

Project Portfolio

Utilizing feedback from the CAT, existing planning documents, and results of the Risk and Vulnerability Assessment, a long list of potential solutions to address hazards was developed over the course of the RCCP. This project list was then refined through iterative working sessions with the CAT and a prioritization methodology was applied to determine the final five highest priority projects to include in the Project Portfolio.

Projects identified offer structural and non-structural hazard mitigation techniques that have co-benefits beyond resiliency. Project prioritization was done first by the CAT, where the group was asked to rank their preferences for projects under four categories of solutions: infrastructure, nature-based, policy-based, and outreach/education. Following this meeting, Kleinfelder applied components of the [STAPLEE](#) method to top ranking projects, taking into account attributes of cost-benefit, internal capacity, RCCP goal alignment, and identification of a project sponsor/champion. Community members then contributed their feedback about preferred projects at the Pender County Spring Fest and through the online Public Survey #2.

Full Project List in the **Appendix** details the projects that were identified throughout the process but were not selected for inclusion.

Each Project Profile provides information intended to support development of applications for funding opportunities. **Table 13: Proposed Project Summary** highlights the top five priority projects included in the Portfolio.

Table 13. Proposed Project Summary

Project	Description	Estimated Cost	Needs Addressed	Source
Burgaw Hydrologic & Hydraulic (H&H) Study	Conduct an H&H study to identify areas within the town limits vulnerable to flooding and develop strategies for flood mitigation (e.g., increase culvert capacity, improve drainage system, etc.).	\$60,000 - \$90,000	Stormwater Management, Flooding	Community Action Team
Rain Garden Installation & Educational Demonstration	Identify a strategic location for a small-scale bioretention cell (i.e., “rain garden”) to improve water quality, reduce peak runoff flows, and reduce runoff volumes from a small catchment area within Town. Provide conceptual recommendations for design of the rain garden. Conceptualize partnership(s) and program(s) to utilize the rain garden for educational demonstrations about green stormwater infrastructure.	\$25,000 - \$50,000	Stormwater Management, Flooding, Education	Community Action Team
Enhance Community Resilience through Ordinances and Regulations for Stormwater and Flood Damage Prevention	<p>Part A: Develop a set of regulations and local, community-centric solutions to manage stormwater runoff that exceeds minimum State requirements, where possible. To address Town goals for stormwater and flood management, ordinance development should explore provisions for public outreach, integration of green infrastructure and nature-based approaches, and other strategies to advance climate resiliency.</p> <p>Part B: Review the current Flood Damage Prevention Ordinances for improved control of flooding hazards and drainage improvements. Revisions should meet or exceed National Flood Insurance Program (NFIP) Minimum Requirements for Safer Development in Flood Prone Areas and include riparian buffer language.</p>	\$30,000 - \$50,000	Stormwater Management, Education, Development	Community Action Team

Project	Description	Estimated Cost	Needs Addressed	Source
Osgood Canal Stream Restoration / Flood Mitigation Program	Survey the Osgood Canal and update the H&H model of the canal prepared for the 2015 Burgaw Stormwater Master Plan with any changes to crossings or overbank areas. Run the updated model using current and future projected extreme precipitation events. Based on survey of the canal and coordination with the Town of Burgaw, inventory locations where floodplain creation/channel widening is feasible. Develop a 15% design of a restored Osgood Canal based on a nearby reference reach and use the overall design as a basis for a Flood Mitigation Program to prioritize future projects. Stream restoration elements may include culvert and bridge replacement; reshaping and stabilizing eroded streambanks; establishing vegetative cover on critically eroding lands; repairing riparian buffers on any new and existing development; restore native riparian vegetation.	\$100,000 - \$200,000	Stormwater, Management Flooding, Erosion	Burgaw Comprehensive Plan 2030
Stormwater Education & Outreach Campaign	Collaborate with entities such as NC Sea Grant, NCSU Cooperative Extension, NC Coastal Federation, NC National Estuarine Research Reserve and NC Coastal Reserve, etc. to conduct a public education and outreach campaign regarding community floodplain management activities, flood insurance policies, disaster assistance in Special Flood Hazard Areas, and other site-scale ways to mitigate flooding. Outreach should also include information and resources for property owners related to ditch/canal maintenance and options for native landscaping. This is also considered a Community Rating System activity. Consider engaging HOAs about stormwater best management practices within neighborhoods.	\$35,000 - \$45,000	Stormwater Management, Education	Community Action Team

Project A.

