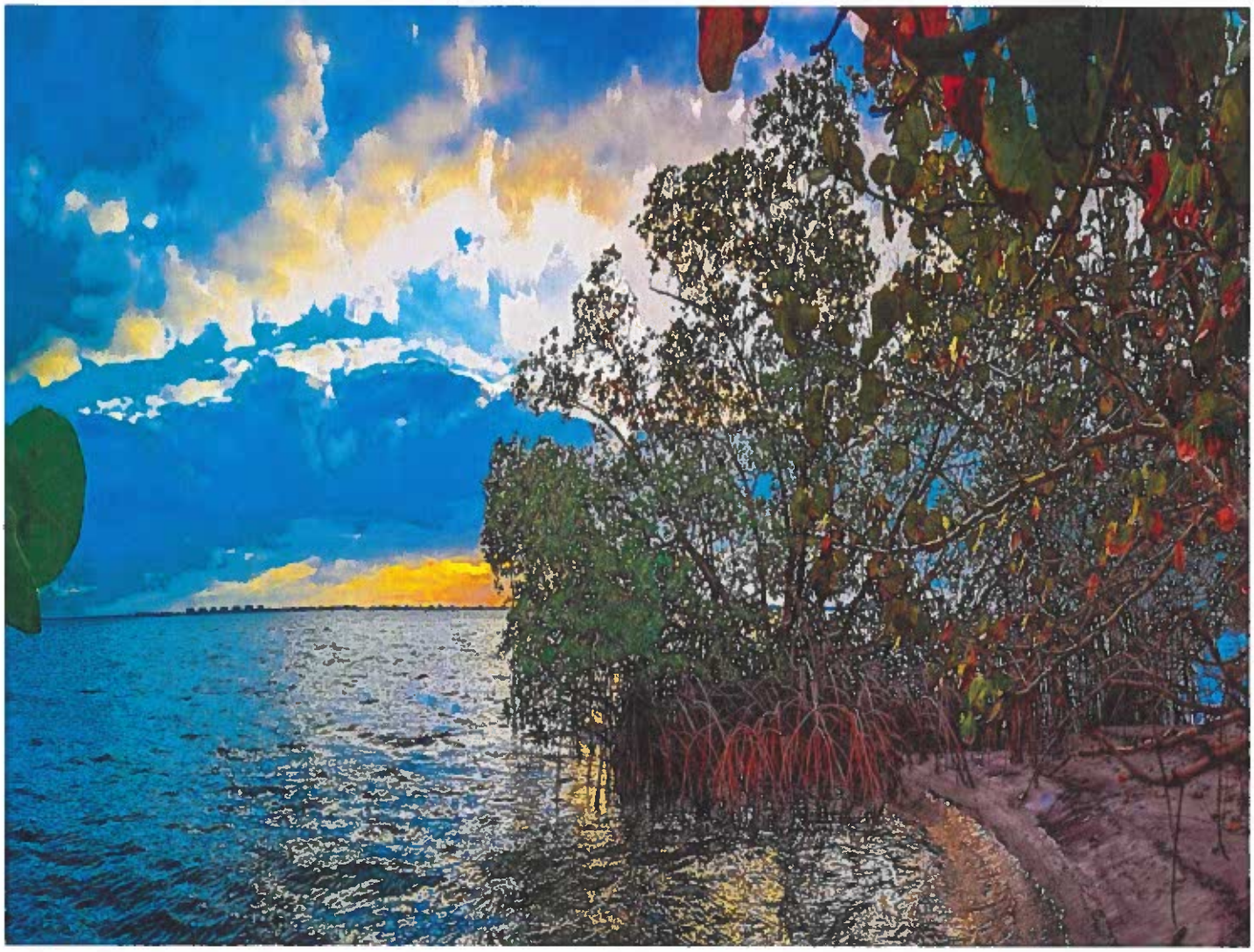
St. Lucie County Regional Resilience Plan

Final Report

January 2026



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To the residents, businesses, organizations, and leaders of
St. Lucie County, Port St. Lucie, Fort Pierce, and St. Lucie Village

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EXECUTIVE SUMMARY

Community resilience refers to the ability of governments, individuals, organizations, institutions, and businesses to anticipate, respond to, endure, and recover from both immediate and prolonged pressures stemming from natural hazards like hurricanes, flooding, and extreme heat events.

St. Lucie County (SLC, or County) and its municipalities—City of Port St. Lucie (PSL), City of Fort Pierce (FP), and St. Lucie Village (SLV)—joined together to take a collaborative approach toward short- and long-term resilience planning, beginning with the development of comprehensive Regional Resilience Vulnerability Assessments (RVA). Phase I of the RVAs, completed in June 2025, focused on flooding hazards (RVA-Flood). Phase II focused on "Other Hazards" (RVA-OH), including coastal erosion, extreme heat, drought, wind, wildfires, storm surge, inland flooding, and sea level rise. Together, the RVAs represent a foundational step in developing a community-wide resilience plan by taking a local, data-driven approach to evaluate the vulnerability of community-wide assets to various natural hazards. This document represents an initial step in a longer-term resilience planning journey. It includes the methodology, results, and recommendations developed by a committee of local practitioners and sustainability experts dedicated to advancing resilience in St. Lucie County.

This resulting Regional Resilience Plan (RRP) builds from the work completed in the RVAs and identifies adaptation strategies that can be implemented to ensure a resilient future for the region. Adoption or acceptance of the RRP by local jurisdictions signals a shared commitment to prioritizing resilience. It does not constitute adoption of the specific policies or actions recommended in the plan, but rather, an agreement to consider these recommendations in future planning and decision-making. Importantly, adoption of the RRP also positions the County and municipalities to be eligible for critical state and federal grant funding to support resilience initiatives.

SLC and the municipalities have a long history of collaborating to address a wide range of issues and implement initiatives that promote sustainability and resilience. From the acquisition and restoration of natural areas to the development of stormwater storage and conveyance systems, septic-to-sewer projects, water quality improvement efforts, and disaster preparedness, the St. Lucie community is well-positioned to continue to enhance its resilience to future threats.

The St. Lucie County RRP outlines a comprehensive strategy to enhance resilience, safety, economic stability, and health across St. Lucie County and the municipalities, encompassing both immediate and long-term adaptation strategies. The RRP, developed in response to hazards such as sea level rise and storm surge, wind, coastal erosion, extreme heat, and increased flooding, was informed by the RVAs that examined critical infrastructure, at-risk populations, and natural resources. The goal of this plan is to equip the County and municipalities with adaptive capacity to withstand current and projected hazard impacts while maintaining the safety, health, and economic stability of all residents.

The Phase I RVA-Flood analysis was funded in part by the Florida Department of Environmental Protection through a Resilient Florida Program grant, while the Phase II RVA-OH analysis and Regional Resilience Plan was funded by a Florida Department of Commerce Community Development Block Grant Mitigation Program, through the U.S. Department of Housing and Urban Development. Together with the RVAs, the Regional Resilience Plan represents a critical initiative that reflects a collaborative

effort among St. Lucie County and its municipalities, local agencies, and community stakeholders to build a more resilient and adaptative community.

Public stakeholders and steering committee members played a vital role in shaping the RRP by providing essential input and feedback. More than two dozen meetings or workshops were held to provide information on resilience planning and the development of the RRP, eliciting input from 11 different groups from neighborhood associations and non-profit organizations to government and agency boards and committees. SLC and the municipalities established a resilience steering committee of key collaborators, comprising representatives from diverse backgrounds. The resilience steering committee assisted in shaping the resilience project by reviewing goals, offering input on study direction, identifying geographic context, guiding modeling methodologies, pinpointing available data and resources, providing specific asset information, and reviewing project findings. The steering committee represented various St. Lucie County, Port St. Lucie, Fort Pierce, and St. Lucie Village departments including Planning & Development Services, Public Works, Utilities & Solid Waste, Public Works, Emergency Operations, Coastal Engineering, Innovation & Strategic Initiatives, and Environmental Resources. The resilience steering committee was also comprised of various member agencies including representatives from SLC Florida Department of Health, SLC School District, SLC Economic Development Council, St. Lucie Transportation Planning Organization, and the Treasure Coast Regional Planning Council.

To ensure success, the RRP emphasizes collaboration with partners, community engagement, policy integration, and adaptive management, allowing for responsive adjustments based on ongoing data collection and progress evaluations. Funding strategies include leveraging federal and state grants, local funding, and innovative financing, providing the financial foundation needed to sustain resilience efforts.

Success metrics, such as key performance indicators and regular progress assessments, will guide the County's and municipalities' efforts, ensuring transparency and accountability. Outcomes will be shared as updates with the public, fostering community support and trust in their local government's commitment to resilience.

The St. Lucie County's RRP provides a forward-looking foundation and a flexible framework to guide future resilience actions. The RRP positions the County to not only adapt to but thrive in the face of hazard-related challenges, creating a safer, healthier, and more resilient future for all residents.

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Acronyms and Abbreviations

BCEGS	Building Code Effectiveness Grading Schedule
CDBG-MIT	Community Development Block Grant Mitigation
County	St. Lucie County
CRS	Community Rating System
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
FP	Fort Pierce
F.S.	Florida Statute
GIS	geographic information system
HUD	U.S. Department of Housing and Urban Development
municipalities	City of Port St. Lucie, City of Fort Pierce, and St. Lucie Village
NFIP	National Flood Insurance Program
NIH	NOAA intermediate-high (sea level rise projection)
NIL	NOAA intermediate-low (sea level rise projection)
NOAA	National Oceanic and Atmospheric Administration
PSL	Port St. Lucie
RRP	Regional Resilience Plan
RVA	Resilience Vulnerability Assessment
RVA-OH	Resilience Vulnerability Assessment – Other Hazards
SLAMM	Sea Level Affecting Marshes Model
SLC	St. Lucie County
SLV	St. Lucie Village

Glossary

Adaptation: The process of adjustment to actual or expected threats and impacts, in order to moderate harm or exploit beneficial opportunities. Adaptive capacity is the ability to make these adjustments based on feedback loops.

Adaptive Capacity: The ability of an asset to adapt, withstand, or function effectively in the face of hazard impacts.

Assets: People, resources, ecosystems, infrastructure, and the services they provide. Assets are the tangible and intangible items that St. Lucie County residents and communities value.

Bathtub Method/Model: A methodology that calculates and/or models the addition of water on the landscape to determine existing and future risks to flooding. The bathtub model looks at water on the land based on topography without regard to current or future stormwater infrastructure nor underground hydrology dynamics.

Critical Assets/Infrastructure: Public assets, networks, and essential systems crucial for the well-being of St. Lucie County and the municipalities. Disruption or damage to critical infrastructure would lead to negative community, environmental, and/or economic consequences.

Days of Tidal Flooding: The number of days that the water level exceeds mean higher high water at (in this study) the Virginia Key Tide Gauge, when that water level is adjusted for sea level rise.

Exposure: The presence of people, assets, and ecosystems in places where they could be adversely affected by hazards.

Flood Mitigation: Structural changes to reduce the frequency and severity of flood damages.

Hazard: An event or condition that may cause injury, illness, or death to people or damage to assets or otherwise impede their normal function.

Hazard Mitigation: When used by the Federal Emergency Management Agency (FEMA), the actions taken to reduce loss of life and property by lessening the impact of near future disasters.

Hazus: A GIS-based software tool that applies engineering and scientific risk calculations to provide defensible damage and loss estimates.

Impacts (negative impacts in this discussion): Effects on natural and human systems that result from hazards. Evaluating potential impacts is a critical step in assessing vulnerability.

Infrastructure: Fundamental physical and organizational structures (man-man and natural) and facilities necessary for the functionality of a community.

Likelihood: The probability of an asset being impacted by a hazard based on its geographical position.

Mitigation: A human intervention to reduce impacts from current or future impacts.

Mean Return Period: The average amount of time expected between occurrences of a specific event, such as a hurricane or flood, based on historical data and probability.

Nature-based Solutions: Efforts to safeguard, sustainably manage, and restore or augment natural or altered ecosystems as an effective way to reduce the risks posed by natural hazards, such as flooding, extreme heat, and coastal erosion. Nature-based solutions can provide effective mitigation, while simultaneously enhancing human well-being and biodiversity.

Planning Horizon: The projected conditions at a future date, in this study the planning horizons are 2040 and 2070.

Projections: Potential future conditions simulated by complex computer-based models of the earth's systems. Projections are based on potential scenarios and various factors under different assumptions about natural processes and human activity and are crucial for informing adaptation and mitigation strategies, as well as community preparedness.

Regionally Significant Assets: Vital facilities within the County that cater to a wider geographic scope, spanning neighboring communities, and may be but are not inherently under the county or municipal ownership and maintenance.

Resilience: The capacity of a community, business, or natural environment to prevent, withstand, respond to, and recover from a disruption.

Risk: The potential total cost if something of value is damaged or lost, considered together with the likelihood of that loss occurring. Risk is often evaluated as the probability of a hazard occurring multiplied by the consequences that would result if it did happen.

Scenarios: A set of assumptions about the future regarding the level and effectiveness of mitigation efforts and other physical processes, each with a level of uncertainty.

Sea Level Rise (Absolute Sea Level Rise): An increase in the height of the ocean surface above the center of the earth, without regard to whether nearby land is rising or falling.

Section 380.093(3), F.S.: A Florida statute passed in 2021, 380.093(3), F.S. pertains to vulnerability assessments related to flooding and sea level rise in the state of Florida. It requires the state to compile a comprehensive statewide assessment of specific risks posed by flooding and sea level rise.

Sensitivity: The degree to which a system, population, or resource is or might be affected by hazards.

Storm Surge: An abnormal rise in seawater level generated by a storm, over and above the predicted astronomical tide. It is primarily caused by strong winds pushing water toward the shore and can result in extreme coastal flooding, especially when coinciding with high tide.

Tidal Flooding: Defined in Florida Statute (F.S.), Subparagraphs 380.093(3)(d)1. and 380.093(3)(d)2., F.S. as "Depth of tidal flooding, including future high tide flooding. The threshold for tidal flooding is 2 feet above mean higher high water."

Uncertainty: The inability to predict, with 100 percent accuracy, a particular outcome because future weather conditions and system dynamics arise from the complexity of variables.

Urban Heat Island Effect: A phenomenon where urban areas experience significantly higher temperatures than surrounding rural areas due to the concentration of buildings, roads, and other

infrastructure that absorb and retain heat. Limited vegetation and increased human activity further intensify this effect.

Vulnerability: The propensity or predisposition of assets (human, ecological, and man-made) to be adversely affected by hazards. Vulnerability encompasses the degree of exposure, sensitivity, risk, potential impacts, and adaptive capacity.

Vulnerability Assessment: A systematic, data-driven process for analyzing hazard exposure, hazard sensitivity, and adaptive capacity to identify who or what is vulnerable to certain conditions, the level and extent of impacts, and the potential adaptations that can be implemented to lessen risk.

100-Year Event: A statistical term used to describe an event (such as a flood or storm) that has a 1 percent chance of occurring in any given year. It reflects the probability based on historical data and modeling.

24-Hour Rainfall: A calculation of the amount of rainfall over 24-hours. This parameter is often used when calculating storm rainfall events that generally occur once every 25 or 100 years.

1.0 INTRODUCTION

1.1 Project Background

This St. Lucie County Regional Resilience Plan (RRP) represents a proactive approach to adaptation in response to escalating natural hazards impacting the South Florida region. St. Lucie County and the municipalities—City of Port St. Lucie, City of Fort Pierce, and St. Lucie Village—face increasing threats from hazards such as coastal erosion, drought, extreme heat, inland flooding, compound flooding, storm surge and sea level rise, hurricanes, and wildfires. Recognizing these mounting challenges, the County and municipalities have undertaken Phase I (Flood) and Phase II (Other Hazards) Regional Vulnerability Assessments (RVAs) and developed a comprehensive RRP to address both immediate and long-term hazards. A more detailed outline of the project process is displayed in **Figure 1-1**. This project reflects a collaborative effort among St. Lucie County and the municipalities, local agencies, and community stakeholders to build a more resilient and adaptative community.

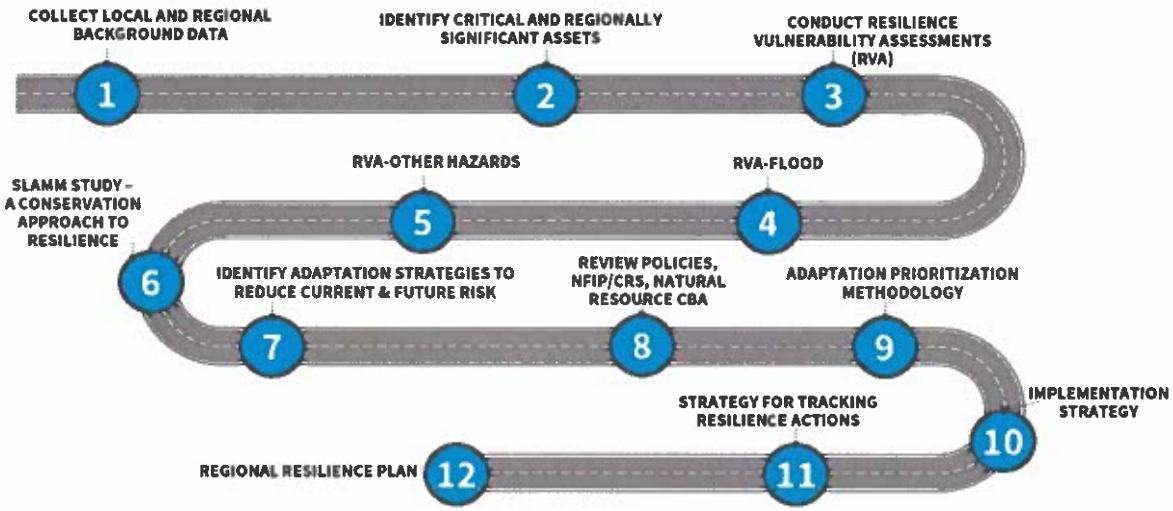

Figure 1-1. RVA and RRP Project Process

1.2 RRP Project Goals, Metrics, and Targets

The primary objectives of this project are to enhance County-wide resilience by offering adaptation and mitigation strategies based on current and future identified risks while maintaining safety, health, and economic stability. Key objectives include the following:

- Develop adaptation strategies that respond to prioritized hazards.
- Identify future potential funding strategies and partnerships to ensure continuity and momentum.
- Support broad access to the benefits of resilience actions, with attention to areas and populations that may be more exposed to hazards.

These objectives ensure that the RRP serves as a practical guide for decision-makers and a reference point for stakeholders as the County and municipalities moves toward a more resilient future.

1.3 Resilience Initiatives in St. Lucie County

1.3.1 Vision

The RRP envisions a St. Lucie County that is resilient, prepared, and inclusive in the face of hazard-related risks. This vision embodies the County and municipalities' commitment to safety, economic stability, and health, ensuring that every resident is protected from hazards. The vision also emphasizes a balanced approach to development and conservation, acknowledging the need to protect natural resources while fostering community well-being.

2.0 PROJECT PROCESS AND METHODOLOGIES

The first step in the process of developing the Regional Resilience Plan included the collection of comprehensive local data to perform mapping and GIS-based vulnerability assessments. Two Resilience Vulnerability Assessments were developed:

- Phase I: RVA Flood
- Phase II: RVA-Other Hazards (RVA-OH)

The RVAs conducted for SLC and the municipalities identified and evaluated several key hazards impacting the region, including:

- Coastal erosion
- Storm surge and sea level rise
- Inland flooding
- Compound flooding
- Drought
- Extreme heat
- Wind
- Wildfire

The RVAs included a systematic process to identify the potential vulnerabilities of the community to adverse impacts from flood hazards. It incorporated scientific data from technical sources such as the National Oceanic and Atmospheric Administration (NOAA) and the Federal Emergency Management Agency (FEMA), topographic and elevation data, hydrologic data, asset data, and sea level rise and rainfall projections. In addition, watershed mapping, a tree canopy analysis, and a cost-benefit analysis of conservation lands were performed (see **Appendices D**, **E**, and **F** respectively). Finally, supplemental information in existing local studies relative to flood risk were utilized, as well as input from residents, organizations, agencies, government entities, and businesses. Four categories of assets were evaluated: Transportation and Evacuation Routes; Critical Infrastructure; Community and Emergency Facilities; and Natural, Cultural, and Historic Resources.

