PROJECT PORTFOLIO

The assembled project portfolio details nine (9) high priority projects, addressing hazards, type of strategy area and approach, priority rating, potential sources of funding, cost and project duration estimates, project map(s), project description, and project scope. These projects were developed to coincide with the top priority solution that would help make the community more resilient to the hazards identified: riverine flooding, nuisance flooding, sea level rise, storm surge, drought, wildfire, and coastal erosion. One nature-based or hybrid solution project is eligible to move forward into Phase 3 of the RCCP, Engineering and Design. The Town of Plymouth CAT, along with stakeholders, choose to move forward with the Stormwater Action Plan to RCCP Phase 3. This will be combined with the Upgrade Stormwater System project, to advance to Phase 4 implementation. Steps taken to assemble the project portfolio that led to the community and the CAT choosing this project are outlined below.

IDENTIFY A SUITE OF POTENTIAL PROJECT SOLUTIONS

The first step to assembling the project portfolio was to identify a suite of potential solutions. The contractors helped the CAT identify 39 potential solutions. The Pamlico Sound Hazard Mitigation strategies and the Hurricane Mathew Resilient Redevelopment Plan alternative actions identified an additional 34 potential solutions that could also be carried forward. These solutions were categorized by Planning/Policy, Green and Hybrid Infrastructure Solutions, and Hard/Grey Infrastructure Solutions and presented to the CAT at Meeting 4. Each CAT member then identified their top solutions.

CONSOLIDATE AND PRIORITIZE PROJECTS

The second step in assembling the project portfolio was to consolidate and prioritize the project solutions. The CAT identified fifteen (15) solutions from the suite of potential solutions that could move forward based on the STAPLEE Method and a simple benefit/cost rating system to help consolidate and prioritize all the potential project solutions. The STAPLEE Method assesses the social, technical, administrative, political, legal, economic, and environmental aspects and potential impacts of each project solution. The benefit/cost rating system used a high/medium/low scoring system to predict benefits and costs of each project solution.

Potential priority projects were presented to the CAT during the 5th meeting where the STAPLEE and benefit/cost rating metrics were reviewed and finalized. These projects were then brought to the community for additional feedback at the Phase 2 Public Open House. The Town of Plymouth along with the CAT identified nine (9) priority projects to be presented in the project portfolio.

Priority Projects

- Stormwater Action Plan – Stormwater System Upgrade
- Neighborhood Drainage Improvement Projects
- Conaby Creek Flood Study - Conaby Creek Flood Improvement Projects
- Stream Debris Cleanout
- Improve Constructed Wetland at West Water Street
- Washington Street Stormwater and Streetscape Project

- Improve Wastewater Treatment Plant Access Road
- Relocate or Retrofit Vulnerable Lift Stations
- Back-up Generators at Critical Facilities

Stormwater Action Plan – Stormwater System Upgrade

North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

TOWN OF PLYMOUTH

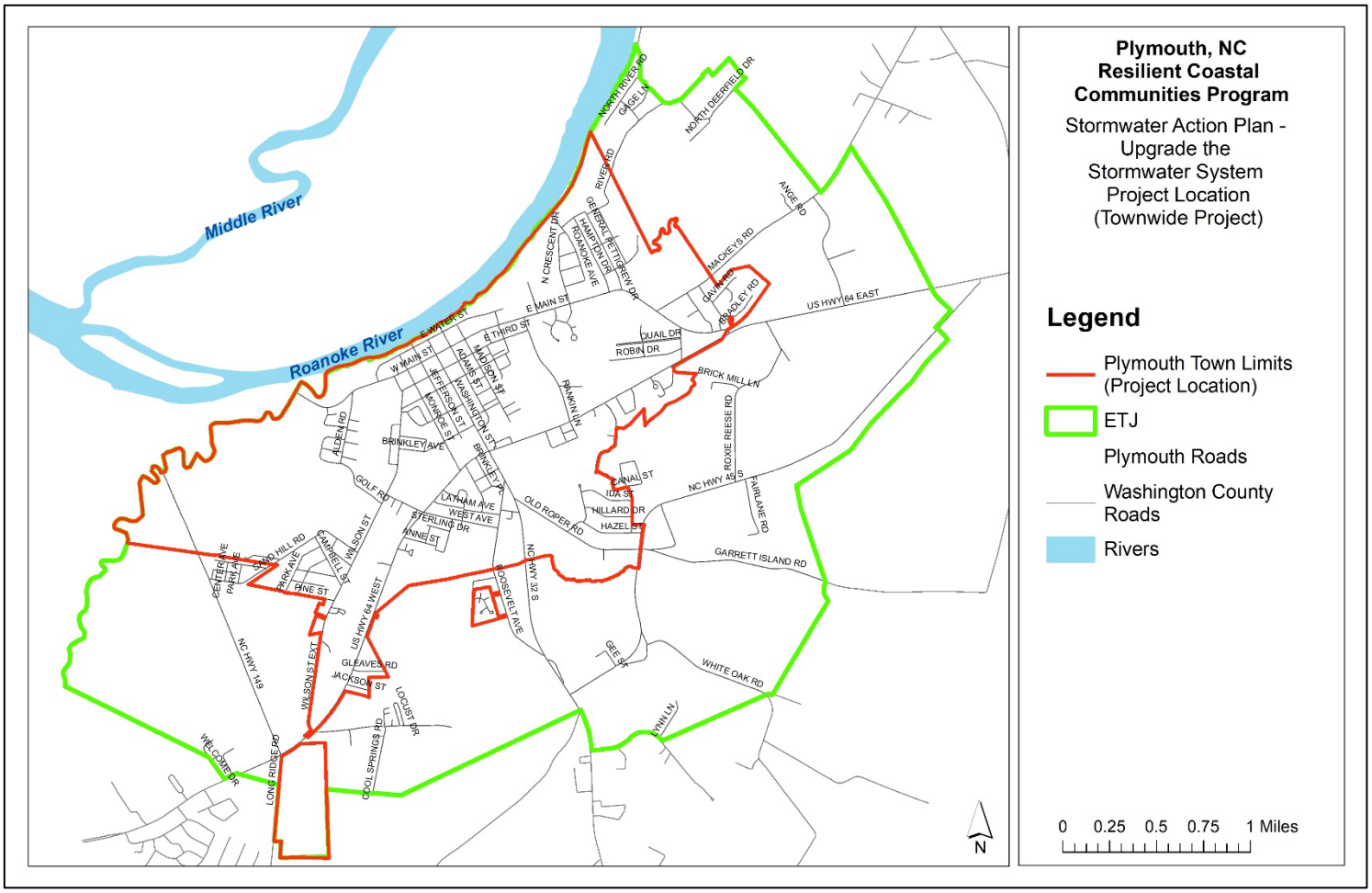
Stormwater Action Plan – Stormwater System Upgrade

Project Summary	
Project Description	Develop a Stormwater Action Plan combined with strategically upgrading the stormwater system through improved and expanded infrastructure. The project will establish mapping and condition assessments for stormwater system components and outfalls with a focus on known problem areas and areas identified via a desktop analysis. The project will promote proactive stormwater maintenance through development of interactive mapping tools and maintenance guidance. The project will encourage stormwater quality awareness through public outreach efforts and produce construction drawings for a priority project.
Project Scope	Engineering/Design - Develop a Stormwater Action Plan. This plan will complete a stormwater ground assessment and surface hydrology analysis that will be incorporated into an online mapping system that can submit real-time data to analyze, prioritize, and take action on a problem area. The plan will also incorporate a maintenance plan that will be tracked by the online tool. The plan will include assessing and documenting the type and location of stormwater infrastructure, collecting and analyzing data on the hydraulic flow, assessing stormwater system capacity and functionality, and identifying projects to upgrade the system and improve the ability of the system to convey water and/or improve water quality. Both hard/grey infrastructure and green/nature-based solutions will be considered in the Stormwater Action Plan. A public education campaign on stormwater responsibilities will also be included. Design and construction drawings will be completed for one project chosen in partnership with the community. - Hydro Analysis / vulnerability assessment - Field Work - Natural Resource Technical Report - Project Prioritization/Recommendations - Arc Online Tool - Stormwater Maintenance Manual - Public Education Campaign – Stormwater Responsibilities - Permitting Due Diligence - Project Surveys / Utility Locations - Engineering/Design Implementation - Strategically upgrade the stormwater system through pipe replacements (upsizing where needed), increasing the size and quantity of culverts and catch basins, redefining ditches, implementing backflow preventors, installing bioswales, bioretention cells, etc. The previously developed Stormwater Action Plan will determine project prioritization. - Permitting - Construction

