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Phase 2: Planning, Project Identification, and Prioritization

3.1 Potential Solutions

Based on existing information, coordination with Town staff and other project teams, feedback from the Planning Board, and community input, a list of potential solutions was compiled, and each identified as:

- Infrastructure and nature-based measures
- Local policy and regulations
- Local and regional plans
- Education, awareness, and incentive programs

The community response to the project survey overwhelming (over 90% of survey respondents) supports the need of infrastructure and nature-based projects for the Town to be more resilient. The top three community-wide activities to pursue based on the community survey include prevention planning, emergency services, and natural resource protection. The matrix of potential solutions is included in Appendix B. It is anticipated that the Town will continue to update this matrix as new information becomes available.

3.2 Prioritized Projects Portfolio

Many of the projects included in the project matrix were pulled from existing plans, initiatives, and the Town's budget and Capital Improvement Plan (CIP). These projects aim to reduce exposure and sensitivity and increase adaptive capacity to hazards. It is important to note that these other efforts included prioritization exercises for possible implementation. For example, the VCAPS compiled projects into tables based on level of priority (1-3), with Priority 1 projects being the highest priority. The VCAPS also identified if the projects had any overlap or integration with FOCUS Nags Head.

The potential project solutions were evaluated based on feedback received from Town staff, the Town Planning Board, and community input, in addition to how the potential solution addressed the critical asset type determined to be the most vulnerable. These projects were further characterized by high-level cost, advancement of prior efforts, technical soundness, co-benefits, long-term impact, and capacity to implement.

Below is the list of the prioritized projects based on community engagement and analysis in Phase 1 and 2 of the RCCP.

Project 1:

Project Name	S. Old Oregon Inlet Road Project Areas #12
Project Description	Flooding along the S. Old Oregon Inlet Road (NCSR 1243) roadway has been documented for many years, specifically in the areas between James Street to Juncos Street (Project Area #12). Areas along this corridor are subject to flooding for prolonged periods of time after rainfall events, restricting pedestrian travel along the multi-use path and frequently reducing vehicular travel to one-lane along S. Old Oregon Inlet Road. Project Area #12 improvements include the addition of approximately 2,050 linear feet (l.f.) of a "french drain" perforated pipe system. The system design would account for connectivity for a permanent pump station setup and dune infiltration system. Project Area #12 will require additional design services for the pump station and dune infiltration system which is estimated at approximately $50,000. This amount could be applied towards a Town "match". The estimated opinion of probable construction costs is $1,845,000 with an additional $75,000 for construction administration for a total cost of $1,970,000. It should be noted a lag period has been provided between design and construction to account for environmental permitting.
Hazard(s) addressed by project	Flooding (from rainfall events)

Type of Solution	Infrastructure & Nature-Based Measures
Project Estimated Cost	$1,920,000
Potential Implementation Funding Sources	ARPA grant Town match
Estimated Timeline	Fiscal Year (FY) 24-25: Construction
Priority Rating	High (1)
Project Map	See Appendix C

Project 2:

Project Name	Project Area #4 - Bonnett Street Drainage Construction
Project Description	Insufficient drainage infrastructure, along low-lying properties and elevated groundwater are causing flooding along Wrightsville Avenue from Bonnett Street to Bainbridge Street. The conceptual proposal is includes employing a network of perforated pipes along S. Wrightsville Avenue which will connect to a pump station that will discharge to an infiltration area partially below the Bonnett Street Beach Access parking lot. A Land & Water Fund grant application request was submitted in February 2022. A decision will not be made until Fall 2022. Per the grant requirements, construction is required to be started within one year of the notice of award. An 18-month window for construction is typically provided by the grant agency with consideration for an additional 12 months, if necessary.
Hazard(s) addressed by project	Flooding, increased groundwater elevation
Type of Solution	Infrastructure & Nature-Based Measures
Project Estimated Cost	Total project related costs equate to $875,300 with grant reimbursable funds equaling $472,300. A Town match has previously been expended in the amount of $24,000 with a remaining balance of $379,000 towards a grant "match". Design services would be required in advance of the construction and are estimated to total $90,000. No funds would be expended if the grant is not awarded.