The RVAs incorporated critical municipal and regionally significant assets. Critical assets are public assets, networks, and essential systems crucial for the continued delivery of essential services to the residents of St. Lucie County and its municipalities. First, data representing all critical County- and municipal-owned assets were collected to create the baseline asset inventory. Then based on community priorities, the baseline asset inventory was refined to the critical asset inventory.

The RVAs employed a sequential methods approach, first characterizing vulnerability as a function of exposure and sensitivity. Exposure refers to the presence of people, assets, and ecosystems in areas where they could be adversely affected by any of the hazards. The St. Lucie County RVAs assessed exposure levels to each hazard by identifying the projected intensity and extent caused by each scenario for each planning horizon. Intensification of flooding hazards, heat, drought, wildfire, and erosion were mapped to identify areas in need of adaptive measures. In some cases, specific area(s) were identified while others required a more regional approach.

Once the critical assets were identified, a sensitivity analysis was performed to determine the degree to which a system, population, or resource is or might be affected by the hazards and the associated risk or consequence that would result if that hazard occurred.

2.1 Overview of Regional Vulnerability Assessment Results

The results of the flooding analysis (RVA Phase I Flooding analysis) identified 933 critical at-risk assets across the county and its municipalities, including emergency services, healthcare facilities, schools, water infrastructure, and conservation lands. From a baseline asset inventory of over 77,000 assets, 2,178 were classified as critical. The assessment revealed that both coastal and inland areas face significant flood risks from sea level rise, storm surge, and heavy rainfall.

The results of the RVA-OH (Phase II) analysis identified threats to the delivery of essential services from heat, drought, wildfire, and erosion. These threats were analyzed and prioritized based on their threat to level of service. The asset types include emergency facilities, healthcare facilities, community support buildings, water infrastructure, schools, historic structures, and similar resources. Where possible, the Phase II RVA also leveraged quantitative data to calculate expected structural damage, measured in dollars, and the impact on low- to moderate-income populations. For hazards with future-condition scenarios available, the change in structural damage was calculated to illustrate the potential increase in sensitivity due to weather patterns. The identified assets may serve as a foundation for SLC and the municipalities to determine adaptation priorities and projects.

To enhance public understanding and engagement, the County also published a public-facing StoryMap that outlines the RVA projects. This interactive tool includes a map viewer that allows users to explore the modeled scenarios in detail. It provides a visual and accessible way for residents, stakeholders, and decision-makers to understand the geographic distribution of hazards and the assets at stake. The story map complements the technical documentation by offering a user-friendly platform for exploring the County's resilience planning efforts. The StoryMap and technical documents are available online at: www.ResilientStLucie.com.

2.2 Resilience Planning Methods

Resilience planning involves creating a robust, adaptive framework that addresses current vulnerabilities while building capacity for future weather-related challenges. The RRP encompasses both the immediate needs identified in the RVAs and long-term resilience strategies that strengthen community adaptability over time.

2.3 Steering Committee

Collaboration played a central role in this project, involving a diverse range of stakeholders to ensure both technical expertise and community insights were considered. SLC and the municipalities established a resilience steering committee of key collaborators, comprising representatives from diverse backgrounds and associations. The resilience steering committee played a vital role in shaping the project by reviewing goals, offering input on study direction, identifying geographic context, guiding modeling methodologies, pinpointing available data and resources, providing specific asset information, and reviewing project findings. The steering committee represented various County and municipal departments including Planning & Development Services, Public Works, Coastal Engineering, Utilities & Solid Waste, Emergency Operations, Innovation & Strategic Initiatives, and Environmental Resources. The resilience steering committee was also comprised of various member agencies including representatives from SLC Florida Department of Health, SLC School District, SLC Economic Development Council, St. Lucie Transportation Planning Organization, and the Treasure Coast Regional Planning Council. The resilience steering committee met throughout the process to review information, recommendations, and discuss key project milestones and decisions.

2.4 Public Outreach

Community resilience refers to the ability of governments, individuals, organizations, institutions, and businesses to anticipate, respond to, endure, and recover from both immediate and prolonged pressures stemming from unpredictable weather patterns and extreme weather events, rising sea levels, increased flooding frequency, and heightened storm severity. To establish community resilience, it is essential to actively engage stakeholders when shaping planning efforts and determining adaptation strategies and infrastructure priorities.

Public involvement for the RRP was comprehensive with a focus on gathering feedback from community members on adaptation strategies. Information was provided to and received from members of the community through public meetings and workshops. Public engagement and outreach efforts for this project were geared toward communicating relevant science-based information that engaged the public, community leaders, and subject matter experts, regardless of education and technical background. Utilizing various methods and multimedia tools collaboratively, the outreach initiatives aimed to enhance community understanding and involvement.

Public input and feedback were actively sought through more than two dozen public workshops and presentations. The Project Team evaluated the information gathered from the community and coordinated efforts to integrate the input into the project, while documenting the engagement outcomes to provide a transparent record of the community's contributions.

In addition to internal tracking, St. Lucie County maintains a public-facing webpage that provides access to key project information. This platform serves as a central hub for community engagement and transparency, allowing residents and stakeholders to stay informed about ongoing resilience efforts. Technical documents are available online at: www.ResilientStLucie.com.

2.4.1 Stakeholder and Public Outreach Events

Figure 2-1 outlines the public engagement approach utilized by the Project Team. The public engagement encompassed multiple phases to maximize community involvement and support. The process began with strategic planning for engagement events in accessible locations throughout SLC and the municipalities. Public announcements and educational materials were widely distributed through various relevant websites, calendars, email lists, newsletters, community organizations, and social media platforms. Participants in these events were encouraged to ask questions and express their priorities and insights. Feedback was actively sought using comment cards and engagement activities such as poster board prompts and an interactive presentation tool that enabled real-time polling using a participant's smart phone to gauge comprehension and encourage participation.

Figure 2-1. St. Lucie County Public Engagement Process

St. Lucie County hosted more than two dozen stakeholder engagement meetings to introduce resilience planning, summarize the RVAs findings, and share the results of the draft Regional Resilience Plan to introduce and elicit feedback on resilience planning efforts. The purpose of these meetings was to allow the public to enter into dialogue where they were able to ask questions and provide community-specific input. During these meetings, the County conducted exercises encouraging the public to discuss vulnerabilities they have identified within the community and critical assets of concern to them if impacted by hazards (see **Appendix H**).

The most recent workshops, held in late 2025, included sessions that tied together Resilience Planning and Stormwater Master Planning efforts; highlighted a Conservation Approach to Resilience Planning; and reviewed the results of the RVAs and Regional Resilience Plan. Please see **Appendix H** for the comprehensive results of the public workshops.

3.0 EXISTING PLANS AND RESILIENCE INITIATIVES

The County and municipalities have demonstrated their commitment to community resilience planning through a proactive approach, implementing several adaptation and mitigation projects. Notable examples include the floodproofing and elevation of critical infrastructure, the construction of living shorelines, acquisition and conservation of natural lands, the installation of stormwater storage and management systems to reduce flooding risks, and beach and coastal dune restoration to act as the first line of defense against storms and storm damage. Additionally, the County and municipalities have a range of approved projects within its Local Mitigation Strategy, such

as retrofitting public buildings to serve as emergency shelters, enhancing seawall structures, and storm hardening of essential facilities. To lead resilience efforts, the County completed a community-wide Sea Level Rise Vulnerability Assessment in 2021, prior to the Resilient Florida Program being launched and completion of the 2025 RVAs. The County and municipalities have produced disaster and hurricane preparedness guides and worked with numerous agencies for distribution. Recognizing the importance of community involvement, SLC and the municipalities encourage residents to participate in documenting real-time flooding events. By uploading photographs and information to a local government app or the South Florida Water Management District's Flood Observation Survey tool, residents assist local and regional stormwater management planners in developing strategies to reduce flood risks. The County and municipalities also participate in the FEMA National Flood Insurance Program's (NFIP) Community Rating System program, which brings significant cost savings to residents for NFIP flood insurance policies.

This proactive approach, with a strong emphasis on community involvement, has laid the foundation for the development of this RVA and RRP initiative. By adopting a forward-thinking philosophy, the County and municipalities foster a sense of ownership and shared responsibility for addressing risks, while also enhancing preparedness and resilience. Furthermore, the recognition that identifying and addressing vulnerabilities, especially those related to critical assets before they fail, is the most fiscally responsible strategy—highlighting the County's and municipalities' long-term commitment to resilience.

3.1 Mobility Plan

St. Lucie County's Sustainable Mobility Infrastructure Plan is a federally funded initiative aimed at integrating transportation, land use, and resilience into long-term planning. Supported by the Community Development Block Grant Mitigation Program, the plan revises the County's Right-of-Way Protection Map to account for sea level rise, stormwater needs, and infrastructure elevation, serving as a tool to mitigate future weather impacts.

The plan is built around a "Focused Growth" scenario, which concentrates new development in compact, mixed-use corridors that are walkable and transit-accessible. This approach helps reduce single-occupancy vehicle use and supports alternative mobility options like micromobility and transit. Population and housing forecasts through 2100 are used to guide infrastructure needs, while mobility technologies and multimodal strategies are incorporated to improve access and reduce emissions.

By aligning transportation planning with flood risk projections and adaptation strategies, the plan strengthens St. Lucie County's resilience. It ensures that future infrastructure investments are not only efficient, but also capable of withstanding extreme weather, sea level rise, and other stressors.

3.2 Stormwater Master Plan

The County, Port St. Lucie, and Fort Pierce have developed Stormwater Master Plans to serve as comprehensive roadmaps for managing stormwater in a sustainable and cost-effective manner. The plans aim to reduce flood risks, protect water quality, and support community and economic development.

St. Lucie County is currently finalizing an update to its Stormwater Master Plan (anticipated to be completed in 2026). Key initiatives of the plan include the inventory of existing stormwater systems, identification of high-risk flood areas, and implementation of advanced stormwater management technologies (**Figure 3-1**). The plan also emphasizes the importance of community engagement and encourages residents to participate in documenting real-time flooding events through tools like the South Florida Water Management District's Flood Observation Survey.

By integrating these Stormwater Master Planning efforts, the County and municipalities aim to enhance the resilience of their infrastructure, improve the health of local water bodies such as the Indian River Lagoon and St. Lucie River, and ensure a safer, more sustainable future for its residents. More information regarding SLC watershed information and mapping can be found within **Appendix D**.

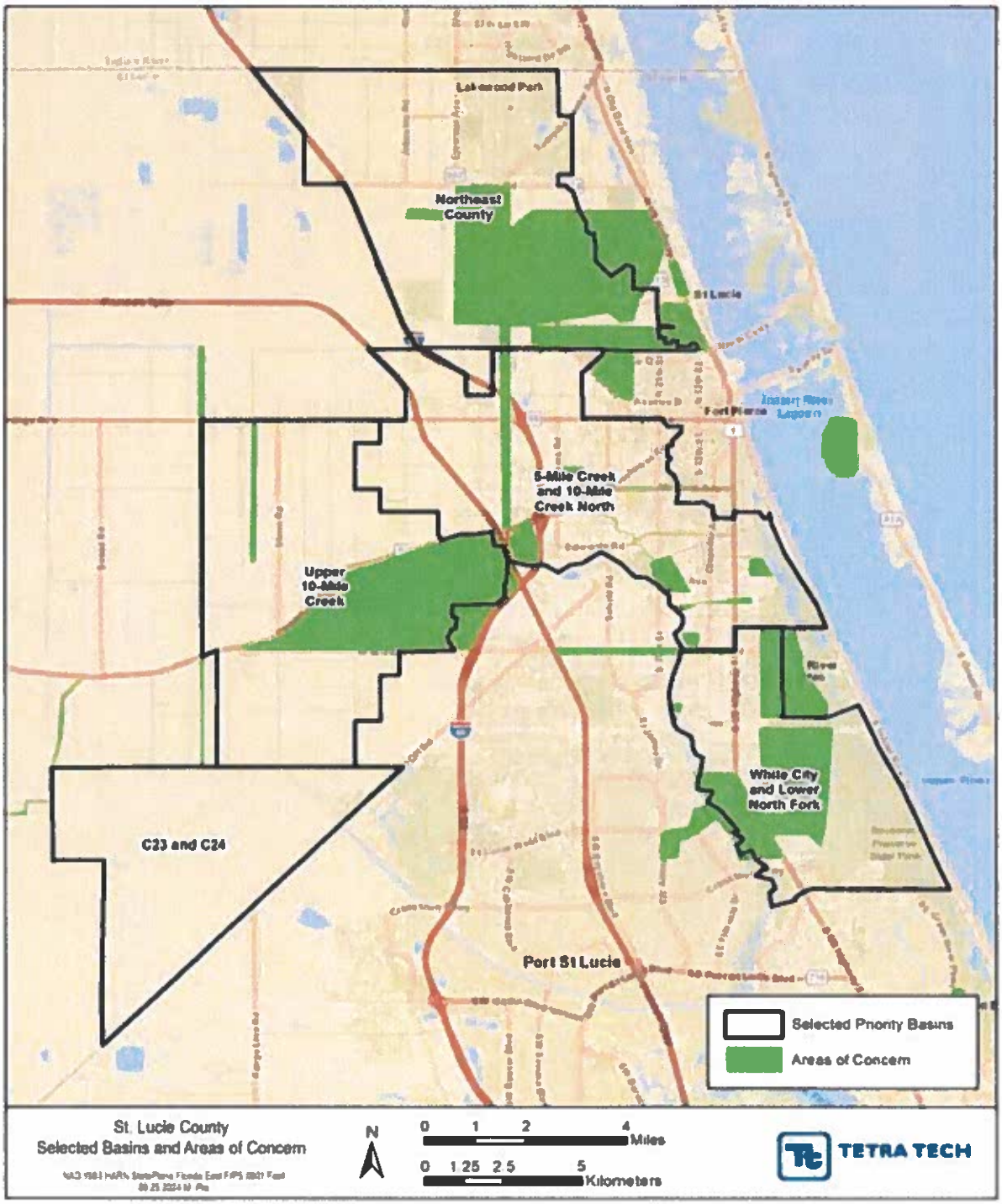

Figure 3-1. Locations of Priority Basins with Areas of Concern Identified in the Draft Stormwater Master Plan

3.3 Environmentally Significant Lands Program

SLC, Port St. Lucie (PSL), the City of Fort Pierce, and St. Lucie Village worked together on a 1994 ballot initiative to protect environmentally significant lands throughout the County. SLC citizens overwhelmingly passed this $20 million bond referendum, resulting in the acquisition and management of over 11,000 acres. The goal of the Environmentally Significant Lands Program is to conserve, safeguard, and rehabilitate ecosystems in their natural condition while allowing for appropriate public access. These protected ecosystems enhance the quality of life for residents, act as a natural defenses against stormwater runoff and flooding, enhance air and water quality, and attenuate wind from severe storms.

3.4 Naturally PSL: Green Spaces & Places

"Naturally PSL: Green Spaces & Places" is a community-driven initiative inspired by the collective vision of Port St. Lucie residents. It aims to raise awareness about the City's green spaces, provide information on upcoming projects, and work with partners in contributing to land acquisition and green space enhancements. With residents and partners, this program seeks to protect 744 acres of conservation and recreational land within the city limit, expanding and activating 41 miles of recreational trails, recruiting new volunteers, and fostering innovative approaches to enhance community resiliency.

3.5 Grow Green Urban Forestry Initiative

The City of Port St. Lucie's Grow Green initiative expands and enhances its urban forestry program by planting trees along transportation corridors, at key development sites, and on private property to increase the urban canopy cover. Trees provide multiple benefits, not only adding beauty and reducing localized heat, but also playing a significant role in reducing the impacts of stormwater and flooding.

3.6 Torino Regional Park

The Conceptual Master Plan for Torino Regional Park, which spans 195.17 acres, features passive and active amenities that are compatible with the site's natural prairie, hydric pine flatwood and marshes, and over 32 acres of wetlands. Preserving and protecting these natural assets throughout the future park is critical in enhancing both city and county resilience goals through mitigating flood risk, improving water quality, and supporting regional biodiversity while providing adaptive recreational spaces for residents.

3.7 McCarty Ranch Extension & Preserve/ St. Lucie River/C-23 Water Quality

McCarty Ranch Preserve spans over 3,100 acres and plays a vital role in regional resilience by functioning as both a major stormwater storage facility and a water quality improvement project. Acquired in 2012 to address flooding, pollution, and water supply challenges, the preserve is engineered to capture and retain up to 21 billion gallons of stormwater annually, preventing approximately 9 billion gallons of untreated runoff from entering the North Fork of the St. Lucie River each year. Its ability to capture, store, and treat billions of gallons of stormwater annually directly reduces the risk of localized flooding, relieves pressure on downstream drainage infrastructure,

prevents nutrient-laden runoff from polluting sensitive waterways, and secures the regional water supply for generations to come.

3.8 Half Cent Sales Tax

In 2018, SLC, PSL, Ft. Pierce, and St. Lucie Village residents approved a ballot proposal to increase the sales tax by ½ cent to fund projects to reduce neighborhood flooding, improve water quality, improve local roads, reduce traffic congestion, and add sidewalks.

3.9 FEMA Community Rating System

FEMA's Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirements of the NFIP. In Community Rating System communities, NFIP flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community's efforts. SLC and the municipalities recognize the importance of floodplain management as a community-based effort to prevent or reduce the risk of flooding, resulting in a more resilient community and reducing the financial impacts of flooding. For each higher Class rating a local government obtains (higher class rating receives a 'lower class number'), the entire community receives 5 percent off their NFIP flood insurance premiums. Currently, the City of Fort Pierce maintains a Class 6 rating, and St. Lucie County and Port St. Lucie a Class 5 rating, resulting in a 20 percent and 25 percent reduction in flood insurance rates for the entire community. Additional information on the NFIP-CRS program and analysis of St. Lucie County's CRS ranking, can be found in **Appendix G**.

3.10 St. Lucie County Unified Local Mitigation Strategy

The St. Lucie County Unified Local Mitigation Strategy establishes a framework for implementing and coordinating mitigation goals, objectives, and projects aimed at reducing impacts on the public, property, and environment. The Unified Local Mitigation Strategy Working Group (consisting of St. Lucie County; the cities of Port St. Lucie, Ft. Pierce, and St. Lucie Village; and multiple agencies and non-profits countywide) updates the Local Mitigation Strategy document every 5 years, which outlines the various hazards faced within St. Lucie County and projects that will address them.

3.11 Coastal Storm Protection Program

Established in 1967, the St. Lucie County Erosion District has been tasked with evaluating and mitigating beach erosion while maintaining safe navigation in the St. Lucie Inlet. To achieve these goals, the County has implemented a long-term beach monitoring and maintenance program designed to enhance shoreline resilience by providing storm protection, recreational opportunities, and environmental benefits. Engineered beach fill templates are central to this effort, incorporating three components: equilibration fill, which quickly adjusts to a natural slope; advance fill, calculated to erode over a specified number of years; and the design fill, which represents the minimum beach width and dune height needed for adequate protection. The lifespan of the advance fill determines the renourishment cycle—the timing for additional sand placement to restore the beach and restart the process. Regular monitoring ensures that beach conditions meet protection standards and informs the schedule for future sand placement projects.