	- Construction Administration - Construction Inspections
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Flooding (Nuisance, Riverine)
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) <u>Stormwater Action Plan</u> ▪ Planning ▪ Green and Hybrid Solutions <u>Stormwater System Upgrade</u> ▪ Green and Hybrid Solutions
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Accommodate ▪ Build Adaptive Capacity
Project Estimated Cost	<u>Engineering/Design</u> - $500,000 <u>Implementation</u> - $200,000 - $750,000 (per stormwater retrofit project)
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation <u>Stormwater Action Plan</u> ▪ NC Resilient Coastal Communities Program Phase 3 ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Capability and Capacity Building (C&CB) Grant ▪ NC Department of Environmental Quality Water Resources Development Grant (WRDG) <u>Stormwater System Upgrade</u> ▪ NC Resilient Coastal Communities Program Phase 4 ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) Grant ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ NC Department of Environmental Quality Water Resources Development Grant (WRDG) ▪ NC Department of Environmental Quality 319 Grant ▪ HUD Community Development Block Grant – Mitigation (CDBG-MIT)
Project Estimated Timeline	3-10 years (project will be completed in phases)
Priority Rating	High

Potential Submission for RCCP Phase 3	♦	Yes		No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*

Project Map



Neighborhood Drainage Improvement Projects

North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

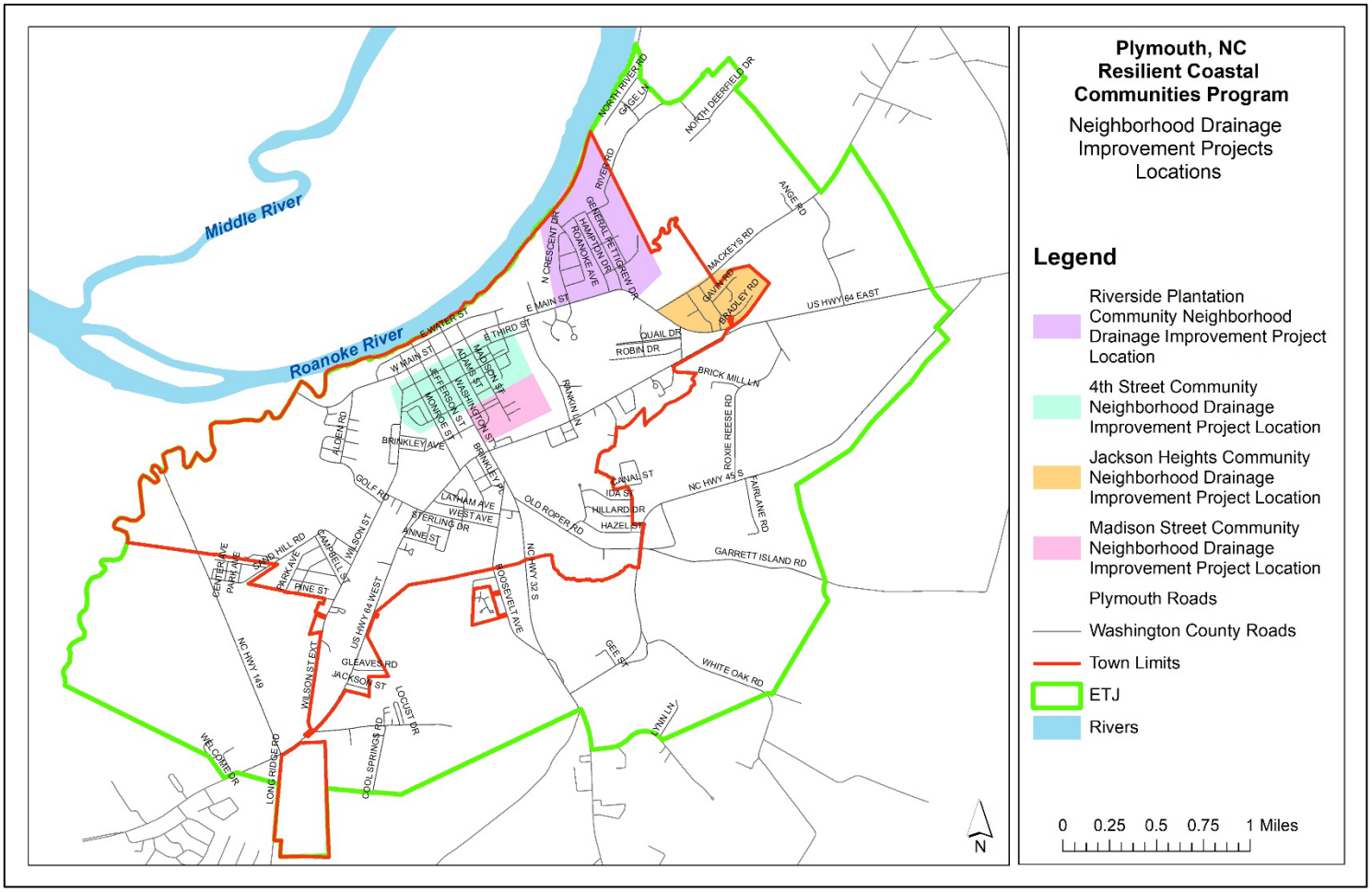
TOWN OF PLYMOUTH

Neighborhood Drainage Improvement Projects

Project Summary	
Project Description	Complete hybrid drainage improvement projects with priority areas at: 1. Riverside Plantation Community 2. 4th Street Community (including side streets such as Adams Street and Winesset Circle) 3. Jackson Heights Community 4. Madison Street Community
Project Scope	Engineering/Design – Design hybrid drainage improvement projects with priority areas at: 1.) Riverside Plantation Community, 2.) 4th Street Community (including side streets such as Adams St. and Winesset Cir.), 3.) Jackson Heights Community, 4.) Madison Street Community. The engineering/design phase will include detailed assessment and documentation of the type and location of stormwater infrastructure in the neighborhood, collecting and analyzing data on the neighborhood's hydraulic flow, assessing the neighborhood drainage system's capacity and functionality, and identifying projects to upgrade the neighborhood's drainage system and improve the ability of the system to convey water and/or improve water quality. Both hard/grey infrastructure and green/nature-based solutions will be incorporated. Public education on the proposed projects will be incorporated. - Hydro Analysis - Inventory Field Work - NEPA / SEPA Documentation - GIS analysis - Project Prioritization/Recommendations - Public Education - Engineering/Design - Permitting Due Diligence Implementation – Construct neighborhood drainage improvement projects based on the designs completed in the engineering/design phase. Projects could include pipe replacements (upsizing where needed), increasing the size and quantity of culverts and catch basins, redefining ditches, implementing backflow preventors, installing bioswales, bioretention cells, and other green and hybrid solutions. - Permitting - Construction - Construction Administration - Construction Inspections

Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Flooding (Nuisance, Riverine)
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) <u>Engineering/Design</u> ▪ Hybrid/Green Infrastructure Solution <u>Implementation</u> ▪ Hybrid/Green Infrastructure Solution
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Build Adaptive Capacity ▪ Accommodate
Project Estimated Cost	Engineering/Design - $225,000 Implementation - $150,000 - $500,000 (per local stormwater retrofit project)
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation <u>Engineering/Design</u> ▪ NC Resilient Coastal Communities Program Phase 3 ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG) <u>Implementation</u> ▪ NC Resilient Coastal Communities Program Phase 4 ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG)
Project Estimated Timeline	2-3 years
Priority Rating	High