Potential Implementation Funding Sources	Land & Water Fund Town Match
Estimated Timeline	Winter 2022 - Design Fall/Winter 2023 - Construction
Priority Rating	High (2)
Project Map	See Appendix C

Project 3:

Project Name	Estuarine Shoreline Management Plan Implementation
Project Description	Implementation of 3 priority living shoreline projects identified in the Town of Nags Head Estuarine Shoreline Management Plan (ESMP). Completing the ESMP is an essential step in mitigating the impacts of flooding, storm surge, erosion, and sea level rise on the estuarine shoreline. The Plan is a comprehensive effort to address the management of 17 miles of estuarine shoreline in the Town while balancing land use, ecosystem health, public health, and recreational opportunities. This planning effort will characterize the existing shoreline and its historical changes; identify shoreline best management practices, uses, and policy; explore the legal and regulatory context of shoreline management and nature-based solutions; and consider the impacts of future hazards such as sea level rise and storm surge. The ESMP process will identify strategies and sites where the Town's estuarine shoreline can protect critical structures, enhance habitat values, and provide aesthetic and community benefits.
Hazard(s) addressed by project	Flooding, storm surge, erosion, and sea level rise
Type of Solution	Infrastructure & Nature-Based Measures
Project Estimated Cost	To Be Determined (TBD) based on project prioritization in the ESMP (anticipated completion by December 2022)
Potential Implementation Funding Sources	State and Federal grant opportunities Town Match

Estimated Timeline	TBD based on project prioritization in the ESMP (anticipated completion by December 2022)
Priority Rating	High (3)
Project Map	TBD based on project prioritization in the ESMP (anticipated completion by December 2022)

Project 4:

Project Name	Water Quality and Groundwater Data Loggers
Project Description	The past Decentralized Wastewater Management Plan (DWMP) recommended that the Town consider purchasing up to 28 remote water quality data loggers as part of a desire to increase frequency of water quality sampling of nitrate nitrogen (NO3) and Enterococci samples throughout the town. Enterococci is the primary indicator to septic failures and is specifically used as an indicator for beach closures. Each remote water quality data logger was estimated at approximately $5,500, representing a total project cost of $154,000. This project, documented in the DWMP (updated Spring 2022) involves the purchase of ten groundwater data loggers, which are approximately $2,185/each. The purchase of these data loggers is a recommendation of the Updated Decentralized Wastewater Management Plan (DWMP). Section 8.3 of the DWMP. While there are four groundwater elevation monitoring sites in Nags Head, additional continuous remote groundwater elevation monitoring should be conducted to determine seasonal variations, long-term variability and effects on groundwater lowering projects. These remote groundwater data loggers will continuously log data and determine average groundwater levels and compare to established limits. Total project cost is $21,850 (i.e., 10 loggers, $2,185 each).
Hazard(s) addressed by project	Septic system failures, increased groundwater elevation
Type of Solution	Infrastructure & Nature-Based Measures
Project Estimated Cost	$21,850

Potential Implementation Funding Sources	NCDDEQ 319 (h), FEMA BRIC, NCLWF, NCDOJ EEG, NCDEQ WRDG, NCDEQ DWI (per Table 12-1 of the DWMP, updated Spring 2022) Town Match
Estimated Timeline	2022-2024
Priority Rating	High (4)
Project Map	Monitoring sites to be determined

Project 5:

Project Name	New Homeowner Welcome Packet - DWMP
Project Description	Provide septic and water quality education materials to new homeowners along with Septic Health Initiative (SHI) program details.
Hazard(s) addressed by project	Septic system failures
Type of Solution	Education, Awareness & Incentive Program
Project Estimated Cost	Minimal cost – dependent upon print materials and mailings
Potential Implementation Funding Sources	Town General Fund Town Water Fund Multiple Grant Opportunities (see Section 11.0 of the DWMP, updated Spring 2022)
Estimated Timeline	Ongoing
Priority Rating	High (5)
Project Map	Town-wide