Recognizing the complexity and cost of maintaining resilient shorelines, St. Lucie County has established strong partnerships at the state and federal levels. The County works closely with the U.S. Army Corps of Engineers on two critical shoreline projects: the Fort Pierce Shore Protection Project, a 1.3-mile stretch south of the St. Lucie Inlet South Jetty, and the South County Beach Project, a 3.4-mile stretch north of the County's southern boundary. Additionally, a longstanding partnership with the Florida Department of Environmental Protection has provided substantial state funding support for beach resilience initiatives. These collaborations reduce financial burdens and bring technical expertise, ensuring that St. Lucie County beaches remain resilient and protected for the future.

3.12 St. Lucie Community Resilience Steering Committee

In February 2021, the County established a Resilience Steering Committee comprising representatives from all three city governments within the county as well as County staff specializing in emergency management, community health, regional planning, transportation, economic development, public works, utilities, and planning. This multi-jurisdictional and multi-agency committee collaborates on developing and implementing resilience strategies. The steering committee aims to take a systematic approach that reduces risk to people, infrastructure, the environment, and the economy from potential impacts to the local community. The committee strives to provide robust avenues for citizen and sector stakeholder engagement in the plan development process, to realize a resilience plan that protects the health, safety, and well-being of all residents in an equitable way.

4.0 COUNTYWIDE ADAPTATION STRATEGIES

4.1 Adaptation Classification Types

The RRP identifies various adaptation strategies, and while they can encompass a wide range of approaches, they can be classified under four main categories: 1) protection, 2) accommodation, 3) avoidance, and 4) retreat. When applying these adaptations to assets, the County and municipalities should consider each adaptation approach when reviewing recommended adaptation plans for each asset. Ultimately, the most applicable and effective method, based on time frame, level of effort, potential for coordination with other planned projects, cost, and scale should be selected for each asset.

4.1.1 Protection

Adaptation strategies can involve protection or defense mechanisms to manage the impacts of hazards. These strategies preserve the integrity of an asset through the creation of additional hard and soft measures that guard against impacts and often eliminate the need for structural modification. Protection-based adaptation strategies can include living shorelines, beach and dune nourishment, seawalls, levees, and general dry floodproofing.

4.1.2 Accommodation

Accommodation strategies involve modifications and retrofitting to the physical design of a structure, allowing it to remain in its current location. This type of adaptation makes the structure more resistant to flood damage and eliminates or delays the need to move or further modify the asset. Examples of these strategies include increased stormwater storage, property elevation, implementing

wet floodproofing, or creating floodable structures. It often entails review of flood hazard mapping, strategic land-use planning, and flood insurance coverage.

4.1.3 Avoidance

Avoidance pertains to the practice of steering new development away from vulnerable areas. Avoidance is financially significant because once infrastructure has been constructed, it must be maintained for the entirety of its lifespan. This type of policy aims to eliminate risk to future infrastructure by requiring that design practices factor in the level of current and future hazard impacts over the life of the structure. Policymaking, development and zoning regulations, and incentive programs are tools to foster avoidance in both public and private construction.

4.1.4 Retreat

Efforts to retreat, or participate in planned relocation, can occur when all other adaptation strategies prove to be inefficient or ineffective. Retreat often occurs when assets are in areas of consistent or increasing flood and wind loads. Retreat can occur voluntarily or result from some type of incentive and can take place promptly, usually in response to some disruptive incident or gradually as part of a long-term plan. Communities can strategize an eventual departure from vulnerable areas in the future, while making limited investments in the assets while they remain in place. It can also involve adapting the designs of future buildings to shoulder an eventual relocation. Managed retreats for non-governmental ownership can take the form of government buyout programs, development control, land-use planning, rolling easements, and land swaps.

4.2 Countywide Adaptation Strategies

4.3 Proposed Adaptation Strategies

The Regional Resilience Plan outlines four primary adaptation strategy categories aimed at bolstering the County and municipality's resilience to the impacts of hazards: Physical Modifications; Natural Defenses and Nature-Based Adaptations; Planning, Management, and Policy; and Community Education, Programs, and Readiness. Each category targets specific aspects of resilience, addressing both the structural needs of critical infrastructure and the broader social needs of the community. This comprehensive approach leverages physical, natural, policy-driven, and community-centered strategies to ensure that St. Lucie County and the municipalities are prepared for both immediate and long-term challenges. This section describes the different categories and types of strategies, while **Appendix A** builds upon this framework with a complete portfolio of associated actions for each category. It details specific adaptation and mitigation actions that the County and municipalities can apply to future programs, infrastructure upgrades, asset protection, and policy initiatives.

Appendix A also includes a recommended implementation category for each strategy, aligned with the adaptation approach described in Section 8.7. This approach organizes actions into three groups: Immediately Actionable strategies that can start with existing resources; strategies that Require Planning and Coordination such as design, permitting, or partnerships; and strategies that Require Significant Investment, Sequencing, or Research, which depend on funding or technical studies. Each strategy within **Appendix A** is matched with its appropriate category to guide decision-makers in sequencing projects based on feasibility, resource needs, and complexity.

Additionally, **Appendix A** aligns each adaptation strategy with the specific natural hazard(s) it may address if implemented. These hazards: coastal erosion, compound flooding, drought, extreme heat, inland flooding, storm surge and sea level rise, wind, and wildfire were analyzed in detail through the Phase I and Phase II Resilience Vulnerability Assessments. This alignment ensures that future projects are not only well-timed and feasible but also targeted to reduce risk from the most pressing threats facing St. Lucie County and its municipalities.

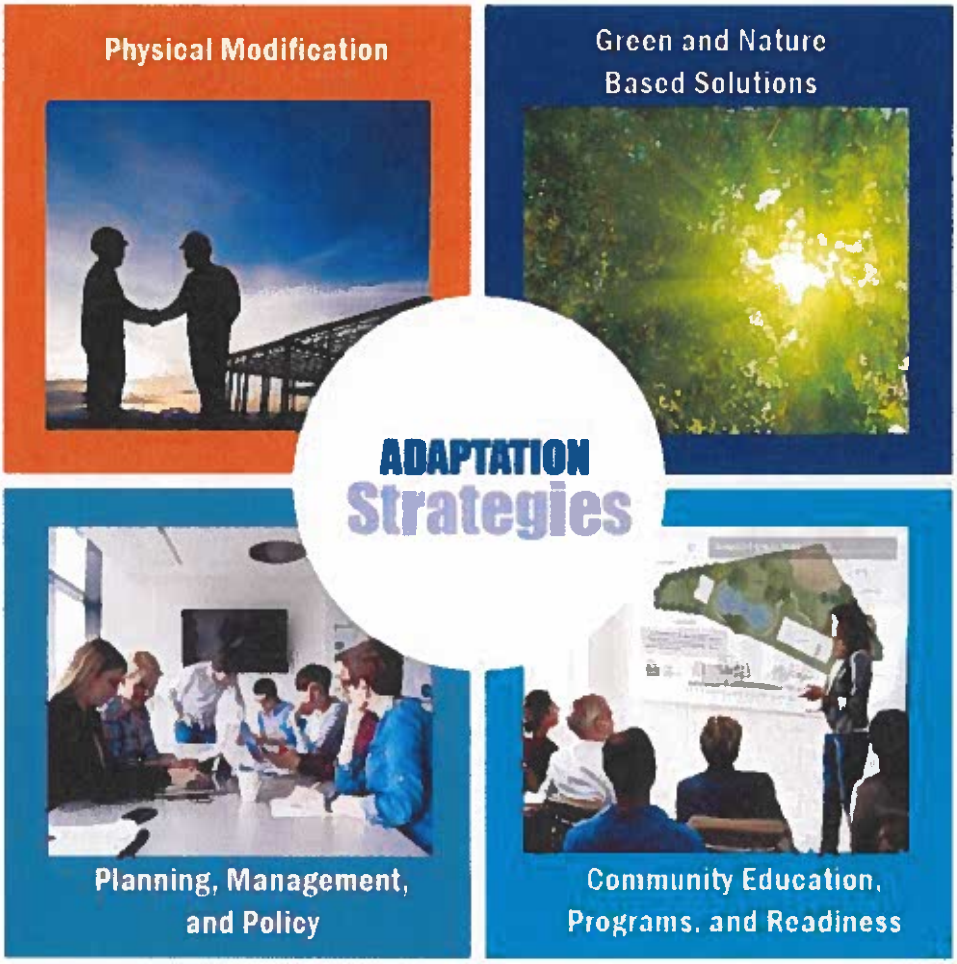

Figure 4-1. Adaptation Strategy Categories

4.3.1 Physical Modifications to Assets

Physical modifications focus on enhancing the resilience of existing infrastructure and developing adaptive solutions to physically fortify vulnerable assets. This category includes retrofitting, replacement, planned relocation, maintenance and operations, and demolition or abandonment. By physically modifying critical infrastructure, the County, municipalities, and community partners can reduce potential damages, maintain essential services during extreme weather events, and improve overall resilience to future conditions. These physical adjustments directly address vulnerabilities and

reinforce infrastructure to withstand the unique challenges posed by hazards such as flooding, heat, and storms.

4.3.1.1 Maintenance and Operations

Maintenance and operations strategies involve the routine upkeep of infrastructure to prevent deterioration and maintain its resilience during emergencies. Examples of this strategy include regularly clearing storm drains to avoid blockages, inspecting and repairing levees and bridges to ensure structural integrity, and maintaining roads and retention ponds to manage stormwater. In addition, routine maintenance of HVAC systems in public buildings can help counteract extreme heat, and regular testing of backup generators in critical facilities ensures they are operational during emergencies. Regular inspections can identify problematic conditions and address them before they create a service disruption and reduce the need for replacement. Failed components can be replaced with parts designed to better withstand pressures from hazard-related change and result in long term system upgrades. By investing in ongoing maintenance, the County and municipalities can prevent infrastructure failures, minimize recovery costs, and ensure the effectiveness of adaptation strategies during hazard-related events. Performing routine maintenance and operations may also be a community's response to flooding disruption because full-scale adaptation of infrastructure or a facility may not achievable.

4.3.1.2 Retrofitting

Retrofitting involves modifying existing infrastructure to make it more resilient to hazard conditions. This can include elevating buildings to avoid flood damage, reinforcing structures in flood-prone areas, waterproofing facilities to prevent water infiltration, and installing flood barriers to protect against storm surges. Additional retrofitting measures include upgrading drainage systems to manage increased rainfall and adding cooling systems or heat-resistant materials to buildings to mitigate extreme heat. For instance, public facilities might include increased planted trees and installation of reflective roofing to lower cooling costs and reduce the heat island effect. By enhancing existing structures, retrofitting allows the County and municipalities to maximize the longevity and performance of infrastructure while building adaptive capacity to withstand future hazard-related stresses. It can also have co-benefits such as reduced maintenance needs, lower energy consumption, and improved community aesthetics.

4.3.1.3 Replacement

Replacement entails removing older, compromised infrastructure and substituting it with more resilient alternatives. This strategy reduces the likelihood of costly damages, system failures, and disruptions in essential services. Replacement projects can incorporate upgrades into the replacement design. Examples of the types of upgrades that could be considered include roadways with hazard-adapted materials, using reflective or green roofs to reduce urban heat, or designing a structure to withstand increased flooding and wind loads. For example, older bridges and transportation routes might be replaced with designs and materials engineered to handle higher temperatures or increased drainage needs. Septic-to-sewer conversion is another example of a replacement strategy, as it involves eliminating individual septic systems and connecting properties to centralized sewer infrastructure. This has been and continues to be a priority for the County and

municipalities, supported by various funding sources. By investing in planned infrastructure replacement, the County and municipalities ensure that critical facilities and systems are built to function under more extreme hazard conditions and provide continuous support for its communities. Replacement also provides an opportunity to coordinate with regional partners to address multi-jurisdictional issues, such as shared infrastructure vulnerabilities, interdependent systems, and regional hazard mitigation strategies. This collaborative approach can enhance the effectiveness of adaptation measures and promote consistency across neighboring jurisdictions. Replacement can be used in conjunction with, or as an alternative to planned relocation.

4.3.1.4 Planned Relocation

Planned relocation focuses on moving essential infrastructure or community elements from high-risk areas to safer locations through a coordinated and strategic process. For example, in the event conditions reach a predetermined threshold such as inches of sea level rise or projected flood exposure, certain vulnerable infrastructure, such as utilities and shelters, would be relocated from their existing location in flood-prone zones to elevated areas, reducing exposure to hazards while preserving the asset's functionality. Additionally, this strategy can involve shifting agricultural operations from drought- or flood-prone areas to regions less impacted by extreme weather, or developing new sources of water supply, ensuring food security and sustainable livelihoods. Planned relocation is a proactive approach with preset triggers that will mitigate losses and maintain essential services during extreme weather events and reinforce the County's and municipalities' future resilience by strategically relocating critical infrastructure to safer locations.

4.3.1.5 Demolition or Abandonment

Demolition or abandonment is employed in cases where adaptation measures or further maintenance of infrastructure are not feasible or cost-effective. This strategy involves the safe decommissioning and removal of structures in areas where continued use poses a risk. For example, vacating areas highly susceptible to flooding and converting them into green spaces can absorb excess water, reducing flood risks for surrounding communities. Similarly, old industrial zones in vulnerable locations can be transformed into community recreation areas that act as natural flood buffers while also providing new recreation opportunities. Demolition and abandonment are last-resort options, but they can be effective in reducing risks to human health and safety while also creating opportunities for ecological restoration and flood management.

4.3.2 Natural Defenses and Nature-based Adaptations

Nature-based adaptations leverage the power of natural systems to reduce hazard-related risks and enhance ecological resilience. These solutions include drainage improvements, natural feature construction, ecosystem restoration, beach nourishment, and tree planting and urban forestry. Nature-based adaptations offer multiple co-benefits, such as enhancing water and air quality, storing or attenuating stormwater, buffering high winds, protecting biodiversity, reducing urban heat, and providing recreational spaces for residents. By integrating natural features into urban and coastal areas, the County and municipalities can create adaptive landscapes that mitigate hazard-related impacts and enhance community resilience.

4.3.2.1 Retention Structures and Drainage Improvements

Drainage improvements focus on enhancing stormwater management by using green infrastructure that slows, absorbs, and filters water runoff. Techniques such as permeable pavements, rain gardens, bioswales, and underground storage tanks help manage stormwater effectively, reduce flood risks, and increase groundwater recharge. These solutions can be seamlessly integrated into urban areas, providing flood protection while also improving aesthetics and offering increased habitat for wildlife. By improving drainage capacity through nature-based features, the County and municipalities can better manage heavy rainfall events and minimize flood impacts on built environments.

4.3.2.2 Construct Natural Features

Constructing natural features involves building natural defenses that mimic and enhance ecosystem functions. Examples include man-made marshes, wetlands, living shorelines, green roofs, dunes and beaches, oyster reefs, and artificial reefs. These natural structures act as buffers that absorb floodwaters, slow storm surges, and protect coastal areas from erosion. For instance, living shorelines stabilize the coastline and reduce erosion by using native vegetation, while artificial reefs provide habitat for marine life and dampen wave energy. Constructing natural features strengthens the County's and municipalities' resilience while supporting biodiversity and enhancing coastal aesthetics.

4.3.2.3 Preserve and Restore Ecosystems

Preservation and restoration initiatives aim to rehabilitate ecosystems that provide natural protection from hazard impacts, while providing multiple co-benefits. This includes protection and restoration of forests, mangroves, reefs, wetlands, and seagrasses, which play crucial roles in attenuating impacts from high winds and flood waters, shielding coastal areas from storm surges, enhancing water quality, and promoting marine biodiversity. By prioritizing environmental land acquisition and ecosystem restoration, the County and municipalities can improve the resilience of natural habitats, benefiting both local communities and wildlife.

4.3.2.4 Protect Coastal Shoreline

Coastal change is a natural process that allows beaches to accrete and erode in response to prevailing waves and currents. In a built environment, erosion must be controlled to protect roads, parks and buildings. Beach nourishment is a periodic maintenance program that involves regularly adding sand when beaches erode to a critical point, which maintains their function as a protective buffer against storm surge and sea level rise. Nourishment efforts include dune construction and stabilization, creating artificial sandbars, and periodically replenishing sand where needed to maintain a beach's storm damage protection value and maintain critical habitat for threatened and endangered nesting sea turtles, shore and wading birds, and the intertidal environment. These actions not only protect coastal infrastructure and natural environment but also support the tourism economy and recreational opportunities. Engineering studies can be conducted to determine if some combination of hard structures can prolong the life of the natural beach. Beach maintenance is a critical adaptation strategy for SLC, as it preserves valuable coastal land and manages erosion, providing a natural

barrier against rising sea level, and protecting critical infrastructure including the St. Lucie power plant and hurricane evacuation routes.

4.3.2.5 Increase Tree Canopy and Green Corridors

Tree planting and urban forestry are aimed at increasing the urban tree canopy to mitigate extreme heat, reduce stormwater runoff, and improve air quality. Planting shade trees along streets and in parks can cool urban areas, while green corridors connect habitats and offer recreational spaces for residents. This strategy may include initiatives to encourage tree planting in residential areas, schools, and community spaces. Expanding urban forestry enhances resilience, supports public health, and contributes to a greener, more livable community. St. Lucie County undertook a comprehensive tree canopy assessment to better understand the distribution, density, and ecological function of its urban forest. The complete analysis can be found within **Appendix E**.

4.3.3 Planning, Management, and Policy

Planning, management, and policy adaptations integrate resilience into jurisdictional regulatory and operational frameworks. This category includes strategies such as land use and zoning revisions, emergency planning, codes and standards, operations, capital planning, and monitoring and management. By embedding resilience into governance and planning processes, the County and municipalities can guide future development toward sustainable and adaptive outcomes, ensuring that infrastructure, services, and communities are prepared for hazard-related impacts.

While implementing adaptation projects is a critical step, it must be accompanied by thoughtful planning for the future. Incorporating effective planning, management, and policy measures is essential for building resilience and sustainability into communities. Through proactive planning, the County and municipalities can identify vulnerable areas, establish regulations for land use and development, and integrate hazard and recovery considerations into decision-making processes. Additionally, robust management practices ensure the efficient allocation of resources and the implementation of adaptation measures. By adopting forward-thinking policies, governments can create frameworks that support resilient infrastructure, encourage sustainable practices, and enhance community well-being.

4.3.3.1 Land Use Policy

New and/or updated land use and zoning regulations are crucial for guiding development away from high-risk areas and encouraging resilient land use practices. This planning strategy includes updating zoning codes to discourage development in vulnerable areas, promoting land preservation, and incentivizing resilient building practices. For example, density bonuses might be offered for developments that incorporate resilient features, while vulnerable lands could be designated for nature-based infrastructure. By revising land use policies, the County and municipalities can reduce exposure to hazards and direct growth to safer areas, supporting sustainable development.

4.3.3.2 Emergency Planning

Emergency planning encompasses the development and regular updating of emergency response plans for various hazards. This includes creating post-disaster code enforcement protocols, hazard mitigation plans, and emergency response and recovery plans. The County and municipalities may

conduct community drills and establish temporary adaptation measures, such as deployable flood barriers and standby power generators, to enhance preparedness. Effective emergency planning ensures that local governments and residents can respond quickly and effectively to hazard events, reducing recovery time and protecting lives.

4.3.3.3 Codes and Standards

Codes and standards are essential planning considerations for establishing minimum resilience requirements for new construction and infrastructure upgrades. By strengthening building codes, refining permitting processes, and enforcing setback requirements, the County and municipalities can mandate resilient construction across sectors. For instance, energy-efficient standards may be required for public buildings, while more stringent building codes can encourage developers to adopt resilient practices. This strategy ensures that all new developments contribute to the countywide resilience goals.

