outreach efforts
Resilient economic development plan	Community hub, placemaking, attract employers, retain employees, flex spaces, anchor institutions, “greening” businesses and sustainable design
Flood gauges and monitoring program	Install/improve flood warning system; refer to planning documents’ that identify potential locations -see Hurricane Matthew plan for background

Projects Under Consideration	Description
Broadband access and digital inclusion plan	Enhance broadband infrastructure and connectivity options Regionwide. Locations can be identified using NC State tools.
Environment & Natural Resources project	Add stormwater control measures to identified assets
Stream Restoration	Stream restoration projects
Alternative Power Supply	Community solar programs for power generation

Appendix B

Listed below are additional potential funding opportunities for Projects A, B, C, and D. Each one requires further research for their requirements. Note, there are no additional funding opportunities for Project E beyond what is shown in Table 7.

Table 9. Additional Potential Funding Opportunities for Project A

Fund	Source
Golden LEAF Economic Catalyst Program- link here	Golden LEAF
NCWRC Partners for Green Growth Cost-Share Program - link here	N.C. Wildlife Resources Commission's (NCWRC)
Public Infrastructure Funds- link here	NC Department of Commerce
Duke Energy Foundation's Hometown Revitalization Grant Program- link here	Duke Energy Foundation

Table 10. Additional Potential Funding Opportunities for Project B

Fund	Source
Congestion Mitigation and Air Quality Improvement Program (CMAQ) - Link here	US DOT
Capacity Building Competitive Grant - Link here	NC DPS
Bureau of Indian Affairs - Safety of Dams, Water Sanitation, And Other Facilities - Link here	US Department of the Interior (DOI); Bureau of Indian Affairs
FEMA Building Resilient Infrastructure in Communities (BRIC) - Link here	FEMA

Table 11. Additional Potential Funding Opportunities for Project C

Fund	Source
FEMA Building Resilient Infrastructure in Communities (BRIC) - link here	FEMA
FEMA Public Assistance (PA) - Disaster Grants - link here	FEMA
Golden LEAF Disaster Open Grants, Flood Mitigation & Recovery Grant programs - link here	Golden LEAF
Drinking Water State Revolving Fund (SRF) Loan program - link here	NCDEQ

Table 12. Additional Potential Funding Opportunities for Project D

Fund	Source
EPA Pollution Prevention Grants (P2 Grant Program) - link here	US EPA
Environmental Justice Government-to-Government (EJG2G) Program - link here	US EPA
Environmental Justice Communities Pass-through Funder (EJCPF) Program – link here	US EPA
Environmental Justice Thriving Communities Technical Assistance Centers Program - link here	US EPA
Neighborhood Access and Equity Grant Program - link here	Federal Inflation Reduction Act (Sec. 60501)