Potential Submission for RCCP Phase 3	♦	Yes		No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*
Project Map					



Conaby Creek Flood Study - Conaby Creek Flood Improvement Projects

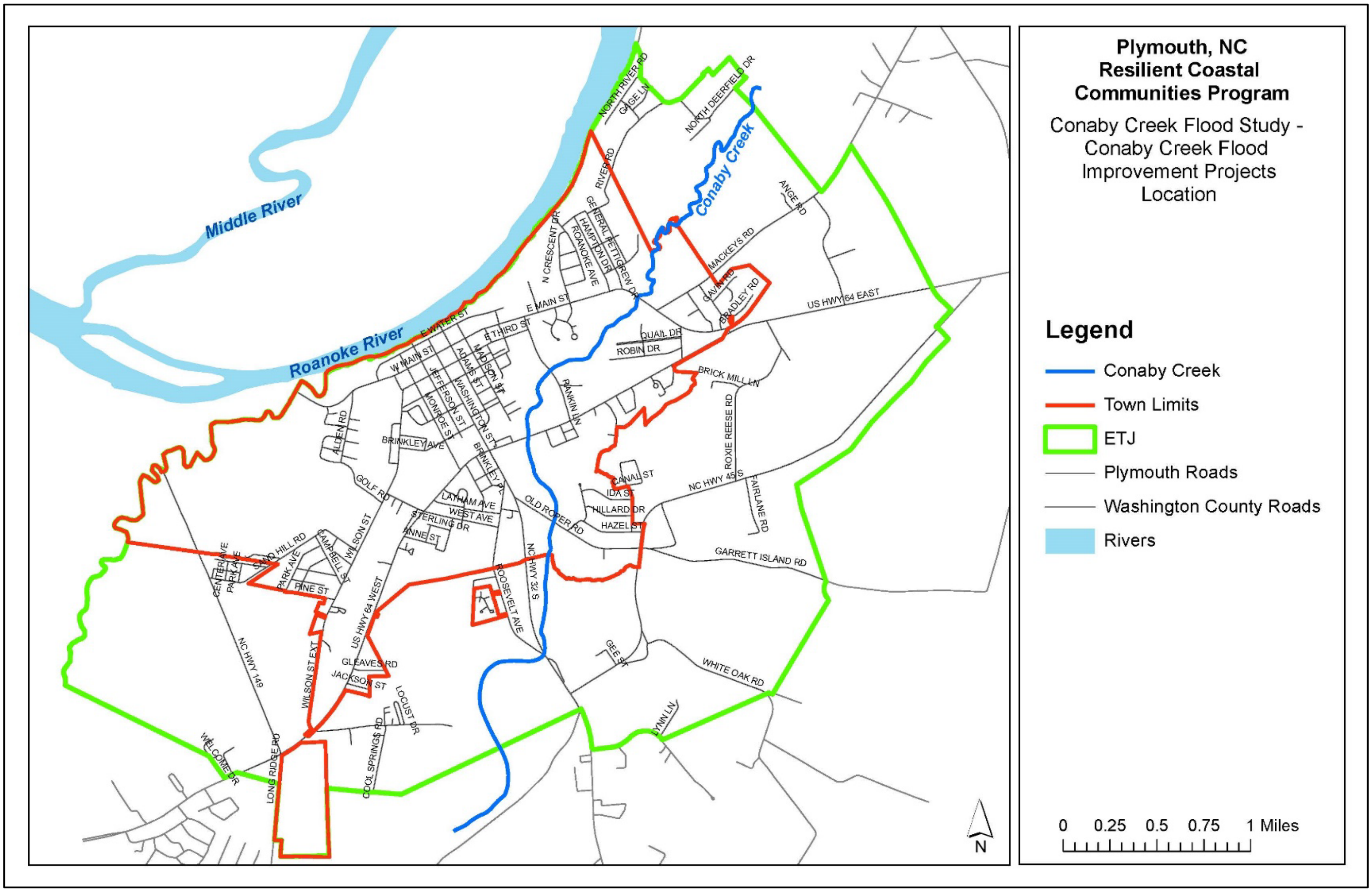
North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

TOWN OF PLYMOUTH

Conaby Creek Flood Study – Conaby Creek Flood Improvement

Project Summary	
Project Description	Complete a detailed flood study and implement projects to relieve flooding from Conaby Creek. The effective FEMA model for the stream is outdated and this project will study projected rainfall, current landcover, and projected landcover. The project will then prioritize solutions and provide a final design for the solution chosen in partnership with the community.
Project Scope	Engineering/Design – Complete a detailed flood study for Conaby Creek. This study will focus on flood-prone areas, including the Highway 64 area, Old Roper Rd./Highway 32 area, E. Main St. area, neighborhoods nearby Conaby Creek, and the crossings of Conaby Creek within the town's jurisdiction. NC DOT hydro analysis documents for bridges will be used to support the study and there will be a partnership with NC DOT Division 1. The study will evaluate conceptual projects to relieve flooding impacts from Conaby Creek. Then engineering/design will be completed for the chosen project. - NEPA - Flood Study and Mapping - Public Outreach - Project Concept Planning - Engineering/Design Implementation – Construct a flood improvement project for Conaby Creek. Projects will be determined in the engineering/design phase. - Permitting - Construction - Construction Administration - Construction Inspections
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Riverine Flooding
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) Engineering/Design ▪ Planning ▪ Hybrid/Green Infrastructure Solution Implementation

	▪ Hybrid/Green Infrastructure Solution				
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Build Adaptive Capacity ▪ Accommodate ▪ Protect				
Project Estimated Cost	<u>Feasibility</u> - $70,000 <u>Engineering/Design</u> - $430,000 - $950,000 <u>Implementation</u> - $ 2,000,000 - $10,000,0000				
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation <u>Engineering/Design</u> ▪ NC Resilient Coastal Communities Program Phase 3 ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Capability and Capacity Building (C&CB) ▪ Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) Grant ▪ NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG) <u>Implementation</u> ▪ NC Resilient Coastal Communities Program Phase 4 ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) Grant ▪ NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG)				
Project Estimated Timeline	5-10 years (project may be completed in phases)				
Priority Rating	High				
Potential Submission for RCCP Phase 3	♦	Yes		No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*
Project Map					


Plymouth, NC
Resilient Coastal Communities Program
Conaby Creek Flood Study - Conaby Creek Flood Improvement Projects Location
Legend
Conaby Creek
Town Limits
ETJ
Plymouth Roads
Washington County Roads
Rivers
0 0.25 0.5 0.75 1 Miles
N
Middle River
Roanoke River
Conaby Creek
US HWY 64 EAST
NC HWY 45 S
GARRETT ISLAND RD
WHITE OAK RD
NC HWY 149
US HWY 64 WEST
NC HWY 32 S