4.3.3.4 Operations and Staffing

Operations and staffing are management activities that involve integrating resilience considerations, practices, and professionals into the daily functions of government agencies and infrastructure management. Standardizing resilient practices across public works and utilities, developing internal protocols for departments to respond to hazard-related emergencies, and ensuring that funding includes hazard and recovery considerations are a few of the key components of operational functions. Appropriate staffing must be available to implement and maintain these functions. Establishing metadata collection protocols is also essential to ensure consistent documentation, tracking, and evaluation of resilience-related activities and infrastructure conditions. By embedding resilience into operations and budgeting, the County and municipalities can maintain functionality during extreme weather and continuously adapt to changing conditions.

4.3.3.5 Capital Planning

Capital planning can include priorities that focus on investments in resilient infrastructure through long-term budgeting and planning. The development of capital improvement plans that focus on resilience, project planning, and designing infrastructure can eliminate emergency expenditures to repair damage from hazard-related impacts in the future. Through the capital improvement planning process, the County and municipalities can allocate resources strategically, ensuring that critical investments support community resilience well into the future.

4.3.3.6 Data Collection, Management, and Monitoring

Monitoring and management can be structured to ensure that adaptation strategies remain effective by establishing systems to inspect, maintain, evaluate, and adapt as needed. Regular monitoring of hazard data, updating adaptation plans based on the most current monitoring information, and managing natural resources to reflect changing conditions, are vital functions for ongoing resilience. This adaptive management approach enables the County and municipalities to refine their strategies and respond to emerging trends, ensuring that all modifications are sustainable and responsive.

4.3.4 Community Education, Programs, and Readiness

The Community Education, Programs, and Readiness category is dedicated to fostering awareness, preparedness, and engagement within the community. Recognizing that resilience goes beyond physical infrastructure and policy, this category emphasizes the importance of empowering residents, businesses, and organizations with the information, tools, and resources needed to understand how hazards will affect them and the actions they can take to reduce their exposure. Promoting community education, implementing outreach programs, and enhancing individual readiness are integral components of building resilience in communities. By investing in community-level adaptation efforts, the County and municipalities can ensure that all residents—especially those with increased vulnerabilities—are equipped to respond to and recover from hazard impacts. These initiatives focus on building a culture of resilience, where adaptation is a shared responsibility that strengthens community bonds and enhances overall hazard preparedness.

Easy access to information and regular updates on the progress of the County's and municipalities' resilience initiatives is vital for building trust and engagement among residents, businesses, and other stakeholders. Outreach programs disseminate information about risks, emergency procedures, and preparedness. By keeping the community informed about ongoing efforts including stormwater management projects, infrastructure improvements, and adaptation strategies, the County and municipalities foster a proactive mindset and demonstrates its own commitment to addressing hazard-related challenges. Customizing important information to specific user groups and demographics provides individuals with a tangible connection to the program that will make them more likely to contribute to and support adaptation efforts. Regular updates also provide opportunities for feedback and input, enabling further tailoring of initiatives to better meet the needs and concerns of the community. Open communication creates a sense of partnership between the local government and its residents, increasing the likelihood that the community will both support county and municipal initiatives and incorporate resilience into their daily lives, thereby reducing the strain on community services.

4.3.4.1 Community Tools

Community tools aim to equip residents with practical resources for adaptation, empowering them to make informed decisions to protect their homes and neighborhoods. This could include providing access to home elevation guides, flood risk assessments, and resilience hubs where residents can gather information and supplies during hazard events. The County and municipalities might also develop interactive online tools or mobile applications offering real-time alerts, preparedness tips, and self-assessment tools. These resources encourage proactive adaptation at the household level, helping residents to take meaningful actions to safeguard their properties and improve personal resilience.

4.3.4.2 Public Awareness

Public awareness initiatives focus on increasing residents' understanding of hazard risks and adaptation measures, promoting a more informed and prepared community. Programs can include workshops, informational flyers, social media campaigns, and partnerships with local schools and community centers to educate youth and adults on hazard impacts and resilience. Additionally,

placing informative signage in vulnerable areas can alert residents to potential hazards and encourage them to take preventive measures. By raising public awareness, the County and municipalities ensure that residents recognize the personal benefit from increased resilience and are more likely to engage in adaptation efforts and comply with emergency protocols.

4.3.4.3 Emergency Preparedness

Emergency preparedness programs are designed to enhance the community's capacity to respond effectively to hazard-related events. These programs can include organizing regular preparedness drills and training sessions, and providing resources for families to create emergency plans and secure personal property. The County and municipalities could also aid in the establishment of neighborhood groups or volunteer networks trained in emergency response, building a grassroots network of informed individuals ready to support one another during crises. The timeliness and effectiveness of emergency response after a disaster is also crucial to creating a resilient community. Ensuring that residents are aware of and have access to the necessary resources for disaster recovery will speed the return of a functioning community. By emphasizing emergency preparedness, the County and municipalities strengthen their collective response capabilities, reducing recovery time and helping communities better withstand and recover from extreme weather events.

4.3.4.4 Community-Based Planning and Development

Community-based planning and development involves engaging a diverse range of community members in resilience planning to ensure adaptation measures are accessible and responsive to the needs of all residents. By prioritizing engagement in its planning processes, the County and municipalities ensure that all residents have access to adaptation resources and are considered in resilience-building efforts.

5.0 METRICS TO PRIORITIZE ADAPTATION STRATEGIES

A scoring matrix has been developed by the project team to guide effective and efficient decision-making for adaptation and resilience in SLC. This tool integrates input from the project goals and objectives as well as hazard considerations to evaluate and rank any future potential adaptation projects. The tool's primary objective is to ensure any future selected adaptation project aligns with the County's and municipalities' resilience goals, delivers maximum benefit to the community, and optimizes resources. Each future adaptation project proposed by the County or municipalities can be scored across the evaluation criteria, with each metric weighted according to RRP-related priorities. The following nine evaluation criteria included in the scoring matrix allow for a comprehensive assessment of whether a future given adaptation project or strategy will meet goals and produce benefits. This comprehensive approach aligns immediate actions with long-term goals, establishing a framework for SLC and the municipalities to navigate the challenges of hazards and create a resilient future.

5.1 Ensure Life Safety/Criticality

Projects that prioritize safeguarding human life and ensuring the resilience of critical assets are essential for community well-being and emergency response. By focusing on life safety and the criticality of assets, these initiatives aim to enhance the community's ability to withstand and recover

from adverse events. This approach ensures that essential services remain operational and that the well-being of residents is preserved during emergencies.

5.2 Incorporate Cross-Cutting Strategies

The County and municipalities should prioritize future projects that promote solutions addressing multiple adaptation goals and hazards, fostering collaboration across different adaptation realms for comprehensive resilience. By integrating cross-cutting strategies, this approach ensures that various aspects of adaptation are considered and addressed simultaneously. This holistic method not only enhances the overall effectiveness of the adaptation efforts but also encourages synergy and cooperation among different sectors and stakeholders, leading to more robust and resilient outcomes.

5.3 Maximize Cost Efficiency and Co-Benefits

The County and municipalities should prioritize future projects that reduce operational and maintenance costs while yielding both financial and nonmonetary benefits. By focusing on initiatives that maximize benefits per dollar spent, these projects aim to create sustainable, economically viable solutions. This approach ensures that financial resources are used wisely, contributing to lasting resilience and minimizing the need for additional investments down the line.

5.4 Enhance Asset Longevity and Adaptation Permanence

Future adaptation projects that prioritize permanent, long-term solutions for assets with extended lifespans are essential. At the same time, incorporating temporary measures for vulnerable assets as interim solutions ensures immediate protection. This balanced approach guarantees that critical infrastructure remains robust and functional over time, while also providing necessary safeguards for more susceptible assets. By combining permanent and temporary strategies, the County and municipalities aims to enhance overall asset longevity and adaptation permanence.

5.5 Minimize Tradeoffs and Downstream Effects

It is essential for the County and municipalities to focus on future projects that minimize trade-offs and unintended consequences. These initiatives will ensure that the implementation of the adaptation project does not introduce additional risks, environmental harm, or social challenges. By thoroughly evaluating potential downstream effects, the County and municipalities aims to develop adaptation strategies that are both effective and sustainable, preventing negative impacts on the community and the environment. This careful planning will help to create solutions that are beneficial in the long term and avoid creating new problems.

5.6 Identify Funding Source(s)

Securing dedicated funding is crucial for the success of adaptation strategies. Future projects with full or partial funding available and/or identified provide a stable foundation for adaptation efforts, ensuring they can be developed and maintained without solely relying on local funds. Grant funding, in particular, is essential for expanding the scope of resilience, allowing projects to move forward as planned and maximizing available resources. A consistent influx of grants empowers the County and

municipalities to scale up adaptation initiatives, building lasting resilience and ensuring long-term sustainability.

5.7 Evaluate Short versus Long Implementation Timeline

Adaptation projects are structured with a mix of urgent and long-term measures, allowing SLC and the municipalities to address immediate vulnerabilities while building resilience for the future. Strategies requiring a short-term timeframe for implementation should be prioritized to ensure timely action on pressing needs. A balanced timeline provides flexibility to manage both short-term impacts and lasting protection against hazards. This approach ensures that immediate vulnerabilities are addressed promptly while creating a foundation for sustainable resilience over decades.

5.8 Facilitate Ease of Implementation

Future adaptation projects that are easy to implement, based on current funding, staffing capacity, ownership, and existing policies are critical to ensuring progress. When projects are realistic and achievable within these existing structures, they are more likely to succeed and gain community support. Simplifying the implementation process helps remove common obstacles, making it easier for stakeholders to get involved and take action. This means fewer delays, more efficient use of resources, and quicker progress toward resilience goals. Clear steps and well-defined responsibilities also help agencies coordinate more effectively, ensuring that resilience efforts are both practical and impactful.

5.9 Consider Future Adaptability

Ensuring that any future adaptation projects incorporate strategies that can be modified to accommodate expected future hazard conditions is crucial. Future adaptability guarantees that these strategies maintain their protective value over time. By building flexibility into these measures, future projects can adapt to new information and future risks. This adaptability provides resilience under changing circumstances, supporting SLC's ability to respond to unexpected challenges and ensuring long-term effectiveness in resilience efforts.

6.0 POLICY

As part of the Regional Resilience Plan (RRP), the project team completed a policy review comprised of two main components.

The first component included the development of a set of Uniform Resilience Policies directly shaped by the countywide Portfolio of Adaptation and Mitigation Strategies that was developed for the project and reviewed by the Resilience Steering Committee (**Section 4.2** and **Appendix A**). These Uniform Resilience Policy Recommendations are attached as **Appendix B**.

The second component included individual jurisdictional analyses of the participating local government's Comprehensive Plans and Codes. These lengthy analyses were provided to each local government in individualized memoranda identifying challenges and opportunities for embedding resilience-related policies into their future policy development. Every element of each jurisdiction's

Comprehensive Plan was included as part of the analysis. For the Code analysis, the review focused on a couple of key sections where opportunities to address resiliency were a priority, including:

- Stormwater design/management and/or assessment regulations,
- Municipal Service Benefit Regulations (County-level),
- Landscaping regulations,
- Shoreline regulations,
- Floodplain management, and
- Others as relevant.

It should be noted that overall land development regulations were not reviewed due to their complexity and length. The project team suggests that participating jurisdictions may benefit from a more robust review of their Codes for opportunities and challenges to implement resiliency policies.

6.1 Uniform Resilience Policies

The project team reviewed the countywide Portfolio of Adaptation and Mitigation Strategies to identify opportunities for translating those strategies into Comprehensive Plan goals, objectives, or policies. In many instances, language from the adaptation matrix was incorporated directly into a recommended goal, objective, or policy. In other cases, adaptation strategies were too detailed to serve as recommended policies, or strategies were consolidated and broadened into more general recommendations. Overall, approximately 75 percent of the adaptation and mitigation strategies are reflected in some form within the Uniform Resilience Policies (**Appendix B**).

To acknowledge work that's already been completed, policies that have been implemented through the RVA and RRP efforts are marked with "(RRVA)". This designation indicates that the recommendation has likely been fulfilled or substantially addressed, requiring no additional effort to meet the policy.

Generally, the Uniform Resilience Policies includes:

1. Proposed Uniform Policy Goal:
   - The local government shall address infrastructure and assets, neighborhoods, and natural resources that experience coastal flooding due to extreme high tides and storm surge, and that are vulnerable to the related impacts of rising sea levels for the purpose of prioritizing funding for infrastructure needs and adaptation planning. The local government shall develop policies to improve resilience to coastal flooding in these areas resulting from high-tide events, storm surge, flash floods, stormwater runoff, and related impacts of sea level rise.

2. Four objectives:

   - **Objective 1:** The local government shall strengthen community and infrastructure resilience by implementing targeted strategies that reduce flood and climate related risks, prioritize funding, create adaptation planning initiatives, and promote sharing of data and information.

- **Objective 2:** The local government shall address the vulnerabilities of public infrastructure and assets due to coastal flooding, storm surge, rainfall, and/or sea level rise within the community by mapping and prioritizing locations that are at risk in the near-term, factoring in the criticality of assets and those dependent upon them.
- **Objective 3:** The local government shall address the vulnerabilities of neighborhoods or portions of neighborhoods due to coastal flooding, rainfall, storm surge, and/or sea level rise within the community.
- **Objective 4:** The local government shall assess the vulnerabilities of natural areas, open spaces and parks due to coastal flooding, storm surge, rainfall, and sea level rise by identifying locations at risk within the short, medium and long-term planning horizons.

3. Proposed policies are generally addressing:

- **Objective 1 Policy Summary**: Policies are related to the use of best available data and gathering additional future data to support resilience decision-making. Local government and agency coordination and leadership through community collaboration are also policy themes. Engagement with the relevant Chambers of Commerce is mentioned as a stakeholder engagement priority. Working across jurisdictional lines to secure collaborative funding that provides multi-jurisdictional benefits are proposed.
- **Objective 2 Policy Summary:** The identification of at-risk areas subject to flooding impact is a primary policy to support decision-making. Additional policy language proposes mechanisms to enhance data collection and include resiliency features into capital improvement projects. Collaboration and outreach to educate the community and build support for adaptation responses are outlined in proposed policies. Finally, suggestions are made for policies on how local governments can benefit from this type of capital improvement planning and be more competitive to secure grant funding.
- **Objective 3 Policy Summary:** This Objective includes policies that improve neighborhood-scale resiliency in terms of actual building strategies and policy modifications, specifically fill and shoreline guidance, and techniques for land development that can become more resilient to flood risks. The Objective also distinguishes the difference between public infrastructure adaptation and private property adaptation, which requires very different policy responses. A key priority for several policies is to aid residential and commercial property owners through permitting incentives, education, and outreach.
- **Objective 4 Policy Summary:** These policies focus on considerations related to environmental areas, natural landscapes, shorelines, and recreational facilities. Policy themes include shoreline adaptations, the value of land protection and management as a resiliency tool, and the relationship of co-benefits and outcomes related to improved water quality.

The Uniform Policies are only suggestions to coordinate the Portfolio of Adaptation and Mitigation Strategies developed within the RRP across the jurisdictions.

7.0 ADAPTIVE CAPACITY

St. Lucie County's Adaptive Capacity Assessment provides a comprehensive evaluation of how well the County and its municipalities are positioned to prepare for, respond to, and recover from a range of hazards. The assessment reviewed over a dozen County and municipal planning documents and ordinances, applying a scoring system to determine the strength of adaptive capacity across seven key hazards: inland flooding, storm surge, coastal erosion, drought, extreme heat, wildfire, and wind. Each hazard was evaluated based on five criteria: policies, mitigation strategies, response capability, deployable resources, and recovery time, offering a holistic view of the County's and municipalities' resilience potential.

The assessment also incorporated feedback from County and city departments and partner agencies, including emergency management and transportation planning. These insights confirmed strengths in flood and hurricane preparedness and highlighted opportunities to improve interdepartmental coordination, expand hazard coverage, and integrate future projections into long-range planning. Notably, while many plans address flooding and hurricanes, other hazards are often underrepresented, suggesting a need for broader integration of hazards into policy and infrastructure decisions.

This evaluation serves as a foundational tool for guiding future resilience efforts. By identifying areas of strength and weakness, the County and municipalities can prioritize updates to existing plans, enhance coordination across jurisdictions, and invest in adaptive strategies that address both current and emerging risks. Strengthening adaptive capacity across all hazard types will be essential to ensuring that St. Lucie County remains resilient. The full adaptive capacity assessment can be found within **Appendix C**.

8.0 IMPLEMENTATION

Adaptation strategies were developed to achieve overarching resilience goals, taking care to ensure that each strategy is actionable, measurable, and inclusive. Section 4 of this plan outlines the broad categories of adaptation strategies considered, including physical modifications, natural defenses and nature-based solutions, planning and policy measures, and community education and engagement. These categories provide a framework for addressing hazards across infrastructure, ecosystems, and communities. **Appendix A** builds upon this framework by detailing specific adaptation and mitigation actions that the County and municipalities can apply to future programs, infrastructure upgrades, asset protection, and policy initiatives.

Appendix A also includes a recommended implementation category for each strategy, aligned with the adaptation approach described in Section 8.7. This approach organizes actions into three groups: Immediately Actionable strategies that can start with existing resources; strategies that Require Planning and Coordination such as design, permitting, or partnerships; and strategies that Require Significant Investment, Sequencing, or Research, which depend on funding or technical studies. Each

strategy within **Appendix A** is matched with its appropriate category to guide decision-makers in sequencing projects based on feasibility, resource needs, and complexity.

Additionally, **Appendix A** aligns each adaptation strategy with the specific natural hazard(s) it may address if implemented. These hazards: coastal erosion, compound flooding, drought, extreme heat, inland flooding, storm surge and sea level rise, wind, and wildfire were analyzed in detail through the Resilience Vulnerability Assessments. This alignment ensures that future projects are not only well-timed and feasible but also targeted to reduce risk from the most pressing threats facing St. Lucie County and its municipalities.

8.1 Level of Effort

Identifying the level of effort associated with the asset adaptation required for each future proposed project involves a detailed examination of the resources, time, scale, possible challenges, and expertise required to execute it successfully. Assessing these factors ensures that each future adaptation project is approached in a realistic manner with a clear understanding of demands. Some future-identified projects may require a significant level of effort due to high levels of intricacy, while others may be more straightforward, requiring a lower level of effort, and completion within a relatively short timeframe.

8.2 Cost Estimate

A future project's design should effectively address each asset's specific adaptation need while also being cost-effective over the asset's remaining useful life. Project cost has a direct correlation to other project elements such as time, scale, and funding source. Factors contributing to the determined level of cost include materials, labor, and equipment. Determining each project's level of cost allows for efficient financial planning and budgeting by the County and municipalities.

8.3 Timeline

A timeline for completion should be developed for each future adaptation project identified by the County or municipalities, including (at a minimum) planning, design, permitting, and construction. Project schedules highlight milestones and consider project complexity, resource availability, and community impact. The placement of future projects within a timeline would be dependent on multiple factors including County and/or municipal priorities, project urgency, availability of funds, permit hurdles, and resources. This timeline may expand or contract depending on changes in the foregoing factors. Larger-scale projects, often requiring more lead time, planning, and resources, will have longer implementation windows as compared to smaller-scale projects.

8.4 Funding Sources

Funding options are often specific to the type of asset. The options analyzed included federal, state, and local funding opportunities. Non-governmental organizations may also offer funding opportunities, but these are typically one-time source as opposed to recurring. Eligibility for grants in general is often based on several factors such as funding cycles, external requirements, project type, and location. A funding analysis will help the County and municipalities determine how each potential resilience project may be financed and whether additional resources are needed. The funding analysis

also allows the County and municipalities to be ready to respond quickly when new and unexpected funding opportunities arise.