Burgaw Hydrologic and Hydraulic (H&H) Study

Project Description

Conduct an H&H study to identify areas within the town limits vulnerable to flooding and develop flood mitigation strategies (e.g., increase culvert capacity, improve drainage system, etc.) culminating in a final report with recommendations.

Location	Locations to focus on will include E. Hayes St/US 117, E Wilmington St Ext., S Dudley St, W. Bridges St Ext, the old golf course and S. Dickerson St.
Source	CAT
Scoping Questions	<ul style="list-style-type: none"> • Does the Town have an inventory of its existing drainage network (stormwater conveyance, culverts, etc.) and utility locations? • Does the Town have documentation of flooding in problem areas? • What is the goal for flood mitigation (relieve nuisance flooding, maintain access during 100-year storm, etc.)?
Hazard(s) Addressed by the Project	<ul style="list-style-type: none"> • Flooding / stormwater runoff • Severe weather and heavy rainfall
Supporting Function	<ul style="list-style-type: none"> • Study / Planning • Stormwater management • Address infrastructure issues
Type of Solution	<ul style="list-style-type: none"> • Study / Plan • Develop concept-level design recommendations
Project Estimated Timeline	1 year
Responsible Entity	Town Public Works with civil engineer consultant support
Potential Partners	<ul style="list-style-type: none"> • Local watershed/waterbody groups • Civil engineering consultant to assist with H&H model and mitigation concept development
Existing Funding	None identified by the CAT
Potential Funding Sources	<ul style="list-style-type: none"> • Resilient Coastal Communities Program • FEMA BRIC (Building Resilient Infrastructure & Communities) • FEMA FMA (Flood Mitigation Assistance) • USACE FPMS (Flood Plain Management Services) • US DOT RAISE (Rebuilding American Infrastructure with Sustainability and Equity) • USDA Rural Development Water & Environmental Programs

Project Estimated Cost	\$60,000 - \$90,000
Anticipated Benefit	<p>Medium</p> <p>Primary benefits include flood mitigation recommendations to alleviate localized flooding and reduce risk. Conducting an H&H Study is a critical 'first step' action in obtaining additional funding for developing and implementing mitigation measures. Future flood mitigation measures would have the greatest benefit to surrounding areas.</p>
Priority Rating	<p>CAT: 2nd / 8th</p> <p>Public: 4.0/5.0</p> <p>Overall: High</p>

Project B.

Rain Garden Installation and Educational Demonstration

Project Description

Identify a strategic location for a small-scale bioretention cell (termed “rain garden”) to improve water quality, reduce peak runoff flows, and reduce runoff volumes from a small catchment area within Town. Provide conceptual recommendations for design of the rain garden. Conceptualize partnerships and programs to utilize the rain garden for educational demonstrations about green stormwater infrastructure.

Location	To be determined through the project
Source	CAT / Town Staff
Scoping Questions	<ul style="list-style-type: none"> • Where will project be located? Is there a known problem area in town where a stormwater feature would be beneficial or would be highly visible? • Are there pollutant load reduction or runoff volume reduction targets? • Are public and/or private lands available for the installation? • Are base mapping, soil data, and utility records available for evaluation of possible installation location and conceptual design recommendations? • How large is the area to be reviewed?
Hazard(s) Addressed by the Project	<ul style="list-style-type: none"> • Flooding / stormwater runoff • Severe weather and heavy rainfall
Supporting Function	<ul style="list-style-type: none"> • Climate Resiliency • Water Quality and Water Quantity Improvements • Education/Public Outreach • Funding Opportunities
Type of Solution	<ul style="list-style-type: none"> *Nature-based Solution • Green Infrastructure • Stormwater Management Practice • Educational Programs
Project Estimated Timeline	12 months (or longer if there are multiple installations, partnerships, programs, etc.)
Responsible Entity	Town of Burgaw with engineering consultant