Stream Debris Cleanout

North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

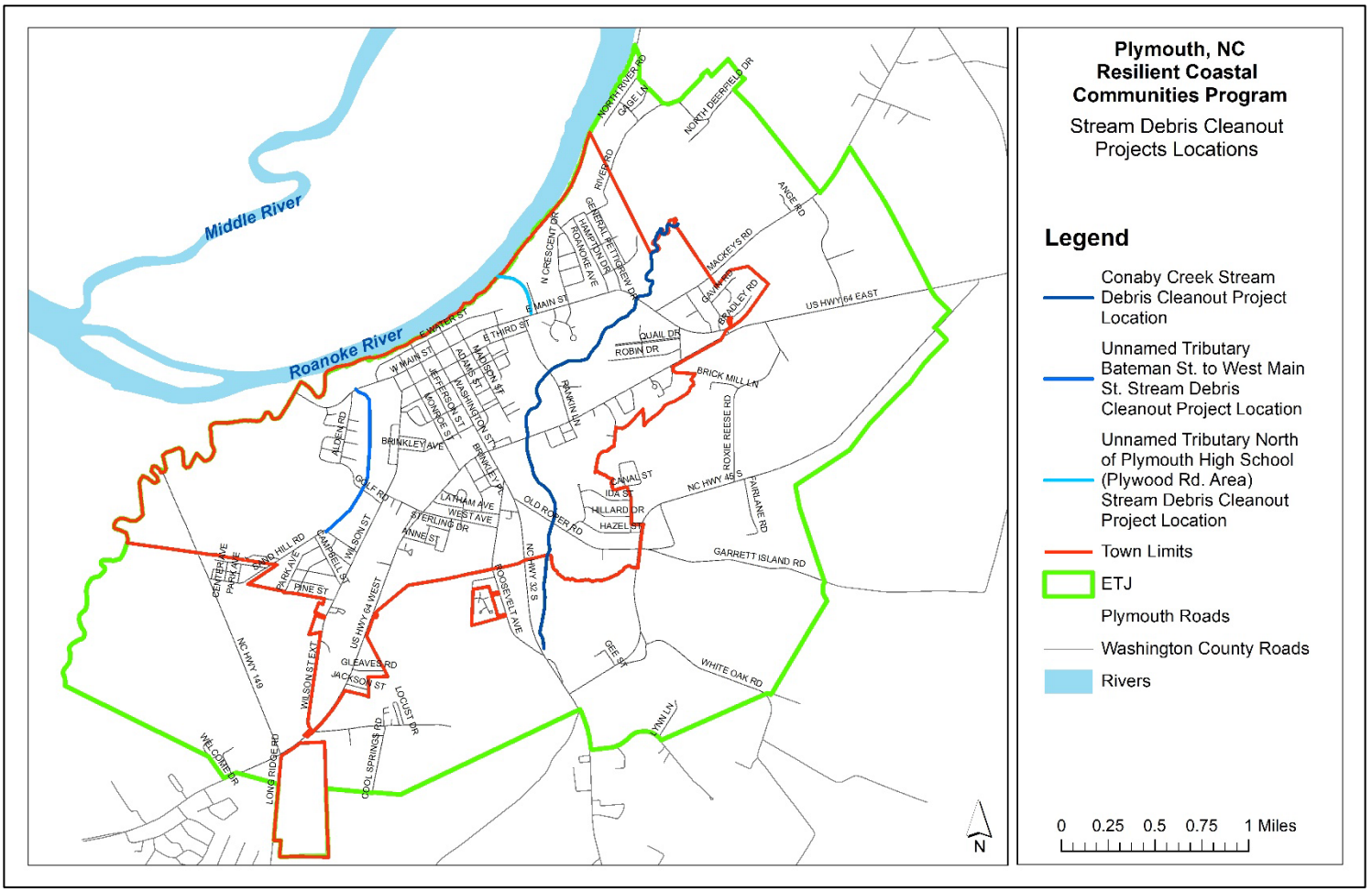
TOWN OF PLYMOUTH

Stream Debris Cleanout

Project Summary	
Project Description	Complete stream cleanouts (snag and drags) with a focus on: 1. Conaby Creek from NC 32 to town limits boundary past E Main St. 2. Unnamed Tributary to Roanoke River from Bateman St. to W. Main St. 3. Unnamed Tributary to Roanoke River north of Plymouth High School (Plywood Rd. area)
Project Scope	Complete stream cleanouts (snag and drags) with a focus on: 1. Conaby Creek from NC 32 to E Main St. 2. UT to Roanoke River Bateman St. and W. Main St. 3. Tributary north of Plymouth High School (Roanoke Ave./Crescent Dr. area). These projects would remove debris from the channel to allow higher volumes of flow. These stream cleanouts would be completed using the U.S. Army Corps of Engineers 1992 Woody Removal Guide and the NRCS Conservation Practice Standard – Clearing and Snagging (code 326) document. Only those log accumulations that are obstructing the flow of water shall be removed. This includes downed trees, broken tops and woody/vegetative debris that has fallen into the stream beds and is restricting water flow and/or contributing to flooding with heavy rains. Minimal disturbance to stream banks is required, therefore; hand-operated equipment will be the first choice in removal, such as-winches, chain saws, shallow draft barge, or boat. Beavers dams will also be removed in the cleanout process.
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Riverine Flooding
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) ▪ Hybrid/Green Infrastructure Solution
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Build Adaptive Capacity ▪ Accommodate
Project Estimated Cost	Up to $25 per linear foot (currently StRAP funds pay $10.80 per linear foot for coastal streams)

Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation ▪ NC Dept. of Agriculture Streamflow Rehabilitation Assistance Program (StRAP) ▪ NCDEQ Stream Debris Removal Program				
Project Estimated Timeline	1-2 years				
Priority Rating	High				
Potential Submission for RCCP Phase 3		Yes	♦	No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*

Project Map



Improve Constructed Wetland at West Water Street

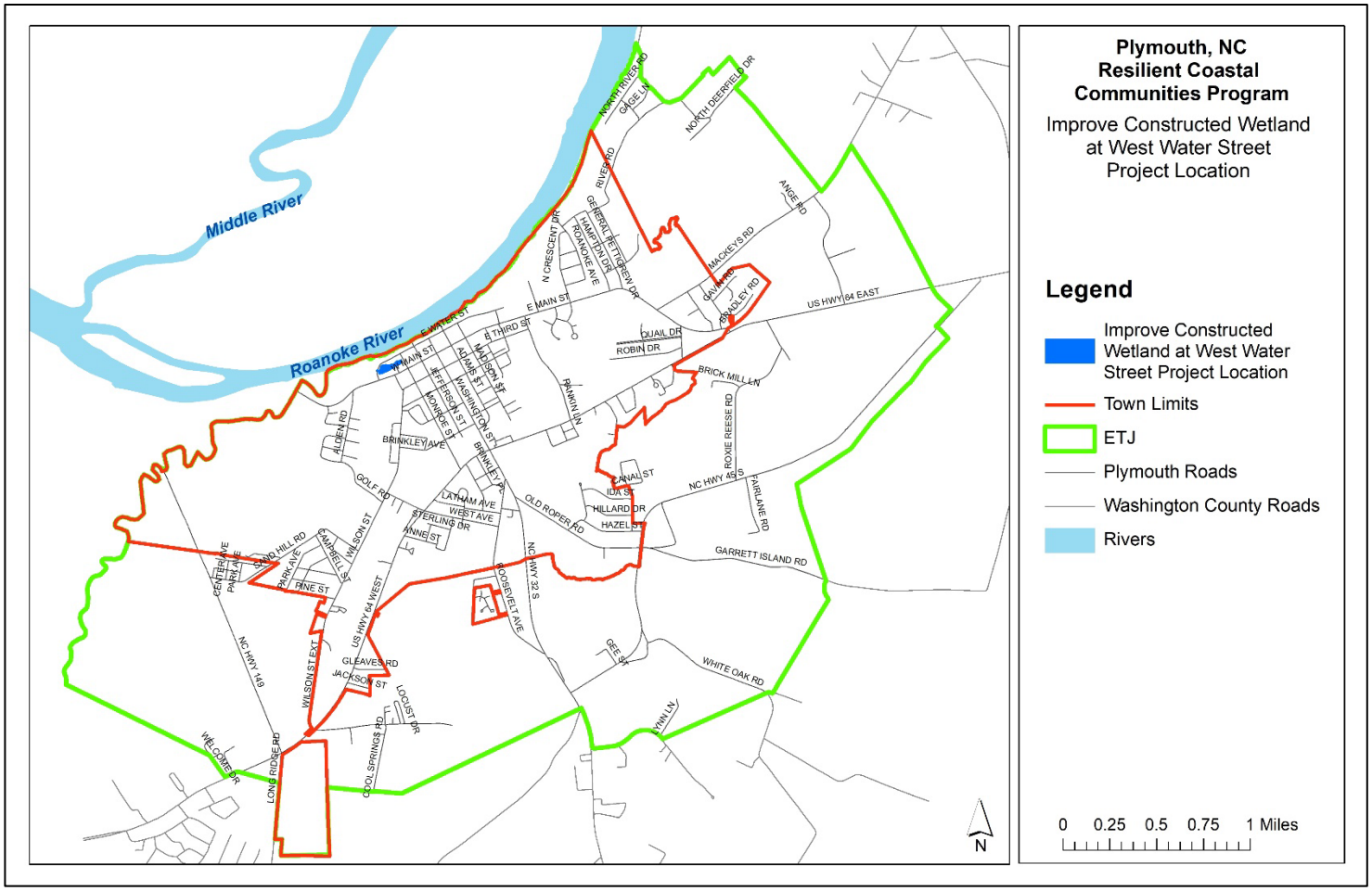
North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