Local government-sponsored adaptation projects are often supported with funding from several sources. **Table 8-1** below describes potential funding mechanisms for resilience projects.

Table 8-1. Future Resilience Adaptation Project Funding Options

Type of Funding	Funding Source
County or Municipal Generated (SLC)	1. General Fund – Taxes collected by a local government are either dedicated to specific programs or added to the General Fund and Reserves.
	2. Municipal Bonds – Issued by local governments with relatively low interest rates and a long pay-back schedule. They can be repaid through a government general fund or by the creation of a dedicated revenue source.
	3. Tax Increment Funds (TIF) – These funds may be used to repay debt incurred to finance public infrastructure projects. The repayment funding stream is generated by the increased property or sales tax generated by new development or increased property values. The use of TIF districts gives local governments the ability to finance new projects without raising taxes or depleting the existing base tax revenues.
	4. Sales Tax – Local Option Taxed are collected by the Florida Department of Revenue and deposited in a special account for the individual taxing authority. These taxes are generally 0.5 or 1 cent levees. The funds can be used to fund infrastructure projects among other activities.
	5. State Revolving Fund (SRF) – The State of Florida provides low interest loans to local governments. Eligible expenditures include planning, design, and construction activities for drinking water, storm water, and non-point pollution projects.
	6. Water Infrastructure Finance and Innovation Act (WIFIA) – The program is the federal counterpart to the SRF and provides low, fixed rate loans for larger water infrastructure projects that may have trouble obtaining other financial sources.
Grants - Federal	
Nature Based (NB)	1. NOAA National Coastal Resilience Fund (NCRF) – The program funds conservation or construction of coastal habitats to protect, restore or expand natural features. Non-federal match (cash or in-kind) is encouraged and may improve competitiveness of the proposal but is not required. (National Coastal Resilience Fund (noaa.gov)).
	2. NOAA Emergency Coastal Resilience Fund (ECRF) – The program funds the rebuilding of habitats after a natural disaster has impacted them. No match is required; however, a match may be included in the proposal. (Emergency Coastal Resilience Fund | NFWF)
Grey Infrastructure (GI)	1. Housing and Urban Development (HUD) Community Development Block Grant – Mitigation (CDBG-Mit) – The program funds are designed to increase resilience to disasters and reduce or eliminate the long-term risk of loss of life, injury, damage to and loss of property, and suffering and hardship by lessening the impact of future disasters. The goals of the program are to build or strengthen critical infrastructure and support the adoption of policies that reflect local and regional priorities with long-lasting effects on community risk reduction. (CDBG-MIT Action Plan Requirements - HUD Exchange)
	2. Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) – The program funds are available after disasters to support projects similar in nature to the HUD CDBG-Mit projects. The program provides 75% federal funding with 25% coming from state and local sources. (Community Development Block Grant (CDBG): Mitigation (MIT) Program | FEMA.gov)
	3. FEMA Building Resilient Infrastructure and Communities (BRIC) – The federal program funds projects that reduced a community's risk of damage from natural disasters including projects that address effects from hazards. It focuses on capability and capacity building in areas like building codes and hazard mitigation planning as well as hazard mitigation projects that are designed to increase resilience and public safety. The program provides 75% federal funding with 25% coming from state and local sources. (Building Resilient Infrastructure and Communities | FEMA.gov)
	4. FEMA Flood Mitigation Assistance (FMA) – The program funds projects that eliminate or reduce risk of repetitive flooding to buildings and communities that participate in the National Flood Insurance Program (NFIP). Adaptation, equity, and resilience projects with respect to flooding are eligible for funding under this

Type of Funding	Funding Source
	program. The program provides 75% federal funding with 25% coming from state and local sources. (Flood Mitigation Assistance Grant Program | FEMA.gov)
	5. Environmental Protection Agency (EPA) Environmental Finance Centers – While not a funding center, this program is comprised of university-based organizations that help communities develop programs to fund the costs of environmental protection programs, which can include impacts to the environment from the effects of hazards. (https://www.epa.gov/sites/default/files/2015-02/documents/fact_sheet_-_environmental_finance_centers_fact_sheet_february_2015.pdf)
	6. Department of Transportation (DOT) Promoting Resilient Operations for Transformative, efficient and Cost-Saving Transportation (PROTECT) – The program is a discretionary grant administered through the U.S. Department of Transportation and provides federal funding to help make surface transportation more resilient to natural hazards, including extreme weather, sea level rise, flooding, extreme weather events, and other natural disasters through support of planning activities, resilience improvements, community resilience and evacuation routes, and at-risk coastal infrastructure. (Bipartisan Infrastructure Law - Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation [PROTECT] Formula Program Fact Sheet | Federal Highway Administration [dot.gov])
State of Florida (SF)	1. Department of Transportation (DOT) Promoting Resilient Operations for Transformative, efficient and Cost-Saving Transportation (PROTECT) – The program is a formula grant administered through the Florida Department of Transportation and provides federal funding to help make surface transportation more resilient to natural hazards, including extreme weather, sea level rise, flooding, extreme weather events, and other natural disasters through support of planning activities, resilience improvements, community resilience and evacuation routes, and at-risk costal infrastructure. (Bipartisan Infrastructure Law - Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation [PROTECT] Formula Program Fact Sheet | Federal Highway Administration [dot.gov])
	2. Local Mitigation Strategy – While this is not a funding source in and of itself, inclusion on this list provides eligibility for projects to be considered for funding under many federal programs. It is comprised of a list of mitigation projects that have been vetted and ranked by the community and includes each project's "shovel readiness".
	3. Resilient Florida Program – The program is designed to provide funding to local communities to assist them in assessing their vulnerabilities to flooding caused by weather, sea level rise, and other sources of flooding, and to design and construct projects that address the exposure of critical assets to those threats. A 50% cost share is required for projects to be eligible for consideration.
	4. Water Quality Improvements Grant Program - The program is available to local governments for repairing, upgrading, expanding, or constructing stormwater treatment facilities that result in improvements to surface water or groundwater quality. Match is not required, but is encouraged and may increase the competitiveness of the grant.
	5. South Florida Water Management District Water Supply Grant – The program is funded annually to assist local governments in implementing cost-effective strategies to conserve water and meet water demand. To qualify for these funds, local governments projects must be construction-ready AWS projects or ready-to-implement water conservation technology programs/projects. The local governments must also have adopted an irrigation ordinance consistent with South Florida Water Management District year-round irrigation rule and have an approved Water Supply Facilities Work Plan. Maximum cost share is 50%.
Other sources for consideration	1. Non-profits organizations often offer one-time grant opportunities based on funding they have acquired. Periodic Google searches and review of the Philanthropy News Digest (Philanthropy News Digest) along with major funders such as the Bill and Melinda Gates Foundation (https://www.gatesfoundation.org/) and the Kresge Foundation (https://kresge.org/) will help to identify any new funding sources.
	2. Public-Private Partnerships – In some cases, the County and municipalities' objectives will line up with a private venture requiring a common outcome. The private sector partner may have funds, expertise or other types of contributions and efficiencies that would benefit a large-scale project.

8.5 Other Considerations

When evaluating future projects for implementation, there are various other considerations that can support a broader array of project types and planning efforts.

8.5.1 Partnership and Collaborations

St. Lucie County and the municipalities have a demonstrated understanding of the importance of partnerships for successful projects. Its long working relationships with the U.S. Army Corps of Engineers, the Florida Department of Environmental Protection, the Florida Inland Navigation District, and the South Florida Water Management District, have resulted in numerous beach management, storm protection, inland waterway, and water quality projects.

The County and municipalities have also developed close working relationships as evidenced by the beach management program, which is partially within the Fort Pierce city limits; SUN Trail Project; and collaboration on land acquisition and the half-cent sales tax to address infrastructure projects. The long-term membership in the Treasure Coast Regional Planning Committee and St. Lucie Transportation Planning Organization have resulted in advancements in resilience for the region. Finally, several public-private partnerships have been forged, resulting in community art and amenities, and offsetting development impacts through the preservation of greenspaces. Funding, expertise, support, assistance, and experience are all valuable tools that have been provided by partners. These existing relationships will be equally important as the County and municipalities move into the resilience adaptation implementation stage.

8.5.2 Lead Agencies/Organizations

As stated earlier, critical assets support services that are fundamental to the community but are not always owned or under the control of the County or municipalities. In some cases, outside agencies or non-profit organizations may lend support to these services. One or more lead departments, agencies, or organizations should be identified for each proposed mitigation project. The agency/organization selection represents the entity or entities most appropriate to assume responsibility for the project. Agencies include those at the state and local levels, and organizations can be national or community-based.

8.5.3 Regulatory and Planning Capabilities

The evaluation of regulatory and planning capabilities involves assessing County and municipality management practices related to changing patterns of natural hazards. The analysis can include reviews of current development restrictions and planning, management regulations, hazard mitigation planning, sustainability programs, emergency planning, and post-disaster recovery with the aim of incorporating sustainable decision-making at every level. The County's and municipalities' level of readiness is clearly indicated by the many planning efforts that have been completed or are in process.

8.5.4 Administrative and Technical Capabilities

The involvement and demonstrated commitment to adaptation on the part of County / municipal administration will determine the importance of incorporating adaptive strategies into capital improvement projects that are supported by staff. Evaluating the number of subject matter experts in fields that are tied to future adaptation projects, relative to community size, indicates technical capabilities and level of support available to other staff in their efforts to identify ways to make their projects more resilient. The success that SLC and the municipalities have achieved together and

separately in obtaining grant funding, federal project participation, and community support for the types of projects that have an impact on resilience mirrors the administrative and technical capabilities of all involved staff and elected officials.

8.6 Fiscal Capacity

The County and municipalities can also evaluate their abilities to fund proposed adaptation strategies. The analysis included in this document explores grants, loans, taxes, insurance, bonds, and other sources. As fiscal capacity grows, more aggressive adaptation policies such as buyout programs, incentive programs, and strategic budgeting can be considered.

8.7 Phased Adaptation Approach

The implementation plan organizes adaptation strategies into three distinct implementation categories to guide phased action over time. Each strategy listed in **Appendix A** is assigned to one of these categories based on urgency, feasibility, and alignment with long-term resilience goals.

1. **Immediately Actionable**: Actions that can begin immediately using existing resources, staff capacity, and current authority. These strategies typically require minimal additional planning or approvals and can deliver quick benefits while building momentum for broader adaptation efforts.
2. **Requires Planning and Coordination**: Actions that need more preparation before implementation, such as detailed design work, engineering studies, permitting processes, supplemental funding, and/or formal partnerships with other agencies and stakeholders. These strategies often involve aligning multiple entities and ensuring regulatory compliance, which adds time and complexity to the process.
3. **Requires Significant Research, Investment, and/or Sequencing**: that depend on major funding commitments, technical studies, and/or enabling policies before they can move forward. These strategies may involve large-scale infrastructure projects, advanced modeling, or phased implementation to ensure feasibility and cost-effectiveness. Sequencing may be critical for these actions because they often rely on foundational steps, such as data collection, policy updates, and/or smaller enabling projects, before full deployment.

9.0 MONITORING AND EVALUATION

Monitoring and evaluation are crucial components of community resilience, ensuring that implemented projects achieve their intended goals and contribute to the County's and municipality's ability to recover from a natural hazard event. A comprehensive monitoring and evaluation program should track the effectiveness of each future adaptation project, providing valuable insights and identifying necessary modifications to enhance performance. It is essential to have a knowledgeable and supportive team that understands the program's objectives and can provide real-time feedback on project implementation. While guidelines for adaptation projects are flexible to accommodate unforeseen circumstances, any deviations should be thoroughly documented to maintain the integrity of the original intent. Monitoring frequency will vary based on a future project's implementation timeline and duration, but should always have standardized reporting protocols in

place to capture progress and address key questions or issues that may indicate the need for some modification. Key management personnel should establish formal methods for adjusting projects as needed. Additionally, publicizing successful projects will increase community awareness and appreciation of efforts to build a more resilient and sustainable St. Lucie County. This approach fosters transparency, accountability, and continuous improvement in the County's and municipalities' resilience initiatives.

9.1 Tracking Progress and Performance

Tracking progress and performance is vital for the successful execution of resiliency efforts. Establishing a realistic timeline for the overall program and each individual future adaptation project is essential for continued success. This timeline should be adaptable to changing conditions and funding availability, with annual reviews to assess progress and make necessary adjustments. Metrics should be used to measure success, and any timeline modifications should be documented to inform future planning. For each future project, cost and timing should be monitored at the 30 percent, 50 percent, and 90 percent completion stages to identify any resource shortfalls or issues causing delays.

To support this effort, the County and municipalities may develop an internal tracking dashboard to monitor the implementation and progress of future resilience projects. This dashboard may enable staff to track project statuses across key milestones, including: Planned, Designed, Permitted, Funded, Under Construction, and Complete. The tool enhances transparency, supports data-driven decision-making, and allows for timely identification of bottlenecks or areas needing additional support.

Progress toward high-level goals should be evaluated at both the project and program levels. Recognizing achievements at the County and municipal staff and community levels can help build momentum. If progress is slower than expected, actions can be identified that can expedite the project such as increased funding, additional manpower, or improved coordination. While deadlines are consequential, it is equally important to consider whether modifying a project can resolve the timing issues while still achieving the intended goals. Deferring completion dates should occur only as a last resort due to potential cumulative impacts on the overall program.

Regular reviews, whether they highlight successes or opportunities for improvement, can provide valuable insights for future adaptation planning and help refine the progress and performance tracking process. This approach would ensure that the County and municipalities remain on course to achieve its resilience objectives.

9.2 Feedback Mechanisms

Feedback mechanisms are essential for assessing project performance and program success, with data gathered from various sources. Formal, quantitative feedback is generated through performance tracking while qualitative feedback can be obtained from staff, vendors, elected officials, grant managers, and the community. Processes such as suggestion boxes or innovation rewards can encourage staff to share comments and suggestions. Vendors should be invited to propose innovative solutions, while elected officials can relay constituent feedback through established channels. Grant

managers at state and federal agencies, with their broad experience in similar projects, can offer valuable insights through regular communication.

Establishing clear lines of communication with the community early in the conceptual phase ensures ongoing feedback about project implementation and goals. This structured exchange with residents and stakeholders helps clarify facts and expectations and allows County and municipal project managers to review community input promptly and make necessary modifications. Results from monitoring and feedback programs should be reviewed routinely so that existing projects can be modified and new projects can be envisioned to improve the program for the future. Additionally, the monitoring and evaluation efforts themselves should be updated as needed to better capture relevant information, ensuring the RRP remains responsive and effective.

10.0 LAND PRESERVATION COST BENEFIT ANALYSIS

St. Lucie County conducted a Land Preservation Cost Benefit Analysis (CBA) to evaluate the economic value of preserving natural lands compared to converting them to development. The analysis considered ecosystem service benefits such as flood protection, water quality improvements, habitat conservation, recreation, and aesthetic value against the costs of maintaining preserves. Using FEMA ecosystem service valuation methods and a 10-year planning horizon with a 7 percent discount rate, the results show that all preserves deliver benefits far exceeding costs, with Benefit-Cost Ratios (BCR) well above 1.0. In fact, BCRs ranged from 26.6 to over 90 when all benefits were considered, and even flood protection alone produced positive returns. Collectively, the nine preserve groups analyzed provide hundreds of millions of dollars in avoided costs and ecosystem benefits, reinforcing the economic and environmental rationale for long-term land conservation. These findings underscore that preservation is not only a resilience strategy, but also a sound financial investment, supporting flood mitigation, biodiversity, and community well-being while reducing future risk. The complete Land Preservation Cost Benefit Analysis can be found in **Appendix F**.

11.0 CONCLUSION

St. Lucie County's Regional Resilience Plan builds on the County's and municipalities' established record of commitment to resilience planning. It represents a proactive, inclusive approach to adaptation. By aligning resilience goals with community needs, economic stability, and promoting healthy practices, the RRP provides a clear path to a safer, more resilient future for all residents. Thoughtful data analysis, clear County and municipal policy priorities, and funding realities were incorporated for the development of proposed adaptation strategies. Through continued partnership, stakeholder engagement, and adaptive management, the County and municipalities are positioned to effectively navigate the challenges posed by hazards.

This report provides the County and municipalities with a robust portfolio of adaptation strategies that can be drawn from to guide future resilience projects geared toward protecting critical assets from hazards. The RRP emphasizes the importance of integrating resilience across multiple sectors, from land use and infrastructure to emergency management and public health, ensuring that adaptation efforts are both practical and forward-looking. It reflects a shared understanding that

resilience is an ongoing process that requires coordination, flexibility, and responsiveness to changing conditions.

Through continued partnerships, stakeholder engagement and education, and adaptive management, the County and municipalities are well-positioned to navigate future challenges, reduce risk, and strengthen community resilience over time. The Regional Resilience Plan serves as a framework that can evolve alongside new data, technologies, and community needs, helping St. Lucie County, Port St. Lucie, Fort Pierce, and St. Lucie Village remain prepared and adaptable.

12.0 REFERENCES

SLC (St. Lucie County). 2019. Comprehensive Plan EAR-Based Amendments: Coastal Management Element. Data, Inventory, and Analysis.

SLC. 2024. Comprehensive Plan EAR-Based Amendments: Conservation Element. Data, Inventory, and Analysis.