Potential Partners	<ul style="list-style-type: none"> • Public/private partnerships • NC Sea Grant • NC Coastal Federation • NCSU Cooperative Extension • Local watershed/waterbody organization
Existing Funding	None identified by the CAT
Project Estimated Cost	Cost for conceptual-level location, design, and program recommendations for one rain garden is approximately \$25,000 - \$50,000 depending on scale of area to be reviewed, available data, and coordination of possible program partners.
Anticipated Benefit	<p>Medium</p> <p>A single rain garden installation will have the greatest impact on a localized drainage area. Multiple installations can be implemented for greater overall impact to watershed area. The demonstration program will educate community members and leaders about the benefits of green stormwater infrastructure, possibly leading to policy changes and greater programmatic impacts.</p>
Priority Rating	<p>CAT: 2nd / 4th</p> <p>Public: 3.2/5.0</p> <p>Overall: High</p>

Project C.

Enhancing Community Resiliency through Ordinances and Regulations for Stormwater and Flood Damage Prevention

Project Description

Part A: Develop a set of local regulations and community-centric solutions to manage stormwater runoff that exceeds minimum State requirements where possible. To address the Town’s goals for stormwater and flood management, ordinance development should explore provisions for public outreach, integration of green infrastructure and nature-based approaches, and other strategies to advance climate resiliency practices.

Part B: Review current Flood Damage Prevention Ordinances for improved control of flooding hazards and drainage improvements. Revisions to ordinances should meet or exceed National Flood Insurance Program (NFIP) Minimum Requirements for Safer Development in Flood Prone Areas and include language about riparian buffers.

Location	Town-wide
Source	CAT / Town Staff
Scoping Questions	<ul style="list-style-type: none"> • What are examples of other communities that have similar ordinances/language? • Does the Town have capacity and motivation to manage incentives, inspections, and enforcement activities? • What is the local process for ordinance adoption? • Is there grassroots support for ordinance change and adoption?
Hazard(s) Addressed by the Project	<ul style="list-style-type: none"> • Flooding • Stormwater runoff • Severe weather and heavy rainfall
Supporting Function	<ul style="list-style-type: none"> • Public health and wellbeing • Public infrastructure • Personal property • Education and outreach: Enhances community knowledge and understanding of hazards and solutions
Type of Solution	<ul style="list-style-type: none"> • Policy / Ordinances • Incentives for low-impact stormwater control measure (SCM) • Educational efforts and resources

Project Estimated Timeline	1 year Approximate timeline: <ul style="list-style-type: none"> • 3-months: pre-development and research. Simultaneously build local stakeholder group and set first meeting. • 3-months: conduct local stakeholder meetings to develop draft ordinances • 3-months: engagement with local elected officials and community organizations for ordinance refinement and building support • 3-months: adoption of ordinance and incentives. Pair this activity with additional community outreach to understand the impacts of adopted measures.
Responsible Entity	Town administrator/manager, Planning Department, planning consultant
Potential Partners	<ul style="list-style-type: none"> • Local hazard mitigation officials • Floodplain administrators • Elected officials • Chamber of Commerce • Economic Development • Planning and Zoning staff/board members • Environmental groups • Realtors/Developers
Existing Funding	None identified by the CAT
Potential Funding Sources	Resilient Coastal Communities Program
Project Estimated Cost	\$30,000 - \$50,000
Anticipated Benefit	Medium Benefits include an education component for the community, enhanced community pride and ownership, a mechanism to reduce risk and guide new development, and reduce the impacts of new development on existing community infrastructure and resources.
Priority Rating	CAT: 1st / 10th Public: 3.0/5.0 Overall: High

Project D.

Osgood Canal Stream Restoration / Flood Mitigation Program

Project Description

Survey the Osgood Canal and update the H&H model of the canal prepared for the 2015 Burgaw Stormwater Master Plan with any changes to crossings or overbank areas. Run the updated model using current and future projected extreme precipitation events. Based on survey of the canal and coordination with the Town of Burgaw, inventory locations where floodplain creation/channel widening is feasible. Develop a 15% design of a restored Osgood Canal based on a nearby reference reach and use the overall design as a basis for a Flood Mitigation Program to prioritize future projects. Stream restoration elements may include culvert and bridge replacement; reshaping and stabilizing eroded streambanks; establishing vegetative cover on critically eroding lands; repairing riparian buffers on any new and existing development; restore native riparian vegetation.