TOWN OF PLYMOUTH

Improve Constructed Wetland at West Water Street

Project Summary	
Project Description	Improve the function of the constructed wetland behind the senior public housing complex to address over street flooding of West Water Street.
Project Scope	Engineering/Design – Design solutions to improve the function of the constructed wetland behind the elderly housing complex to address over street flooding of W Water St. There is the potential that a pump needs replacement. There is a preference that over flow from the wetland is piped to run under W Water St. rather than being allowed to overtop the street. Consider an automated bar/light system to stop traffic if the over street flooding cannot be completely resolved. - Survey - Site Analysis - Environmental / Planning Documentation - Concept Designs / Alternatives - Engineering/Design - Permitting Due Diligence Implementation – Construct identified project(s) to improve the function of the constructed wetland behind the elderly housing complex to address over street flooding of W Water St. Project(s) will be determined during the engineering/design phase. An automated bar/light system to stop traffic will be installed if the over street flooding cannot be completely resolved. - Permitting - Construction - Construction Administration - Construction Inspection
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Nuisance Flooding
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) Engineering/Design ▪ Hybrid Green Infrastructure Solution Implementation ▪ Hybrid Green Infrastructure Solution

Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Build Adaptive Capacity				
Project Estimated Cost	<u>Engineering/Design</u> - $65,000 <u>Implementation</u> - $250,000 - $750,000				
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation <u>Engineering/Design</u> ▪ NC Resilient Coastal Communities Program Phase 3 ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG) <u>Implementation</u> ▪ NC Resilient Coastal Communities Program Phase 4 ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG)				
Project Estimated Timeline	2-3 years				
Priority Rating	High				
Potential Submission for RCCP Phase 3	♦	Yes		No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*
Project Map					


Middle River
Roanoke River
Plymouth, NC
Resilient Coastal
Communities Program
Improve Constructed Wetland
at West Water Street
Project Location
Legend
Improve Constructed Wetland at West Water Street Project Location
Town Limits
ETJ
Plymouth Roads
Washington County Roads
Rivers
0 0.25 0.5 0.75 1 Miles
N
E MAIN ST
E THIRD ST
MAIN ST
WATER ST
NORTH RIVER RD
GAGE LN
NORTH DEERFIELD DR
RIVER RD
N CRESCENT DR
GENERAL PETIGREW DR
HAMILTON DR
ROANOKE AVE
ANGE RD
MACKEYS RD
GRAY RD
BRADLEY RD
US HWY 64 EAST
QUAIL DR
ROBIN DR
BRICK MILL LN
ROXIE REESE RD
FAIRLANE RD
NC HWY 45 S
CANAL ST
IDA ST
HILLARD DR
HAZEL ST
OLD ROPER RD
GARRETT ISLAND RD
WHITE OAK RD
GEE ST
THIN LN
ROOSEVELT AVE
NC HWY 32 S
ADAMS ST
MADISON ST
JEFFERSON ST
MONROE ST
WASHINGTON ST
FRANKLIN
BRINKLEY AVE
BRINKLEY PL
ALDEN RD
GOLF RD
LATHAM AVE
WEST AVE
STERLING DR
ANNE ST
WILSON ST
CAMPBELL ST
OLD HILL RD
PARK AVE
CENTER AVE
PINE ST
US HWY 64 WEST
WILSON ST EXT
NC HWY 149
GLEAVES RD
JACKSON ST
LOCUST DR
ODOL SPRINGS RD
LONG RIDGE RD
WELCOME DR