APPENDIX A: PORTFOLIO OF ADAPTATION AND MITIGATION STRATEGIES

St. Lucie County Regional Resilience Plan
Portfolio of Adaptation & Mitigation Strategies

Strategy Category	Strategy Type	Description	Applicable Hazard(s)
Physical Modifications to Assets	Maintenance and Operations	***Ongoing***	
		Integrate building elevation and inundation data into permitting and planning of facilities by linking elevation certificates and vulnerability mapping to construction and retrofit decisions. Maintain and update elevation certificate data countywide.	Flooding (rainfall, storm surge, sea level rise, tidal flooding, combination flooding)
		Develop an infrastructure asset management system with survey level data, or modify an existing one to incorporate resiliency elements, that compiles data on infrastructure age, condition, and survey-grade vulnerability metrics to guide maintenance and retrofit strategies. Digitize all relevant data into a centralized system.	All
		Ensure facilities are weatherized and HVAC systems maintained to reduce vulnerability to extreme heat and storm impacts.	Extreme heat, wind
	Retrofitting	***Immediately Actionable***	
		Install and prioritize tidal protection to infrastructure, including tidal gate valves, surge barriers, and valve retrofits, with annual updates to prioritization in capital planning.	Sea level rise, storm surge, tidal flooding
		Retrofit critical facilities with energy-efficient cooling systems, passive design features, and renewable energy sources to reduce heat stress and maintain operations during power outages.	Extreme heat
		Expand use of reflective and cool roofing materials to mitigate extreme heat impacts on buildings.	Extreme heat
		Requires Planning and Coordination	
		Retrofit critical facilities for wind resilience, including impact-resistant windows, reinforced roofs, and other wind-hardened features to ensure continuity of operations.	Wind

Physical Modifications to Assets	Retrofitting (cont'd)	Strengthen existing infrastructure and support equipment by assessing vulnerabilities and developing a comprehensive plan to improve the integrity of public assets and systems.	All
		Requires Significant Research, Investment, and/or Sequencing	
		Elevate and retrofit critical infrastructure (e.g., roads, utilities, buildings) in high-risk areas using adaptive design standards such as floating infrastructure, tidal-resistant roads, and elevation strategies.	Flooding (rainfall, storm surge, sea level rise, tidal flooding, combination flooding)
	Replacement	***Immediately Actionable***	
		Prioritize replacement of critical assets (e.g., bridges, culverts, stormwater systems) that have exceeded their design life or show signs of hazard-related stress.	All
		Coordinate need for replacement with capital budgeting cycles.	All
		Coordinate replacement efforts with hazard mitigation and emergency planning to ensure continuity of essential services during extreme events.	All
		Incorporate nature-based design elements into replacement projects, such as permeable surfaces, bioswales, or living shorelines, where feasible.	All
		Requires Planning and Coordination	
		Replace aging infrastructure with hazard-adapted alternatives that meet updated resilience standards for flooding, wind, and heat	Flooding (rainfall, storm surge, sea level rise, tidal flooding, combination flooding), extreme heat, wind
		Requires Significant Research, Investment, and/or Sequencing	
		Use replacement projects as opportunities to integrate renewable energy systems, energy-efficient technologies, and passive cooling strategies	Extreme heat
		Develop a replacement schedule based on vulnerability of assessments, maintenance records, and projected impacts to guide long-term capital planning	All
	Planned Relocation	***Immediately Actionable***	
		Identify trigger points for relocation based on infrastructure-specific failure points using monitoring data, trends, and vulnerability assessments to inform when and where retreat or relocation should be initiated.	All

Physical Modifications to Assets	Planned Relocation (cont'd)	***Requires Planning and Coordination***	
		Develop a Managed Retreat Framework to guide the potential relocation of assets and community elements from low-lying coastal areas, considering flood exposure and ecosystem migration due to sea level rise.	Flooding (rainfall, storm surge, sea level rise, tidal flooding, combination flooding), coastal erosion
	Demolition or Abandonment	***Immediately Actionable***	
		Identify and prioritize structures for demolition or abandonment based on vulnerability assessments, cost-benefit analyses, and long-term resilience goals.	All
		Engage communities in planning for abandonment or demolition to ensure transparency and alignment with local needs and values.	All
		If properly justified, coordinate demolition/abandonment efforts, and/or employ land use planning strategies to mitigate repetitive loss and reduce risks to human health.	All
		Requires Planning and Coordination	
		Develop protocols for safe decommissioning of compromised infrastructure, including environmental remediation and community notification.	All
		Convert vacated high-risk areas into green infrastructure zones that support flood absorption, habitat restoration, and passive recreation.	Storm surge, tidal flooding, inland flooding
		Requires Significant Research, Investment, and/or Sequencing	
		Monitor and evaluate post-demolition land performance to assess flood mitigation, ecological benefits, and community use outcomes.	All
Natural Defenses & Nature-Based Adaptations	Retention Structures and Drainage Improvements	***Immediately Actionable***	
		Identify and utilize public open spaces for enhanced stormwater management, including dual-purpose uses such as green space, preservation, and floodwater retention.	Inland flooding
		Determine and model stormwater storage capacity by identifying public and private floodwater storage areas and assessing drainage potential to inform infrastructure improvements.	Inland flooding

Natural Defenses and Nature-Based Adaptations	Retention Structures and Drainage Improvements (cont'd)	Complete or update stormwater master plans to ensure proper planning in the future.	Inland flooding
		To support future planning and modeling, any existing metadata related to modeling efforts should be updated and maintained.	All
		Requires Planning and Coordination	
		Upgrade stormwater infrastructure using future rainfall projections and hybrid gray-green systems to address compound flooding risks, especially in low-gradient inland areas. Revisit level of service for stormwater management incorporating a tidal flooding consideration.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Requires Significant Research, Investment, and/or Sequencing	
		Enhance freshwater system resilience by implementing hydrologic modifications to maintain freshwater inputs and installing salinity barriers or adaptive culverts at estuarine-freshwater interfaces.	Sea level rise, storm surge, tidal flooding
	Construct Natural Features	***Immediately Actionable***	
		Prioritize nature-based solutions such as dune restoration, living shorelines, and other ecological approaches over hard infrastructure where feasible.	Coastal erosion, storm surge, wind
		Increase utilization of passive green infrastructure including trails, swales, and retention areas to support stormwater management, habitat connectivity, and recreational benefits.	Inland flooding
		Develop a green infrastructure master plan to guide the integration of bioswales, rain gardens, permeable surfaces, and other natural features into urban redevelopment.	Inland flooding
	Preserve and Restore Ecosystems	***Immediately Actionable***	
		Strengthen support for wetland conservation through voluntary and incentive-based programs that emphasize flood resilience and ecosystem health.	Flooding (rain, storm surge, sea level rise, tidal flooding, inland flooding, combination flooding), drought
		Restore degraded coastal wetlands and natural buffers (e.g., mangroves, dunes, beaches) to increase co-benefits for flood mitigation and biodiversity.	Sea level rise, storm surge

Natural Defenses and Nature-Based Adaptations	Preserve and Restore Ecosystems (cont'd)	Restore and protect inland wetlands and floodplains to enhance natural flood storage, improve water quality, and support habitat resilience.	Inland flooding, drought
		Requires Planning and Coordination	
		Advance restoration of floodplain and marsh systems by reconnecting historic floodplains, removing culverts and berms, and piloting brackish zone restorations.	Inland flooding, drought, fire
		Create buffer zones and implement strategic conservation goals for vulnerable habitats, including species-specific and critical wetland areas.	Inland flooding, heat, drought, fire
		Harmonize natural resource restoration with resilience strategies, integrating ecological restoration into broader adaptation planning.	All
		Requires Significant Research, Investment, and/or Sequencing	
		Create a Coastal Habitat Transition Reserve Network by designating upland buffers for wetland migration and addressing "coastal squeeze" in highly developed areas.	Sea level rise, storm surge, tidal flooding
	Protect Coastal Shorelines	***Immediately Actionable***	
		Implement innovative shoreline protection strategies such as groins, oyster reefs, and living shorelines to reduce erosion and enhance coastal resilience.	Coastal erosion, storm surge, sea level rise, tidal flooding
		Coordinate with US Army Corps of Engineers (USACE), the Florida Department of Environmental Protection (FDEP), and local municipalities to prioritize beach nourishment projects in areas with critical infrastructure or evacuation routes at risk from future sea level rise.	Coastal erosion, storm surge, sea level rise, tidal flooding
	Increase Tree Canopy and Green Corridors	***Immediately Actionable***	
		Conduct a tree canopy study and based on results, expand tree canopy and urban greening, prioritizing urban heat islands—especially in Fort Pierce and Port St. Lucie.	Extreme heat, inland flooding, wind
		Increase tree coverage and green infrastructure in public spaces to provide shade and cooling benefits.	Extreme heat, inland flooding
		Expand parks and install cooling features such as splash pads and pools to reduce heat exposure for the public.	Extreme heat, inland flooding
		Ensure advanced forestry management including ecological and commercial silviculture, prescribed burns and silvopasture to minimize the potential for wildfire.	Wildfire, drought

Natural Defenses	Increase Tree Canopy and Green Corridors (cont'd)	***Requires Planning and Coordination***	
		Design recreational and open spaces with dual-purpose features, such as floodable park elements along canals and coastal areas to support stormwater management and resilience.	Extreme heat, inland flooding
Planning, Management, and Policy	General	***Immediately Actionable***	
		Review the Comprehensive Plan and Code for linkages with recommendations in the Vulnerability Assessment. Conduct a comprehensive analysis for consistency and opportunities to strengthen resiliency goals, objectives, and policies.	All
		Review existing shoreline policies to determine if criteria need to be developed or modified to address water quality, erosion, and sea level rise adaptation measures. Use natural resource and shoreline map series to inform policy development.	Coastal erosion, storm surge, sea level rise, tidal flooding
		Monitor regional, state, and federal rulemaking related to stormwater and other resiliency-related policies. Track changes that integrate future climate conditions, including wet season groundwater elevations, sea level rise, and precipitation intensity/duration/frequency curves.	All
		Coordinate with county, municipalities, agencies, and stakeholders on policy development and updates.	All
		Requires Planning and Coordination	
		Integrate sea level rise projections into the Comprehensive Plan and design elements of the Code. Adopt regional projections into planning and design processes.	Sea level rise, storm surge, tidal flooding
		Establish roadway design standards that are resilient to sea level rise.	Sea level rise, storm surge, tidal flooding
	Land Use Policy Considerations	***Immediately Actionable***	
		Discourage development in flood-prone and erosion-prone areas; implement coastal setback policies and align with the Coastal Construction Control Line.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)

Planning, Management, and Policy	Land Use Policy Considerations (cont'd)	Incorporate flood risk, sea level rise, drought, and high wind projections into zoning, building codes, and comprehensive land use planning.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding), drought, wind, wildfire
		Prioritize permitting incentives for resilient and low-impact development (LID); review development requirements to enhance incentives for resilient building standards.	All
		Ensure affordable housing requirements account for future flood risk and other hazard vulnerabilities.	All
		Promote drought-tolerant landscaping and discourage high-water-demand development in areas with limited water supply resilience.	Drought, wildfire
		Use future land development data to identify and mitigate urban heat islands.	Extreme heat
		Conduct repetitive loss area analysis and integrate findings into vulnerability assessments and acquisition or flood-proofing strategies.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Encourage structure elevation programs for residents in low-lying areas to reduce flood risk.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Provide a 50% discount on permits for resilience upgrades such as impact windows, reinforced roofs, solar panels, and energy-efficient improvements—helping families prepare for hurricanes, flooding, and utility costs. The program can run certain months out of the year (spring prior to hurricane season) so as not to impact permitting program budgets.	All

Planning, Management, and Policy	Land Use Policy Considerations (cont'd)	***Requires Planning and Coordination***	
		Maintain and expand strategic land acquisition programs, including for repetitive loss properties, upland parcels in marsh/mangrove transition zones, and underutilized properties with flood storage benefits.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Limit impervious surface expansion in habitat transition zones.	Inland flooding
		Ensure that dynamic shoreline management planning continues.	Coastal erosion, sea level rise, tidal flooding, storm surge
		Requires Significant Research, Investment, and/or Sequencing	
		Establish conservation buffers to support natural shoreline migration and reduce infrastructure exposure.	Sea level rise, storm surge, tidal flooding, wind
		Implement Wildland-Urban Interface (WUI) mitigation strategies, including defensible space standards and fire-adapted landscaping.	Wildfire
	Emergency Planning	***Immediately Actionable - Pre-Storm (Preparedness and Planning)***	
		Complete detailed adaptation assessments for earliest at-risk infrastructure. Use vulnerability assessment information in emergency management planning and to prioritize projects.	All
		Incorporate vulnerability assessment data into local mitigation strategy and existing emergency management plans.	All
		Update emergency management and hazard mitigation plans to include vulnerability analysis data.	All
		Incorporate drought early warning into existing hazard mitigation plans by tracking updates from the US Drought Monitor and National Drought Mitigation Center. Identify clear triggers for remedial actions and communicate those actions to the public.	Drought, wildfire
		Establish a pre-storm preparedness protocol for inspecting infrastructure and securing or moving equipment.	Wind, storm surge, tidal flooding, inland flooding
		Ensure that a debris management plan includes pre-staging, rapid clearance, and recycling strategies to reduce post-storm recovery time and minimize impact to landfill.	Wind, storm surge, wildfire

Planning, Management, and Policy	Emergency Planning (cont'd)	Enhance wildfire detection and response capacity through improved GIS mapping, remote sensing, and interagency coordination.	Wildfire
		Immediately Actionable - During-Storm (Response and Communication)	
		Develop a flood early warning system with gauges in strategic locations to monitor water levels and provide alerts when roads may be flooding. Incorporate streaming data sources to create real-time data portal for citizens and decision makers.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Work with other agencies and government departments to identify and ensure vulnerable populations are provided with information regarding facilities and shelters during flooding events when vehicle travel may be compromised.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Consider signage and communication plans for alternate or compromised routes during flood events. Use this as an opportunity to educate the community and property owners about access issues.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Plan for and build public facilities to have the capacity to stage resources during flood events.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Immediately Actionable - Post-Storm (Recovery and Adaptation)	
		Ensure that a debris management plan includes rapid clearance and recycling strategies to reduce recovery time and minimize impact to landfill (also relevant pre-storm).	Wind
		Use vulnerability assessment information to prioritize recovery projects and long-term adaptation strategies.	All
		Requires Planning and Coordination	
		Integrate compound flooding risk into emergency management plans.	Combination flooding
		Update evacuation planning and sheltering strategies based on SLOSH Category 5 exposure, particularly for St. Lucie Village and Fort Pierce.	Storm surge

Planning, Management, and Policy	Codes and Standards	***Immediately Actionable***	
		Update design standards for public projects.	All
		Use the local technical amendment process for building code enhancements that address elevation and enhanced wind resistance measures.	Wind, Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Requires Planning and Coordination	
		Review building codes periodically to identify updates in building standards that may be required to address hazards as they change and/or intensify.	All
		Requires Significant Research, Investment, and/or Sequencing	
		Review, update, or develop policies to protect historic structures from future risk. Develop procedures for historic structures in highly vulnerable areas to adapt and make resilience improvements as feasible.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding) wildfire
	Operations and Staffing	***Immediately Actionable***	
		Update the essential employee list for emergency preparation and response activities, and conduct preparedness training for government employees to maximize workforce readiness.	All
		Ensure that an employee team of appropriate size and composition is trained and up to date on disaster response expense tracking to maintain eligibility for reimbursements.	All
		Coordinate with utility and service providers—including law enforcement, emergency management, schools, and critical care facilities—to evaluate infrastructure vulnerabilities and minimize service gaps.	All
		Annually update elected leadership on vulnerability and resiliency planning progress, and conduct a resilience strategy review prior to the capital budgeting process to align funding and implementation.	All
		Improve internal communications across departments to enhance collaboration during major events through formal or informal mechanisms.	All

Planning, Management, and Policy	Operations and Staffing (cont'd)	Ensure that a properly trained employee team is in place to track disaster response expenses and maintain eligibility for reimbursements.	All
		Establish a Heat Resilience Task Force to coordinate cross-sectoral responses involving public health, emergency management, and urban planning.	Extreme heat
		Convene a wildfire preparedness stakeholder committee to develop a community fire-emergency response	Wildfire
		Requires Planning and Coordination	
		Ensure critical public services and buildings are equipped to function during power outages associated with extreme heat events, including facilities designated as cooling centers.	Extreme heat
		Requires Significant Research, Investment, and/or Sequencing	
		Improve the capacity of medical facilities to prepare for and recover from natural disasters and future hazard-related conditions.	All
	Capital Planning	***Immediately Actionable***	
		Hold a workshop prior to the initiation of the annual budgeting process to brief elected leadership on the relationship between the capital budgeting process and resilience benefits of proposed projects.	All
		Requires Planning and Coordination	
		Ensure that critical public services are equipped to function during power outages that may accompany storms and extreme heat events, including public buildings that may be needed as cooling centers.	Extreme heat, wildfire, wind, flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Integrate a resiliency tag on Capital Planning budgets where departments can identify proposed capital improvements projects as resilience improvements.	All
		Requires Significant Research, Investment, and/or Sequencing	
		Improve capacity of medical facility operations to prepare for and recover from natural disasters and future conditions.	All

Planning, Management, and Policy	Data Collection, Management, and Monitoring	***Immediately Actionable - Coastal and Habitat Monitoring***	
		Expand coastal monitoring programs to track erosion hotspots and sediment transport patterns.	Coastal erosion
		Continue collecting localized coastal erosion data for St. Lucie County beaches and use it to model future erosion rates.	Coastal erosion
		Establish baseline monitoring for key habitats such as wetlands and mangroves.	All
		Install Surface Elevation Tables to monitor accretion rates in wetland areas.	Sea level rise
		Develop early warning indicators for habitat transitions, such as GIS mapping, tidal gauges and elevation benchmarks.	Coastal erosion, sea level rise, tidal flooding, storm surge, extreme heat, drought
		Implement storm impact monitoring to assess compound flooding effects.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Link engineered beach designs to MSL or other relative datum instead of fixed elevations like NAVD.	Sea level rise, storm surge, tidal flooding
		Immediately Actionable - Infrastructure and Facility Risk Assessment	
		Complete site-level investigation of public and critical facilities using survey-quality elevation data and integrate into GIS.	All
		Complete property-level risk analysis using NFIP data to identify under-insured areas for targeted flood preparedness outreach.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Review flood risk for canal properties and monitor conditions to reduce erosion and improve water quality.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding), coastal erosion

Planning, Management, and Policy	Data Collection, Management, and Monitoring (cont'd)	Create a dataset on hazardous materials use or storage impacts by future flood risk.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Create an updated general building stock and critical facilities dataset using current parcels, footprints, elevations, and RSMeans Data values.	All
		Include updated occupancy class attributes in general building stock and critical facilities using assessor data.	All
		Maintain and update general publicly-owned building stock inventory dataset with critical facility attributes including first floor elevation and foundation type.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Maintain and update general building stock inventory with attributes for wind protection.	Wind
		Immediately Actionable - Flood and Stormwater Management	
		Improve stormwater vulnerability analysis by incorporating more data on structures, drainage basins, storage capacity, and rainfall.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Inventory and develop survey-grade data for control elevations of stormwater conveyance structures.	Inland flooding, Sea level rise, storm surge
		Acquire detailed drainage basin delineations to understand water pooling.	Inland flooding
		Identify all public and private floodwater storage areas.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		As updated FEMA floodplain data becomes available, update exposure analysis and generate detailed flood depth grids.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)

Planning, Management, and Policy	Data Collection, Management, and Monitoring (cont'd)	***Immediately Actionable - Planning, Modeling, and Decision Support***	
		Contribute vulnerability information to regional land and water resource protection efforts.	All
		Develop construction-ready plans for priority adaptation projects and incorporate them into the Local Mitigation Strategy.	All
		Conduct a loss analysis to better understand economic and social impacts from flooding.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Continue expanding and updating urban flooding in areas to inform mitigation.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Perform additional modeling scenarios for higher duration events, such as the 1,000-year MRP.	All
		Through the consumptive use permitting process, determine percentage of water use by sector to identify key target customers for water reduction strategies.	Drought
		Track extreme temperature data for injuries, deaths, shelter needs, agricultural losses, and other impacts.	Extreme heat
		Requires Planning and Coordination	
		Model and update impacts to habitats and species distribution from sea level rise.	Sea level rise, tidal flooding
Community Education, Programs, and Readiness	Community Tools	***Immediately Actionable***	
		Develop a program through partnerships and volunteer efforts to track changes in water quality and salinity.	Sea level rise, tidal flooding
		Maintain a database of low-interest capital resources and insurance mitigation programs to incentivize property owners to invest in storm resilience improvements and lower insurance premiums.	All
		Develop a central web portal dedicated to climate-related public education and outreach especially for flooding and extreme heat.	All

Community Education, Programs, and Readiness	Community Tools (cont'd)	Provide or require stormwater training for landscapers and site maintenance professionals, using resources like the Florida Friendly Landscaping Program.	Inland flooding
		Utilize technology for citizen scientists to document flood events by submitting photos, which can support staff in multiple ways.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Provide public access to GIS maps showing real-time flooded areas to reduce traffic congestion and support recovery efforts.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Promote hazard adaptation plans across sectors.	All
		Pursue and develop programs to help property owners adapt their properties to mitigate future flood risk. Explore funding options and incentives such as fortified construction standards or similar programs.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Incentivize the use of low-flow appliances and promote water catchment devices like rain barrels and cisterns for irrigation.	Inland flooding, drought
		Requires Planning and Coordination	
		Establish resilience hubs.	All
		Promote rainwater harvesting for floodwater retention and reuse; review land development regulations (LDRs) and provide public education.	Inland flooding
	Public Awareness	***Immediately Actionable***	
		Develop an online library of disaster preparedness and recovery resources that is broadly advertised and available to the public, emphasizing individual roles in community resilience.	All
		Continue CRS and resiliency education by linking flood insurance education with Community Rating System activities. Maximize participation in CRS and consider developing a watershed management plan as a credit activity.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Improve community discussions about projected changes and impacts and increase awareness of natural and man-made hazards and future vulnerabilities.	All