Location	Osgood Canal from upstream of South Dickerson Street to behind Northwood Apartments.
Source	Stormwater Master Plan (2015)
Scoping Questions	<ul style="list-style-type: none"> • What is currently scoped under the planned Stormwater Master Plan update (2024)? • What has the Town already implemented from the Osgood Canal flood mitigation alternatives studied in the 2015 Burgaw Stormwater Master Plan? • Are there particular stream restoration options that the Town of Burgaw is interested (or not interested) in pursuing? For example, would the Town be open to floodplain creation on Town-owned land?
Hazard(s) Addressed by the Project	<ul style="list-style-type: none"> • Flooding • Erosion • Stormwater runoff • Severe weather and heavy rainfall
Supporting Function	<ul style="list-style-type: none"> • Transportation • Environmental enhancement and ecological benefits • Water quality • Health and safety

Type of Solution	<p>*Nature-based Solution</p> <ul style="list-style-type: none"> • Planning and initial design <p>This effort would lead to future infrastructure improvements. Pieces of the design (e.g., culvert replacements, restorations of certain stretches of the canal) would be split out into separate projects to target grant applications.</p>
Project Estimated Timeline	12-18 months
Responsible Entity	Town and/or County Planning Department with a consultant
Potential Partners	<ul style="list-style-type: none"> • Pender County • NCDOT (for any state-owned roads)
Existing Funding	None identified by the CAT
Potential Funding Sources	<ul style="list-style-type: none"> • Resilient Coastal Communities Program • FEMA HMA grants (Flood Mitigation Assistance, Hazard Mitigation Grant Program, Building Resilient Infrastructure and Communities) • EPA grants • DOT grants
Project Estimated Cost	<ul style="list-style-type: none"> • Planning and Design: \$100,000 - \$200,000 • Construction (a later phase): \$10M - \$15M
Anticipated Benefit	<p>High</p> <p>The 2015 analysis showed five road crossings flooded by the Osgood Canal under the present-day 2-year storm</p>
Priority Rating	<p>CAT: 1st / 4th</p> <p>Public: 4.1/5.0</p> <p>Overall: High</p>

Project E.

Stormwater Outreach & Education Campaign

Project Description

Collaborate with partners such as NC Sea Grant, NCSU Cooperative Extension, and NC Coastal Federation, NC National Estuarine Research Reserve, and NC Coastal Reserve to develop and conduct a comprehensive outreach and education campaign regarding community floodplain management and stormwater management. The campaign would focus on 1) raising awareness about flood risks, 2) providing materials and tools to prepare for and recover from a flood event (i.e., developing a flood preparedness plan, information on flood insurance policies and disaster assistance in Special Flood Hazard Areas, etc.) and 3) sharing site-scale methods to mitigate flooding (i.e., ditch/canal maintenance, native landscaping). During this process, the Town and partnering organizations will identify stakeholders (homeowners, renters, business, advocacy groups) and deploy specific strategies for

Location	Town-wide and regional
Source	CAT
Scoping Questions	<ul style="list-style-type: none"> • Has any organization or Town conducted an outreach campaign on stormwater in the past? • What is an effective method for communication? • What are topics that residents are interested in specifically?
Hazard(s) Addressed by the Project	<ul style="list-style-type: none"> • Flooding • Hurricanes / tropical storms • Severe weather and heavy rainfall
Supporting Function	<ul style="list-style-type: none"> • Communication • Preparedness • Public Education
Type of Solution	Educational & outreach program
Project Estimated Timeline	12 months to capture seasonal messaging and educational components throughout the year.
Responsible Entity	Town of Burgaw with a consultant

Potential Partners	<ul style="list-style-type: none"> • NC Sea Grant • NC Coastal Federation • NCSU Cooperative Extension • NC National Estuarine Research Reserve • NC Coastal Reserve
Existing Funding	None identified by the CAT
Potential Funding Sources	Resilient Coastal Communities Program
Project Estimated Cost	\$35,000 - \$45,000
Anticipated Benefit	<p>Medium-High Benefit</p> <p>A community that is well-informed about the risks of flooding and the tools available for mitigation and recovery is better suited to recover after a flooding event. Building community is a key part of resilience.</p>
Priority Rating	<p>CAT: 1st / 4th</p> <p>Public: 2.8/5.0</p> <p>Overall: Medium</p>