Washington Street Stormwater and Streetscape Project

North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

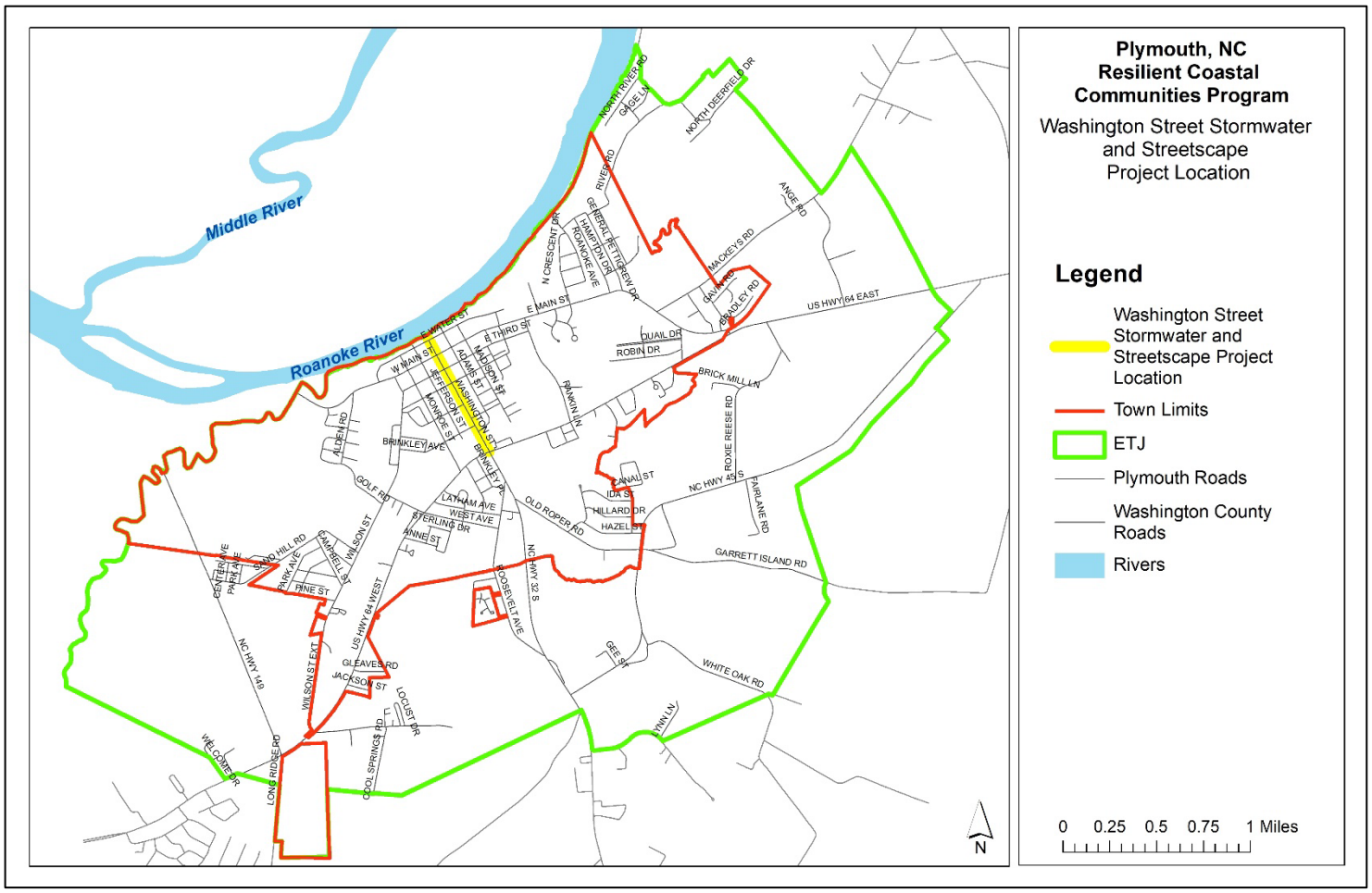
TOWN OF PLYMOUTH

Washington Street Stormwater and Streetscape Project

Project Summary	
Project Description	Upgrade stormwater infrastructure along Washington Steet from W. Main Steet to US 64 utilizing a mix of hard and green infrastructure combined with an aesthetic streetscape improvement project.
Project Scope	Engineering/Design – The primary project need is to replace stormwater pipes under Washington Street, as these pipes are collapsing and causing sinkholes in the road. Primary maintenance including paving should also be performed to ensure the project's longevity. This is a primary travel route connecting US-64 to downtown Plymouth and surrounding residential neighborhoods. This will be a partnership with the Albemarle RPO and NC DOT. Additionally, this project will incorporate streetscape improvements in partnership with the Plymouth Downtown Development Association. Street improvements will include green stormwater infrastructure which will also improve the route's aesthetics, including tree planting, rain gardens, bioretention cells, etc. This is also a great opportunity to complete a "Green Street" project to be rated by a 3rd party such as The Sustainable Transportation Council or Envision. - NEPA/SEPA Planning - Survey - Engineering/Design - Green Street Planning - Permitting Due Diligence Implementation – Work with NCDOT to replace stormwater pipes under Washington Street. This is an important project for stormwater as well as for public safety, as collapsing stormwater pipes are causing sinkholes in this heavily traveled road. Construct streetscape improvements including green stormwater infrastructure, based on designs completed during the engineering/design phase. - Permitting - Construction - Construction Administration - Construction Inspections
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Flooding (Nuisance, Riverine)

Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) <u>Engineering/Design</u> ▪ Hybrid/Green Infrastructure Solution <u>Implementation</u> ▪ Hybrid/Green Infrastructure Solution
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Protect ▪ Build Adaptive Capacity
Project Estimated Cost	<u>Engineering/Design</u> - $700,000 <u>Implementation</u> - $6,000,000 – $8,000,000
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation <u>Engineering/Design</u> ▪ NC Dept. of Transportation (NC DOT) ▪ NC Resilient Coastal Communities Program Phase 3 ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG) ▪ NC Dept. of Commerce ▪ US Economic Development Administration (EDA) ▪ Golden Leaf <u>Implementation</u> ▪ NC Dept. of Transportation (NC DOT) ▪ NC Resilient Coastal Communities Program Phase 4 ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG) ▪ NC Dept. of Commerce ▪ US Economic Development Administration (EDA) ▪ Golden Leaf
Project Estimated Timeline	2-3 years

Priority Rating	High				
Potential Submission for RCCP Phase 3	♦	Yes		No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*
Project Map					



Improve Wastewater Treatment Plant Access Road

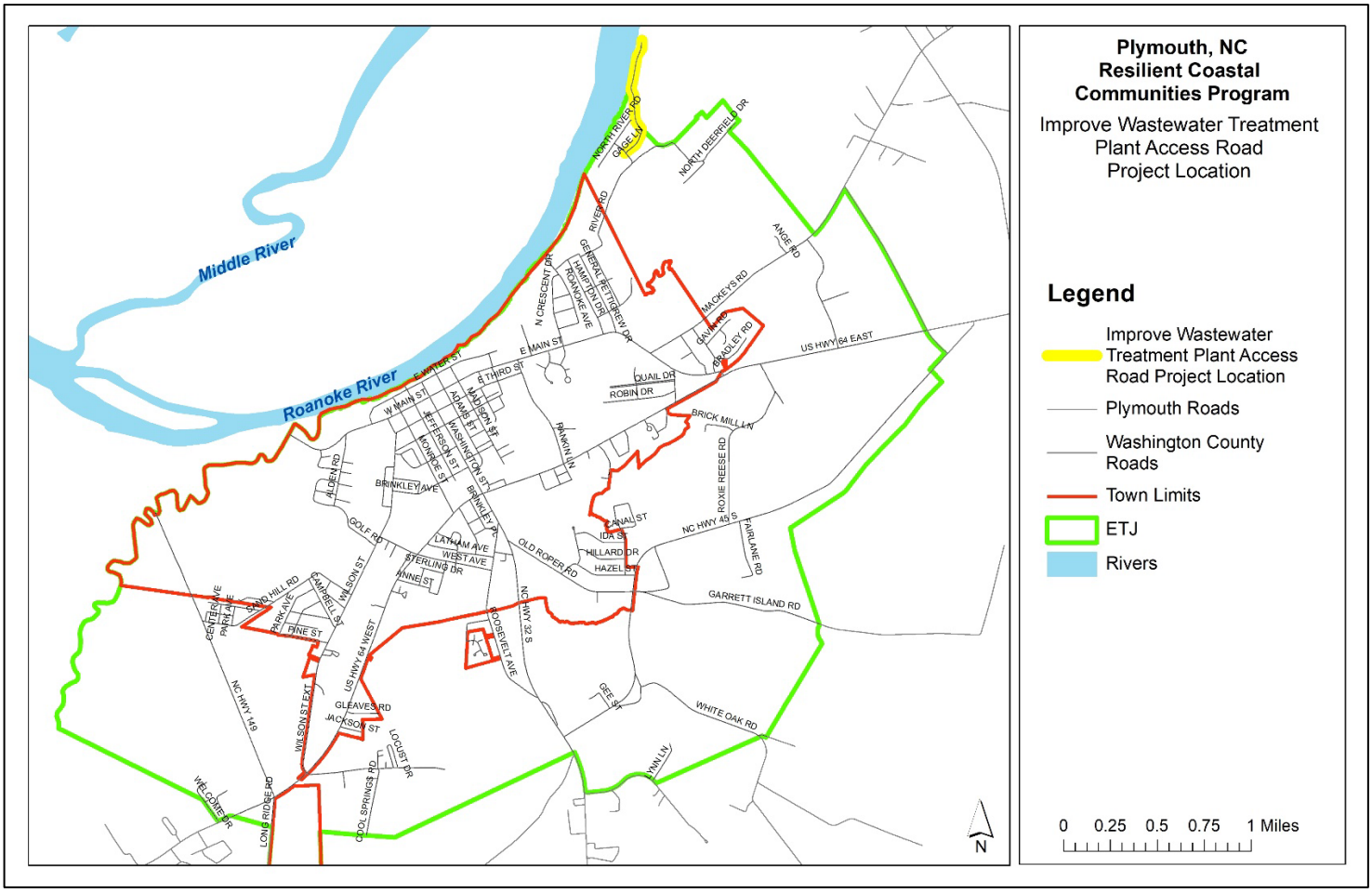
North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

TOWN OF PLYMOUTH

Improve Wastewater Treatment Plant Access Road

Project Summary	
Project Description	Improve Gage Lane from a location north of River Road to the Plymouth Wastewater Treatment Plant. The road is located in the Roanoke River effective floodway.
Project Scope	Engineering/Design – Design a solution to improve Gage Ln. from River. Rd. to the Plymouth Wastewater Treatment Plant. This is a vital project since access to the Wastewater Treatment Plant is impeded during major storm and employees often have to camp out at the facility. The project will consider the elevation and pavement type of Gage Lane. - Survey - Road evaluation - Natural Resource Evaluation - Engineering/Design - FEMA Permitting - Permitting Due Diligence Implementation – Construct improvements at Gage Ln. to facilitate access to the Plymouth Wastewater Treatment Plant during storm events. The engineering/design phase will determine the project to be completed. Elevation of Gage Ln. is a possibility. - Permitting - Construction - Construction Administration - Construction Inspections
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Riverine Flooding ▪ Storm Surge
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) Engineering/Design ▪ Hard/Grey Infrastructure Solution Implementation ▪ Hard/Grey Infrastructure Solution

Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Accommodate ▪ Build Adaptive Capacity				
Project Estimated Cost	Engineering/Design - $80,000 Implementation - $525,000 - $775,000				
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation Engineering/Design ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) Grant ▪ Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) ▪ Golden Leaf Disaster Recovery Grant ▪ NC Emergency Management (NCEM) Disaster Relief and Mitigation Fund Implementation ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) Grant ▪ Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) ▪ Golden Leaf Disaster Recovery Grant ▪ NC Emergency Management (NCEM) Disaster Relief and Mitigation Fund				
Project Estimated Timeline	2-3 years				
Priority Rating	High				
Potential Submission for RCCP Phase 3		Yes	♦	No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*
Project Map					


Middle River
Roanoke River
Plymouth, NC
Resilient Coastal
Communities Program
Improve Wastewater Treatment
Plant Access Road
Project Location
Legend
Improve Wastewater Treatment Plant Access Road Project Location
Plymouth Roads
Washington County Roads
Town Limits
ETJ
Rivers
0 0.25 0.5 0.75 1 Miles
N
E MAIN ST
W MAIN ST
E THIRD ST
NORTH RIVER RD
GAGE LN
NORTH DEERFIELD DR
RIVER RD
ANGEL RD
MACKEY'S RD
BRADLEY RD
US HWY 64 EAST
QUAIL DR
ROBIN DR
BRICK MILL LN
ROXIE REESE RD
NC HWY 45 S
FARLANE RD
CANAL ST
IDA ST
HILLARD DR
HAZEL ST
OLD ROPER RD
GARRETT ISLAND RD
WHITE OAK RD
GEE ST
LYNN LN
NC HWY 32 S
ROOSEVELT AVE
US HWY 64 WEST
GLEAVES RD
JACKSON ST
LOCUST DR
COOL SPRINGS RD
WILSON ST EXT
NC HWY 149
WILCOTTE DR
LION RIDGE DR
WILSON ST
CAMPBELL ST
PARK AVE
PINE ST
OLD HILL RD
CENTER AVE
PARK AVE
GOLF RD
ALDEN RD
BRINKLEY AVE
BRINKLEY PL
LATHAM AVE
WEST AVE
STERLING DR
ANNE ST
ADAMS ST
MADISON ST
JEFFERSON ST
MONROE ST
WASHINGTON ST
PRAWN LN
GENERAL PETTIGREW DR
HAMPTON DR
ROANOKE AVE
N CRESCENT DR

Relocate or Retrofit Vulnerable Lift Stations

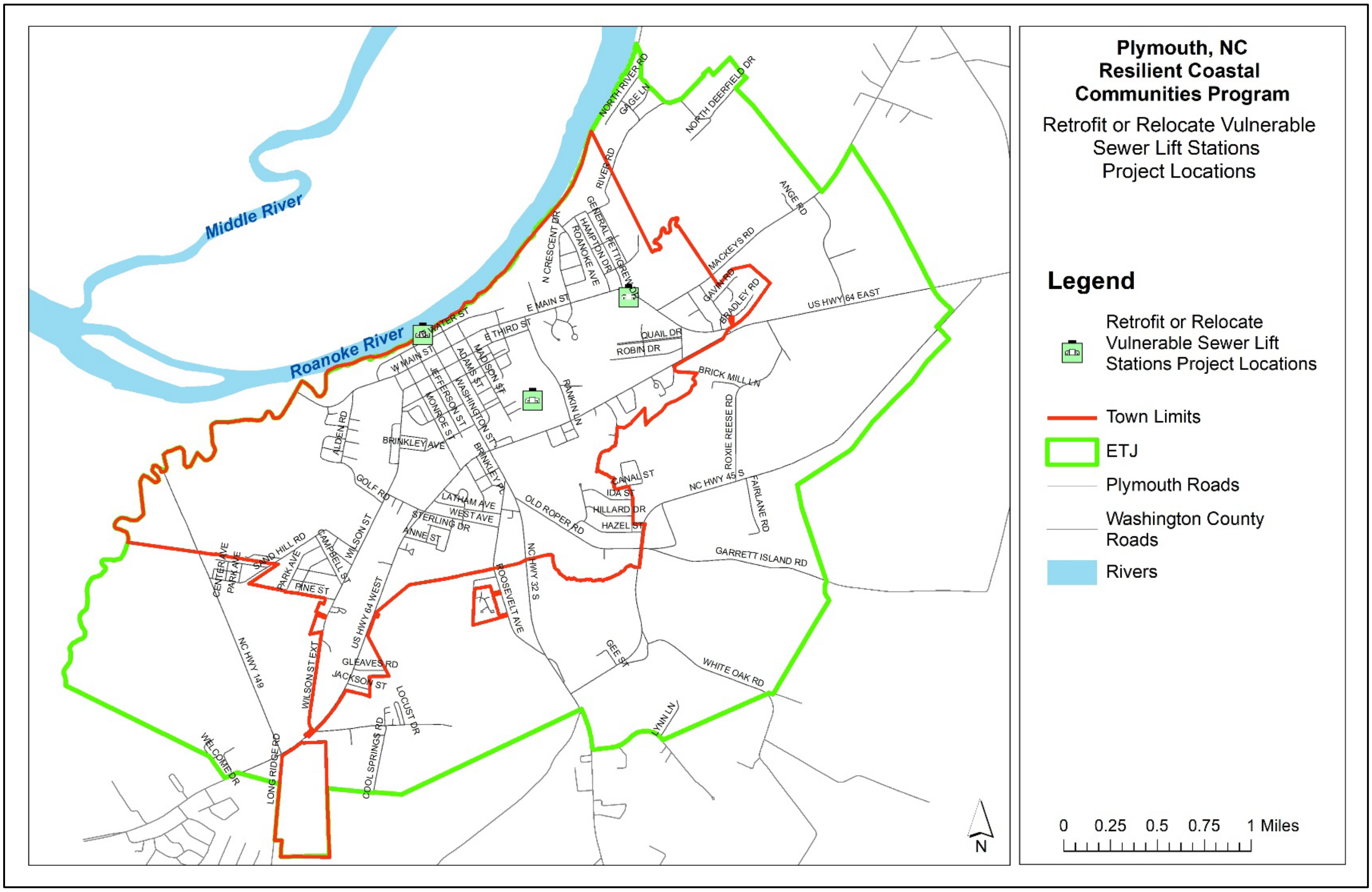
North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

TOWN OF PLYMOUTH

Relocate or Retrofit Vulnerable Lift Stations

Project Summary	
Project Description	Relocate or retrofit vulnerable sewer lift stations on Water Street, Johnson Court and East Main Street to improve risk of impacts from flooding.
Project Scope	Engineering/Design – Analyze the three vulnerable sewer lift stations on Water St., Johnson Ct. and East Main St. Determine which can be retrofitted through elevation, protective barriers, etc. and which need to be relocated. Design retrofits and/or select locations for relocation. - Desktop Analysis - Surveys/Utility location - Lift station analysis - Retrofit engineering/design - Relocation site selection Implementation – Construct retrofit projects and/or relocate the three vulnerable sewer lift stations, as determined during the engineering/design phase. - Permitting - Construct retrofits and/or relocate sewer lift stations - Construction Administration - Construction Inspections
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Riverine Flooding ▪ Nuisance Flooding ▪ Storm Surge
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) Engineering/Design ▪ Hard/Grey Infrastructure Implementation ▪ Hard/Grey Infrastructure

Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Build Adaptive Capacity ▪ Retreat ▪ Protect				
Project Estimated Cost	Engineering/Design - $700,000 Implementation - $6,000,000 - $9,000,000				
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation Engineering/Design ▪ HUD Community Development Block Grant Mitigation Funds (CDBG-MIT) ▪ NC Division of Water Infrastructure Programs (Clean Water State Revolving Fund, State Reserve Program, Viable Utility Reserve Program) ▪ Golden Leaf Disaster Recovery Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) ▪ Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) Grant Implementation ▪ HUD Community Development Block Grant Mitigation Funds (CDBG-MIT) ▪ NC Division of Water Infrastructure Programs (Clean Water State Revolving Fund, State Reserve Program, Viable Utility Reserve Program) ▪ Golden Leaf Disaster Recovery Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) ▪ Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) Grant				
Project Estimated Timeline	2-3 years				
Priority Rating	High				
Potential Submission for RCCP Phase 3		Yes	♦	No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*
Project Map					


Plymouth, NC
Resilient Coastal
Communities Program
Retrofit or Relocate Vulnerable
Sewer Lift Stations
Project Locations
Legend
Retrofit or Relocate Vulnerable Sewer Lift Stations Project Locations
Town Limits
ETJ
Plymouth Roads
Washington County Roads
Rivers
0 0.25 0.5 0.75 1 Miles
N
Middle River
Roanoke River

Back-up Generators at Critical Facilities

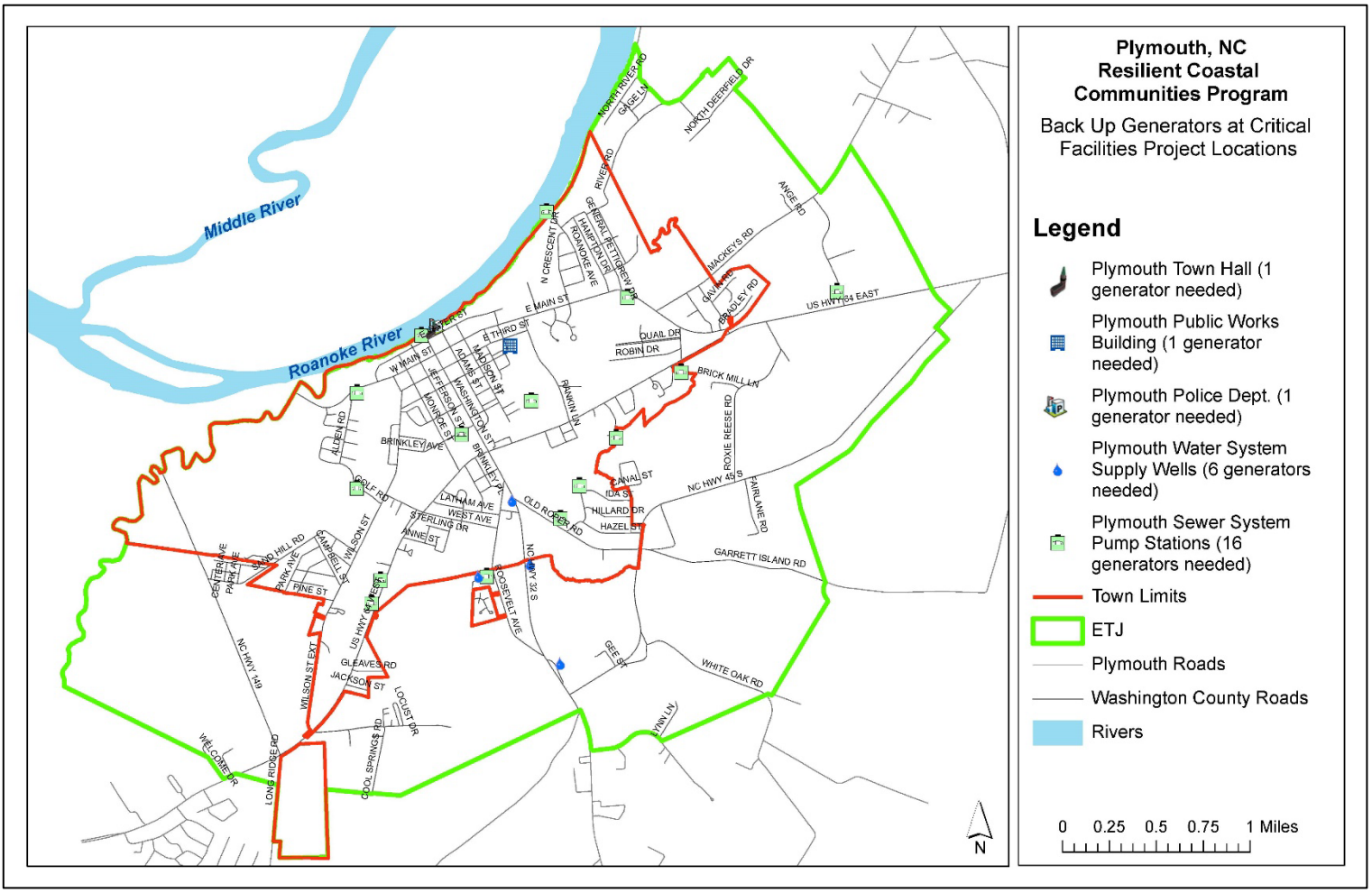
North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

TOWN OF PLYMOUTH

Back-up Generators at Critical Facilities

Project Summary					
Project Description	Acquire back-up generators for critical facilities.				
Project Scope	Acquire generators or other forms of redundant power supply to ensure that critical facilities and infrastructure remain operational where normal power supply is not available. Current generator needs include sewer lift stations (16), water supply wells (6), the Public Works building, the Police Dept., and Town Hall.				
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Any major storm or event which makes normal power supply unavailable (hurricane, tornado, flooding, wildfire, etc.)				
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) ▪ Hard/Grey Infrastructure				
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Build Adaptive Capacity				
Project Estimated Cost	1 generator – 100 kw: $50,000 each with installation 24 generators – 50 kw generators: $35,000 each with installation				
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation ▪ Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) ▪ Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation Grant Program ▪ Golden Leaf Disaster Recovery Grant				
Project Estimated Timeline	1 year				
Priority Rating	High				
Potential Submission for RCCP Phase 3		Yes	♦	No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*

Project Map


Middle River
Roanoke River
Plymouth, NC
Resilient Coastal
Communities Program
Back Up Generators at Critical
Facilities Project Locations
Legend
Plymouth Town Hall (1 generator needed)
Plymouth Public Works Building (1 generator needed)
Plymouth Police Dept. (1 generator needed)
Plymouth Water System Supply Wells (6 generators needed)
Plymouth Sewer System Pump Stations (16 generators needed)
Town Limits
ETJ
Plymouth Roads
Washington County Roads
Rivers
0 0.25 0.5 0.75 1 Miles
N
NORTH RIVER RD
GAGE LN
NORTH DEERFIELD DR
RIVER RD
ANGE RD
MACKEY'S RD
GENERAL PETTIGREW DR
HAMPTON DR
ROANOKE AVE
N CRESCENT DR
E MAIN ST
E THIRD ST
QUAIL DR
ROBIN DR
BRADLEY RD
US HWY 64 EAST
BRICK MILL LN
ROXIE REESE RD
NC HWY 45 S
FAIRLANE RD
CANAL ST
IDA ST
HILLARD DR
HAZEL ST
GARRETT ISLAND RD
WHITE OAK RD
GEE ST
ROOSEVELT AVE
OLD ROPER RD
PAMLIN LN
W MAIN ST
MADISON ST
ADAMS ST
JEFFERSON ST
MONROE ST
WASHINGTON ST
BRINKLEY AVE
BRINKLEY PL
ALDEN RD
GOLF RD
LATHAM AVE
WEST AVE
STERLING DR
ANNE ST
WILSON ST
CAMPBELL ST
OLD HILL RD
PARK AVE
PINE ST
CENTER AVE
PARK AVE
US HWY 64 WEST
GLEAVES RD
JACKSON ST
LOCUST DR
WILSON ST EXT
NC HWY 149
WELCOME DR
LONG RIDGE RD
COOL SPRINGS RD
LYNN LN