Community Education, Programs, and Readiness	Public Awareness (cont'd)	Encourage and incentivize residents to inspect their stormwater systems before major rain events through education and recognition programs.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Engage and educate private sector stakeholders, elected officials, and community members about strategies to increase resilience in the built, natural, and social environments.	All
		Expand public education campaigns on water conservation and drought preparedness for both residential and commercial users.	Drought, wildfire
		Conduct large-scale public education on neighborhood flood risks and flood damage reduction strategies. Consider an incentive program for these activities.	Flooding (storm surge, sea level rise, tidal flooding, inland flooding, combination flooding)
		Provide education opportunities on the benefits of well-designed landscaping for floodwater management.	Inland flooding
		Expand public education on wind hazard preparedness, including exterior preparation, safe sheltering practices, and insurance literacy.	Wind
		Target prevention-based outreach and support to vulnerable populations in high-risk zones, including manufactured housing communities and low-income residents.	All
	Emergency Preparedness	***Immediately Actionable***	
		Develop a countywide extreme heat early warning system and cooling center network, with targeted siting and outreach. Monitor the Heat Risk tool developed by NWS and CDC for heat impact forecasting up to a week in advance.	Extreme heat
		Develop and update extreme heat action plans and cooling centers.	Extreme heat
		Promote fire-adapted communities and defensible space.	Wildfire

Community Education, Programs, and Readiness	Emergency Preparedness (cont'd)	Ensure debris management policies reduce impacts to stormwater functions. Review landscaping debris and maintenance requirements to enhance standards on public and private property. Improve pre- and post-disaster debris management activities to increase clearing and reduce obstruction after storm events, including permit streamlining and debris mulching opportunities for residents and government facilities.	Wind, inland flooding, storm surge
		Requires Planning and Coordination	
		Strengthen evacuation routes and shelter capacity.	All
	Community-Based Planning and Development	***Immediately Actionable***	
		Increase communications with the business community on resiliency issues. Enhance engagement on vulnerability and adaptation strategies to reduce risk and avoid business disruption. Organize a stakeholder group to help business leaders explore vulnerabilities related to communication, worker safety, public/private partnerships, and other preparedness issues.	All
		Exchange vulnerability information with asset owners throughout the county and municipalities, including hospitals and the School District. Coordinate planning for adaptation projects at non-government-owned critical facilities.	All
		Coordinate vulnerability information with the Department of Health, using generalized inundation and population vulnerability maps to assess health-related hazard risks such as vector-borne diseases.	All
	Community-Based Planning and Development (cont'd)	Identify specific populations or neighborhoods with increased vulnerability to threats and develop adaptation strategies to reduce risk. Identify suitable resources for vulnerable communities and businesses to improve preparedness for changing conditions.	All
		Requires Planning and Coordination	
		Develop hazard-resilient affordable housing.	All
		Requires Significant Research, Investment, and/or Sequencing	
		Scale up use of conservation easements by prioritizing landowner outreach in medium-priority SLAMM vulnerability areas and partnering with agricultural interests in southwestern St. Lucie County to preserve recharge zones.	All

APPENDIX B: UNIFORM RESILIENCE POLICY RECOMMENDATIONS

Suggested Goals, Objectives and Policies
To Implement the St. Lucie County & Municipal Regional Resilience Plan

Uniform Policies Related to Regional Resilience Vulnerability Assessment[1]

Introduction:

This document was created to suggest policies that can be incorporated into the Comprehensive Plans of local governments in St. Lucie County (and its municipalities) that implement Strategies from the Regional Resilience Vulnerability Assessment. When reviewing such policies, the following should be noted:

- The policies relate to strategies from the Regional Resilience Vulnerability Assessment to be presented to the elected leadership for acceptance, as such, neither the strategies nor policies are required to be adopted into any Comprehensive Plan;
- Adoption into a Comprehensive Plan is guided by the traditional comprehensive plan amendment process;
- The policies are not mandatory;
- The policies can be modified depending on the local government jurisdiction (for instance, Port St. Lucie is less impacted by tidal flooding, but more impacted by rainfall-driven flooding);
- Terminology can be reviewed and modified to fit local government goals (such as the aforementioned varying types of flood risk) or references to sea level rise[2] (which can also be treated as tidal flooding);
- Commitments on timeframes can be added for clarity; and,
- "Shalls" can be modified "may"

These Uniform Policies are only suggestions to coordinate the Strategies of the Regional Resilience Vulnerability Assessment across the jurisdictions. Separately, an analysis is being completed which analyzes each jurisdiction's Comprehensive Plan for opportunities to incorporate other resilience concepts for long-term planning. Each Comprehensive Plan analysis includes the existing jurisdiction's adopted Comprehensive Plan. If the local government is in the process of updating or has recently updated it Comprehensive Plan, the project team requested direction from the local community on what to review to complete the Comprehensive Plan analysis.

Additionally, certain policies contained within this document are being successfully implemented with the work conducted in the Regional Resiliency Vulnerability Assessment. Those policies where work product has been generated by these efforts, and the policy presumably already met, are marked with a notation of **(RRVA)** in green at the end of the policies. This identification is to underscore that these policies likely require no effort on the part of a local government to accomplish, because they have been met through the development of the Regional Resilience Vulnerability Assessment.

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[1] These suggested policies could be incorporated into individual Comprehensive Plan Elements, a new "Resilience Element" or as needed by any local government and are based on the Strategies proposed in the St. Lucie Regional Resilience Plan.

[2] Sea level rise has been the terminology chosen for the suggested policies because that is the terminology currently used in Section 380.093, F.S. which outlines the requirements to conduct vulnerability assessments using state funds (a source of funding for the Regional Resilience Vulnerability Assessment).

Suggested Goals, Objectives and Policies
To Implement the St. Lucie County & Municipal Regional Resilience Plan

GOAL: ***The City/County shall address infrastructure and assets, neighborhoods and natural resources that experience coastal flooding due to extreme high tides and storm surge, and that are vulnerable to the related impacts of rising sea levels for the purpose of prioritizing funding for infrastructure needs and adaptation planning. The City/County shall develop policies to improve resilience to coastal flooding in these areas resulting from high-tide events, storm surge, flash floods, stormwater runoff, and related impacts of sea-level rise.***

Objective 1.0 - The City/County shall strengthen community and infrastructure resilience by implementing targeted strategies that reduce flood and climate related risks, prioritize funding, create adaptation planning initiatives and promote sharing of data and information.

Policy 1.1: The City/County shall incorporate the best available data, including results of vulnerability assessments and monitored/observed impacts, repetitive loss data and latest scientific predictions, into policy development and planning. **(RRVA)**

Policy 1.2: The City/County shall continue to coordinate with agencies, municipalities and other public and private entities to share the best available data and develop approaches to resilience to enhance the quality of life and ensure the safety of residents and visitors. **(RRVA)**

Policy 1.3: The City/County shall review projected flooding data related to transportation, other infrastructure, emergency management, natural resources and listed species, stormwater, utility and critical facilities, social vulnerability, existing and future growth, levels of service and other policy provisions for the development of projects, priorities, policies and maps. **(RRVA)**

Policy 1.4: The City/County shall conduct a vulnerability assessment within two (2) years that includes various flood hazards including rainfall, tidal, storm surge and the future impacts of sea level rise. Results from existing or future vulnerability assessments will assist in defining flood mitigation priorities. **(RRVA)**

Policy 1.5: The City/County shall continue leadership as a region through collaborative partnerships (for example, the League of Cities, Association of Counties, Chambers of Commerce, etc.) and a focus on strategic funding for the region to improve resilience throughout St. Lucie County.

Policy 1.6: The City/County shall coordinate with other governmental entities to develop and maintain an annual communications strategy that can leverage expertise across the internal departments and jurisdictions to ensure consistent, accessible messaging on resiliency data, flood risks, adaptation projects, and funding opportunities for all types of residential and business stakeholders.

Policy 1.7: The City/County shall collaborate with other governmental partners to host periodic regional resilience forums and public workshops. These meetings shall provide residents, businesses, and community organizations with information on current and projected resilience challenges, such as flooding, sea-level rise, and infrastructure adaptation—and gather stakeholder input to inform County and municipal policy updates.

Policy 1.8: The City/County shall update regional leadership on the status of regional and locally-specific resilience initiatives prior to initiation of annual budget cycle.

Objective 2.0 - The City/County shall address the vulnerabilities of public infrastructure and assets due to coastal flooding, storm surge, rainfall and/or sea level rise within the Community by mapping and prioritizing locations that are at risk in the near-term factoring in the criticality of assets and those dependent upon them.

Policy 2.1: The City/County shall identify areas, to encompass infrastructure and assets including buildings, structures and other facilities that are at risk of flooding due to (1) storm surge (2) king tide (3) rainfall-induced flooding thresholds or (4) combined flooding events. The City/County shall develop maps indicating the locations of such areas. **(RRVA)**

Data Collection and Further Analysis

Policy 2.2: Within the next two years, the City/County shall inventory public infrastructure and assets including, locations of assets. Particular emphasis shall be placed on roads, stormwater, septic systems, utilities and areas where hazardous materials are stored or managed, but all public infrastructure and assets shall be included. This effort shall be coordinated between public works, facilities and resiliency staff for the development of a centralized database to incorporate into capital improvement decision making. **(RRVA)** The City/County should enhance these datasets with information on asset elevations and conditions to determine at risk facilities and timeframe for impacts.

Policy 2.3: The City/County shall review vulnerability assessment results and mapping outputs to ensure that all public utilities and facilities such as sewer, gas, electric, communications, and water systems that are existing or proposed, are analyzed to minimize or eliminate flood damage depending on the criticality of the assets to government functions. The City/County shall coordinate with the utility providers and share information so adequate drainage paths to guide floodwaters around and away from proposed structures to reduce exposure to flood hazards can be best accomplished. Where replacement or relocation is not practicable, the City/County may determine that maintenance of existing infrastructure is the most feasible response to flood risk.

Policy 2.4: The City/County shall consider vulnerable historical, cultural or archaeological resources within the range of infrastructure and assets that must be included within its adaptation planning initiatives. Those areas shall be mapped and collaboration shall occur with cultural, archaeological or historical experts to ensure those impacted areas can be protected, preserved and/or relocated for the use and enjoyment of future generations. **(RRVA)**

Policy 2.5: The City/County shall create a strategic Stormwater Study or update its Stormwater Master Plan in concert with its Community Rating System (CRS) activities. If no update is necessary, such efforts shall include consideration of measures that include nature-based solutions to manage stormwater. Such studies should evaluate co-benefits such as water quality improvements, flood storage enhancements, and opportunities to integrate stormwater retrofits into capital improvement projects (CIPs). Include design life expectations and assumptions for future rainfall conditions and compound flooding considerations as appropriate. Upon completion of such a study, revisit adopted stormwater levels of service to determine if more specificity is necessary to manage expectations for the functionality of the system considering future water resource conditions.

Policy 2.6: The City/County shall collaborate with regional partners to secure funding or partnerships to develop a groundwater model that can be used to better evaluate groundwater inundation and saltwater intrusion in St. Lucie County.

Policy 2.7: For future modeling and analysis, the City/County shall coordinate with state and federal partners, such as the South Florida Water Management District (SFWMD) and United States Geological Survey (USGS), to analyze rainfall curves and integrated water resource information to provide more comprehensive data about the relationships between tidal inundation and precipitation patterns that will further exacerbate the impacts of flood risk on public infrastructure and assets. **(RRVA)**

Policy 2.8: The City/County shall evaluate the need for site-specific adaptation planning measures based on vulnerability assessments and maps identifying at-risk assets. Where assets or facilities are identified as highly vulnerable, the City/County shall determine whether retrofit or relocation strategies are appropriate.

Policy 2.9: Develop, continue and enhance collaborative efforts and regional partners to develop other useful data sources for emergency management and vulnerability planning including real time flood monitoring and early warning systems, drought warning, wildfire detection, debris management, recovery and response, pre-storm preparedness, shelter readiness and capacity, evacuation and transportation planning, recovery resource staging and other strategic local mitigation planning initiatives.

Integrating Sea Level Rise and Flood Risk into Capital Planning Decisions

Policy 2.10: The City/County shall incorporate sea level rise projections and flood risk data into the design and evaluation of capital planning projects for assets and facilities. The City/County shall evaluate and where appropriate, amend its Land Development Code, floodplain management provisions or Public Works design standards to incorporate such design standards which could include, but not be limited to: green infrastructure, low impact development (LID), stormwater design events and onsite retention requirements, road elevation, shorelines, pervious pavement, drought tolerant landscaping, and locations and elevations of supporting equipment such as electrical, pumps, treatment areas. The City/County shall develop supporting design manuals that convey examples of design types to communicate the goals of making infrastructure projects more resilient while achieving other co-benefits such as improving water quality treatment.

Policy 2.11: The City/County shall evaluate capital projects during its budget process to ensure that each project is designed to incorporate consideration of future flood and sea level rise risk for the useful life of the project and provide continuity of service to the extent practicable. Prior to incorporating a new project into the Capital Improvements Element, the City/County shall review it for recommendations to increase resiliency and account for the impacts from flooding. The City/County shall focus on the criticality of the project for service needs, level of service standards and practicality of managing flood risk for the project as points of analysis to ensure that infrastructure useful life and service expectations can be met considering impacts. The City/County may also conclude that adapting projects to address future risk is not practicable.

Policy 2.12: The City/County shall incorporate design considerations for renewable energy and backup power generation (as cost and service effective) to serve infrastructure making it resilient to outages.

Include Resiliency Elements into Public Facilities and Capital Improvements Planning

Policy 2.13: The City/County shall evaluate the need for and implement design standards to harden and mitigate critical public infrastructure to the impacts of flooding through elevation, impact resistant openings, roof reinforcement and other wind and flood improvements to reduce service disruption and increase recovery of facilities' operations.

Policy 2.14: The City/County shall evaluate the costs and benefits of incorporating energy efficient roofing materials and cooling systems, passive design features for lighting and renewable energy sources to reduce heat stress and maintain continuity of facilities operations for government buildings.

Policy 2.15: The City/County shall maintain and periodically update a prioritized list of critical assets that are in vulnerable locations, have experienced repeated impacts or failures during hazard events or have exceeded their design life for replacement or retrofitting projects so that they can be updated and maintain continuity of operations.

Policy 2.16: The City/County shall evaluate existing public facilities to determine if relocation, retrofit, or hardening is warranted based on the 2025 SLC Resilience Vulnerability Assessments due to their location or exposure to flood risk, current or previous service failures, and the potential short, medium or long-range timeframe associated with potential relocation of the facility.

Policy 2.17: The City/County shall develop or enhance an asset management system to incorporate resiliency triggers combining age, condition, vulnerability, risk and service expectations for critical facilities. The City/County shall maintain elevation data related to facilities in conjunction with CRS-related activities that is incorporated to asset evaluation procedures.

Policy 2.18: The City/County shall identify and periodically update priorities for critical facilities' adaptation, relocation, maintenance and/or decommissioning based on service life expectations, dependencies, risk and cost benefit factors.

Collaboration and Outreach on Adaptation Response

Policy 2.19: The City/County shall collaborate with service providers, the Florida Department of Transportation, Florida Department of Health, School District, privately-owned medical facilities, Florida Power & Light, Florida Public Utilities and other energy providers, and other regional partners to exchange data, plans and solutions to address future vulnerability and flood risks. The City/County shall also share vulnerability data across departments and governmental entities such as schools and critical care providers.

Policy 2.20: The City/County shall coordinate the development of resilience and adaptation projects with its pre-disaster mitigation plans, the Local Mitigation Strategy and other emergency management and disaster recovery strategies and planning efforts.

Policy 2.21: The City/County shall develop and implement a public awareness program using signage and related outreach tools to inform residents and visitors of anticipated periodic tidal or other inundation impacts on infrastructure including roads, drainage systems and impacts on buildings and facilities such as parks and open spaces so that the community is aware of the impacts to transportation or access to services. Seasonal high-tide flooding events shall be used as opportunities to illustrate potential future sea level rise impacts on transportation access, community services, and infrastructure.

Policy 2.22: The City/County shall use Capital project construction activities as an opportunity to educate the community about adaptation measures and investments that strengthen resilience to flooding, storm events, and other shocks and stressors. The City/County shall coordinate with its Public Information Office to communicate through signage, public information releases and on web applications and social media.

Funding Adaptation Response

Policy 2.23: The City/County shall evaluate funding structures and alternatives that include leveraging granting programs, assessments and/or user fees to increase project resilience to flooding impacts.

Policy 2.24: The City/County shall ensure adaptation project[3] design and analysis aligns with Section 161.551, F.S. (Public financing of construction projects within the coastal building zone), Rule 62S-7, F.A.C. (Sea Level Impact Projection (SLIP) Studies for State-Financed Coastal Construction), and Section 380.093, F.S. (Statewide Flooding and Sea Level Rise Resilience), so that adaptation projects are competitive for funding opportunities. This shall include review of technical criteria in these provisions so that if public funding is received for such projects, sea level rise and future flood risk are integrated into project development.

Objective 3.0 - The City/County shall address the vulnerabilities of neighborhoods or portions of neighborhoods due to coastal flooding, rainfall, storm surge and/or sea level rise within the Community.

Policy 3.1: The City/County shall identify neighborhoods or portions of neighborhoods that are at risk of flooding in 2040. The City/County shall develop maps indicating the locations of such areas. **(RRVA)**

Adapting How we Build

Policy 3.2: Considering that portions of highly vulnerable residential properties in the region may be outside of the extent of the regulatory floodplain, the City/County shall review its current floodplain management ordinance, and as needed amend its Floodplain Management Ordinance and related Land Development Code regulations to incorporate data from the vulnerability assessment. This analysis shall be used to identify neighborhoods and structures at increased flood risk and to increase opportunities for protection through enhanced drainage, freeboard, elevation standards, voluntary retrofit programs, and community outreach.

Policy 3.3: The City/County shall evaluate the need for additional freeboard requirements due to their location and proximity to the coast or low-lying areas.

Policy 3.4: The City/County shall review and where necessary revise its fill and grading policies within residential neighborhoods, to ensure that appropriate fill materials and elevations are used that protect properties, but do not compromise other adjacent properties, water quality and are coordinated with shoreline policies.

Policy 3.5: The City/County shall consider providing an incentive for private property construction or retrofits to achieve FORTIFIED Home and FORTIFIED Commercial (a program by the Insurance Institute for

[3] Note: this is not every project, just those slated as "adaptation projects" for which the local government may seek funding from the state. If state funds are sought under the Resilient Florida program, SLIP studies incorporating a factor sea level rise would have to be conducted anyway. Essentially this is about making adaptation projects more grant competitive.

Business & Home Safety or IBHS), Waterfront Edge Design Guidelines (WEDG) or other above-code resiliency standards for renovations and new construction to make homes and businesses more resilient. This should include work with other City/County partners, IBHS and organizations such as Smart Home America to build contractor capacity for evaluation of properties to achieve these standards.

Policy 3.6: The City/County shall review development standards for affordable housing projects to determine any need for revisions to increase the resiliency of these projects (whether or not they receive public funds) through incentives and other strategies.

Policy 3.7: The City/County shall identify incentives to divert future development and redevelopment away from vulnerable areas, such as transfer of development rights, clustering, density bonuses or other programs to help ensure the long-term economic resiliency of the area.

Policy 3.8: The City/County shall review data from its vulnerability assessment to identify locations where it is necessary to emphasize protecting and enhancing the built and natural environments of neighborhoods from storm surge, rainfall, erosion and sea level rise impacts, prioritizing natural green infrastructure approaches to the extent practicable. The City/County will consider developing localized flood mitigation plans at the neighborhood scale that will allow for the design of more detailed adaptation strategies such as infrastructure retrofits, enhanced storage areas, shoreline adaptation strategies and habitat restoration.

Policy 3.9: The City/County shall develop a geographically based analysis of existing housing-stock vulnerability using data on repetitive-loss areas, building age and condition, compliance with current building codes, and location within Special Flood Hazard Areas. Findings shall inform housing and mitigation programs to prioritize resilience retrofits and funding.

Policy 3.10: The City/County shall pursue programs that assist property owners in retrofitting existing housing to meet resilient design and accessibility standards. Such efforts may include partnerships to secure grant funding, establish low-interest loan programs, or offer incentives to improve structural hardening and accessibility in flood prone areas.

Private Property Adaptation

Policy 3.11: The City/County shall identify resources regarding a suite of financing opportunities and tools to assist individuals with personal home or business adaptation. This should include funding resources to provide assistance to property owners for weatherization, mitigation, flood-proofing, elevation and other flood-resistant improvement projects. Targeted communications about such funding sources shall be prioritized at the neighborhood scale.

Policy 3.12: The City/County shall collaborate with regional partners to identify gaps between private property adaptation and insurance mitigation credits to better link resiliency improvements, retrofits and construction with actual savings on flood and wind insurance.

Policy 3.13: The City/County shall maximize participation in FEMA's Community Rating System (CRS) program to the extent practicable to pursue greater discounts for flood insurance policy holders.

Policy 3.14: The City/County shall continue participating in federal and state grant programs and leverage disaster recovery and resiliency funding to reduce future flood losses by acquiring repetitive loss properties, elevating (lifting) structures, acquiring residential properties and returning the land to its

natural state, or demolishing residential properties and rebuilding National Flood Insurance Program (NFIP)-compliant insured structures.

Policy 3.15: The City/County shall evaluate and where feasible, implement periodic or seasonal discounts[4] on permits for resilience upgrades such as impact windows, reinforced roofs, solar panels, energy efficiency improvements and other projects that help families prepare for storm season, flood mitigation and cost savings for utilities.

Outreach and Education to Home and Business Owners

Policy 3.16: The City/County shall promote the collection and sharing of data through citizen science initiatives/programs and create a publicly accessible, GIS-based platform where residents and business owners can upload photographs and flood related observations to support documentation of local conditions.

Policy 3.17: The City/County shall collaborate with neighboring jurisdictions on development of a Resilience Hub to facilitate communication, distribute resources, and provide services to residents before, during, and after hazard disruptions.

Policy 3.18: Target business-oriented stakeholders for outreach and data compilation on business disruption, resilience and recovery opportunities and benefits.

Objective 4.0 - The City/County shall assess the vulnerabilities of natural areas, open spaces and parks due to coastal flooding, storm surge, rainfall and sea level rise by identifying locations at risk within the short, medium and long-term planning horizons.

Policy 4.1: The City/County shall identify natural areas, open spaces and parks that are at risk of flooding in the short, medium and long-term due to (1) storm surge (2) rainfall and/or (2) king tide flooding. The City/County shall develop maps indicating the locations of such areas. **(RRVA)**

Adapting Shorelines[5]

Policy 4.2: The City/County shall develop a baseline inventory of shoreline conditions, relationships between existing shoreline type (hardened, natural, living shoreline), their proximity to private or public development and, if new shoreline response is needed, to protect public or private assets. This may include surveying conditions, determination of seawall heights and outfalls from which to make decisions on future projects or policies. Such data should support the development of a shoreline adaptation strategy. This information should also be used to support projects that create living shorelines and protect or enhance healthy mangrove resources and wetlands.

Policy 4.3: The City/County shall identify and map publicly owned shoreline areas that are vulnerable and would benefit from coastal measures such as living shorelines, hybrid shorelines or seawalls. Projects should focus on living shoreline reinforcement for vulnerable locations whenever possible and incorporate groins, oyster reefs and other strategies to reduce erosion.

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[4] Limited duration to not impact overall annual permitting budget and enforcement efforts. Akin to "sales tax holiday".

[5] For those municipalities with shorelines. Can be adapted for coastal v. river shorelines/erosion.

Policy 4.4: The City/County shall coordinate with regional partners on beach, dune and shoreline protection, restoration plans and funding strategies. This may include appropriate beach renourishment and sand bypass as well as dune fortification and restoration with native beach dune vegetation. Within three (3) years, the City/County shall review and revise its dune protection requirements if necessary, and continue to facilitate dune restoration events within the community.

Policy 4.5: The City/County shall evaluate and update its shoreline policies to acknowledge the existence of hardened shorelines that require continued fortification while promoting the creation and expansion of living shorelines and other nature-based resiliency strategies where possible. Relationships between existing shoreline type and protection benefits to other infrastructure should be analyzed as part of this process. Land Development Code updates may occur, as necessary, to modify design standards considering future sea level rise, alternative strategies that enhance water quality, the effectiveness of disclosures to property owners upon resale and the relationship between shoreline and fill policy for properties that need additional elevation protected by an existing seawall.

Land Protection and Management

Policy 4.6: The City/County shall evaluate and where appropriate, revise its land protection, acquisition and land management strategies or priorities to support nature-based contributions to benefit the City/County's adaptation response such as mitigation of shoreline erosion, reduction of heat islands and consideration of the need for certain areas, species of plants or animals to migrate as sea level rise and/or tidal flooding impacts increase over time.

Policy 4.7: The City/County shall identify and evaluate underutilized or vacant properties within neighborhoods that may be acquired or repurposed to enhance water quantity and quality treatment, dual purpose floodable parks and open spaces that provide recreational opportunities as well as resiliency benefits simultaneously.

Policy 4.8: The City/County shall identify and pursue opportunities for joint funding of adaptation projects, including wetland, shoreline, and habitat restoration. The City/County shall share information on these resources with other stakeholders and partner strategically and proactively on projects.

Policy 4.9: In coastal high hazard areas, alteration of sand dunes or mangrove stands shall be permitted only when supported by engineering and environmental analysis demonstrating that such alteration will not increase the potential for flood damage, storm surge impacts, or erosion.

Policy 4.10: The City/County shall develop and distribute educational materials to contractors and property owners regarding the value of sustainable landscaping practices, pervious surfaces, natural lands management, the establishment of urban tree canopy (with appropriate species), using Florida Friendly landscaping materials and the use of landscaping that retains more stormwater onsite to achieve improved water quality.

Policy 4.11: In lesser developed, rural landscapes encourage and implement Wildland-Urban Interface mitigation strategies to reduce fire threats.

Improving Water Quality

Policy 4.12: The City/County shall study, plan, and implement measures to reduce nutrient loads to receiving waterbodies through capital improvement projects, enhanced best management practices, land

development regulation updates, and other strategies. This shall include linking activities to any required regulatory reporting whenever possible.

Policy 4.13: The City/County shall review and where appropriate modify landscape and shoreline canal vegetative requirements (where authority exists) to increase appropriate plantings and manage tidal impacts, drainage flows, water quality and erosion. This should include engagement with the SFWMD regarding the impacts of current and future flood events on the secondary and primary canal systems in the City/County. This shall also include consideration of the potential for algal blooms and how these impacts would affect structural operations.

APPENDIX C: ADAPTIVE CAPACITY ASSESSMENT

St. Lucie County Adaptive Capacity Report

Introduction

St. Lucie County defines adaptive capacity as "the ability of a community, infrastructure system, or organization to respond to evolving hazards or future risk conditions through its preparedness, operations, resources, policies, or physical assets to reduce long-term risk of loss of life, injury, property damage, and hardship, consistent with the objective of increasing resilience to natural disasters" (adapted from IPCC 2014). St. Lucie County and each of its jurisdictions have a unique combination of capabilities to adjust to, protect from, and withstand a future hazard event, future conditions, and changing risk. The adaptive capacity for each jurisdiction's capability to address hazards and related actions was evaluated using the following classifications:

- Strong: Capacity exists and is in use.
- Moderate: Capacity exists but is not used effectively or could use some improvement.
- Low: Capacity does not exist or could use substantial improvement.

Thirteen documents provided the basis of review for this report. These were evaluated with a scoring system scale of 1 to 3 correlating to the Strong (2.1 to 3), Moderate (1.1 to 2), and Low (0 to 1) categories to reflect the strength of the document in supporting the county or municipality adaptive capacity. The scoring criteria are detailed later in this report. Seven relevant subdocuments were also taken into consideration, reviewed, and included in the score of the respective main document. See the document overviews included in the Recommendations for Plan Integration section for listed subdocuments included in this review. As a result, the County as a whole including the municipalities scored **strong adaptive capacity** related to Inland Flooding, and Storm Surge Flooding and **moderate adaptive capacity** related, coastal erosion, drought, extreme heat, wildfire, and wind hazard events. Notably, these overall results are the average of individual document scores, and therefore the documents that received strong and moderate scores are detailed in this report. The documents reviewed for this analysis include planning documents and ordinances for the County, Port St. Lucie, Fort Pierce, and St. Lucie Village. The resulting scoring provides an indicator for each document and hazard.

Theory Review

The adaptive capacity (or capability) review includes an evaluation of the plans and policies and response and recovery, available to the County and municipalities to adjust or withstand a future hazard event. The probability of occurrence, potential impacts, adaptive capacity, and extreme weather patterns, factor into the hazard ranking and estimated hazard impacts for a community.

To build upon the previous definition, the ASTM E3429-24 Standard Guide for Property Resilience Assessments, defines adaptive capacity as the ability of a system to adjust to natural hazards (including environmental variability and weather extremes) to moderate potential damages, to take advantage of opportunities, or to cope with circumstances (ASTM International, 2024). One of the prioritization criteria indicated in the guide is the organizational capacity to implement resilience measures, or in other words, the adaptive capacity of an organization.

Hazard Summary

This analysis is based on the review of identified hazards in the 2025 St. Lucie County Regional Resilience Vulnerability Assessments (RVAs) and Draft Plan (RRP), and the 2021 St. Lucie County Unified Local Mitigation Strategy.

The **2025 St. Lucie County Resilience Vulnerability Assessments** and Draft Plan address short and long-term resilience planning by taking a local, data-driven approach to evaluate the vulnerability of county-wide assets to the risk posed by natural hazards. The County and municipalities included the following natural hazards in the vulnerability assessments: coastal erosion, drought, extreme heat, flooding, storm surge, wildfire, and wind (St. Lucie County, 2025). These hazards were selected due to the potential risk the County and municipalities face with these specific hazards. The vulnerability assessment evaluated each hazard's frequency, severity, and extent along with anticipated environmental changes. The vulnerability assessment characterized vulnerability as a function of exposure as the presence of assets, ecosystems and populations in areas where they could be adversely affected by hazards; and a function of sensitivity, as the degree to which a system, resource or population is or might be affected by hazards.

The **2021 St. Lucie County Unified Local Mitigation Strategy** document is a pre-disaster planning process that is intended to reduce disruptions caused by natural, and human caused and technological disasters in the planning area. The LMS evaluated a range of natural and human caused hazards that can threaten life and property, while the Vulnerability Assessments focused strictly on natural hazards.

Figure 1 – Local Mitigation Strategy (LMS) Matrix -Intersection of Hazards and Potential Impacts

	POTENTIAL IMPACT POINTS																			
	WIND Extensive wind	**WATER** Extensive water	**HAIL** Damaging hail	**EROSION** Soil/bank erosion	**ENERGY** Electric power outage	**TRANSPORTATION** Surface and air transportation disruptions	**WATERWAY TRANSPORTATION** Navigable waterway impairment	**POTABLE WATER** Potable water system loss or disruption, saltwater intrusion	**WASTEWATER** Sewer system outage	**COMMUNICATIONS** Telecommunications system outage	**HUMAN HEALTH** Disease/Physical & Mental health	**HUMAN SAFETY** Design/Training, risk reduction	**ECONOMY & AGRICULTURE** Economic disruption, Agricultural/Industrial damages	**SERVICES & SOCIAL NETWORKS** Disruption of community services & social networks	**BUILDINGS & INFRASTRUCTURE** Damage or loss of buildings or infrastructure	**ENVIRONMENT** Damage to critical or environmental resources	**HISTORICAL RESOURCES** Damage	**FIRE** Fire and Wildfire	**TOXIC/HAZARDOUS** Toxic/Hazardous material releases	**STORMWATER** Stormwater drainage impairment
NATURAL HAZARDS																				
Flooding*		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hurricanes/Tropical Storms*	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Tornadoes*	X				X	X				X	X	X	X							
Severe Thunderstorms & Lightning*	X	X	X		X	X				X	X	X	X					X		X
Wildfire*					X	X				X	X	X	X	X	X	X		X	X	
Erosion*		X		X			X						X			X				X
Extreme Temperatures*					X						X	X			X	X				
Drought													X		X	X		X		
Seismic Hazards (e.g. earthquakes, sinkholes)						X													X	
Tsunami		X		X		X	X				X		X			X				X
Sea Level Rise			X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X
Dam/Levee Failure		X				X	X				X		X		X					X
Agricultural Pests & Diseases	X										X	X	X		X	X				
TECHNOLOGICAL HAZARDS																				
Power Systems Failures					X	X		X	X	X	X	X	X	X						
Wellfield Contaminations								X	X		X	X	X	X						
Epidemics/Pandemics											X	X	X	X						
Radiological Accidents					X	X				X	X	X	X	X					X	
Hazardous Materials Accidents						X					X	X	X	X				X	X	
Transportation Systems Accidents						X	X				X		X	X	X			X		
Communication Systems Failures										X	X		X	X						
HUMAN CAUSED HAZARDS																				
Terrorism and Sabotage					X	X		X		X	X	X	X			X	X	X	X	
Civil Disturbances						X					X	X	X	X			X			
Mass Migration											X	X	X	X						

Criteria & Ranking System

For the purposes of this capability assessment, the following criteria were evaluated to provide an overall adaptive capacity ranking per natural hazard identified in the Resilience Vulnerability Assessments:

- Policies
- Mitigation Strategies
- Response Capability & Resources
- Recovery

County and local documents[1] were reviewed to indicate how the documents address these criteria per identified hazard type. This approach provides a method to evaluate how local plans support adaptive capacity to natural hazards across jurisdictions. The content of plans relative to the identified criteria helps to highlight strengths and gaps in planning coverage at the county and municipal levels. This method allows for consistent comparison and supports strategic planning for resilience improvements.

It should be noted that the scores should be interpreted within the context of each document's intended scope and function. Not all planning documents are designed to meet every criterion evaluated. Adaptive capacity is supported by County and municipal plans and tools that work together across agencies and jurisdictions. Reviewing plans provides a useful diagnostic tool to evaluate coverage, identify priorities for updates or integration, and support a more coordinated approach to resilience. However, document review is not intended to serve as a ranking of plan quality in isolation, but rather as a step toward building a more comprehensive and cohesive planning framework for resilience.

Policies

Policies provide legal and institutional frameworks that guide hazard preparedness, response, and recovery activities. Clear policies help ensure coordinated and consistent adaptation actions. Policies determine the allocation of financial resources and investments toward hazard mitigation, infrastructure resilience, emergency services, and community support, directly influencing adaptive capacity. Building codes, land development and environmental regulations, and zoning regulations set by policies can reduce vulnerability by preventing development in high-risk areas and promoting hazard-resistant construction.

Additionally, policies can mandate inter-agency cooperation, stakeholder engagement, and public-private partnerships, enhancing the pooling and efficient use of resources for adaptation efforts. Adaptive policies allow for flexibility in implementation and encourage innovation in adaptation strategies to respond to evolving hazard risks and uncertainties. Lastly, policies that consider the needs of vulnerable populations ensure inclusive adaptation measures, enhancing overall community resilience.

[1] Plans reviewed are noted in the Sources section of this report.

Policy Ranking Criteria

Policies are considered strong, moderate, or low as follows:

- Strong and current adaptation methods are comprehensive, forward-looking, and designed to maximize resilience and adaptive capacity. They embody best practices and promote sustainable and effective hazard mitigation. This includes regular review and update of policies based on new and updated data, addressing interconnected hazards and compound risk, and mandated participation and coordination across sectors and municipalities.
- Moderate scoring for policies allows some partial flexibility to adapt to new information or conditions, policies address individual hazards but lack integrated, multi-hazard planning, or gaps exist in integration between different planning components.
- Low with outdated adaptation methods apply when policies are not available, policies are inflexible and do not allow for adjustments to new or updated data, or when policies lack clear enforcement or monitoring.

Mitigation Strategies

Mitigation strategies significantly influence a community's or system's ability to adapt to natural hazards based on the strategies that are put in place. Effective mitigation strategies reduce exposure and vulnerability to hazards by addressing potential causes and impacts, thereby lessening the severity of future events. By strengthening infrastructure, enforcing building codes, preserving natural buffers such as wetlands, and improving land-use planning, mitigation practices increase resilience to withstand hazards. Additionally, investing in mitigation measures can lower the financial burden of disaster response and recovery which in turn frees up resources that can be directed toward other initiatives. Furthermore, integrating mitigation into development planning ensures that growth does not increase hazard risks which creates a balanced approach to economic and environmental health.

Mitigation Strategies Ranking Criteria

The mitigation strategies are considered strong, moderate or low as follows:

- Strong (Implemented) - Strong mitigation refers to concrete actions, projects, or policies that have been put into practice to reduce hazard risks and enhance resilience. These strategies have moved beyond planning or proposal stages and are actively contributing to hazard risk reduction. Examples include structural measures, enforceable land use planning and zoning, ecosystem-based approaches such as wetlands, early warning systems, public education and outreach, infrastructure upgrades, and emergency preparedness infrastructure.
- Moderate (Identified but not implemented) – Moderate mitigation strategies are those that have been recognized, proposed, or planned but have not yet been put into practice. These strategies may be documented in hazard mitigation plans, assessments, or policy recommendations but remain pending due to various constraints.
- Low (Not identified) - Low mitigation actions are potential actions, approaches, or policies that have not yet been recognized, considered, or documented within existing hazard mitigation or adaptation plans. These actions represent gaps or missed opportunities in the planning process.

Response Capability & Resources

A strong response capability enables rapid mobilization and deployment of personnel, equipment, and interventions immediately after a hazard, reducing damage and speeding recovery. Well-trained responders, coordinated emergency teams, and adequate equipment allow timely actions such as evacuation, medical care, and infrastructure repairs, directly improving community resilience. Effective communication systems ensure warnings, situational updates, and interagency coordination reach the public and responders quickly, while post-event evaluations and incorporation of lessons learned strengthen future responses.

Additionally, the quantity, readiness, and diversity of deployable resources such as mobile units, shelters, generators, supplies, and financial reserves determine how quickly and effectively a community can adapt to changing hazard conditions. Skilled personnel and technical capacity improve hazard assessment and execution of adaptation strategies, and multiple backup sources for critical systems reduce vulnerability and sustain essential services. Coordinated, integrated resource management across agencies enhances efficiency, reduces duplication, and supports sustained adaptation during prolonged or repeated events.

Response Capability & Resources Ranking Criteria

The ability to respond and available resources was evaluated to be a strong, moderate, or limited response capability and resources availability.

- Strong response capability and resources - Strong response capability and resources refer to a community's robust and effective ability to take timely, coordinated, and appropriate actions before, during, and after hazard events while having resources and capabilities in place to quickly mobilize and reduce hazard impacts. Key characteristics of strong response capability and resources include well-trained personnel, effective communication systems, comprehensive emergency plans, interagency coordination, resource availability, immediate resource deployment, systems for continuous improvement, and effective use of technology.
- Moderate response capability and resources - Moderate response capability and resources represent a community that has foundational elements for effective but not immediate response but may face some limitations in speed, coordination, resources, or flexibility. Key characteristics of moderate response capability include basic training of personnel, functional communication systems, existence of emergency plans, some interagency coordination, adequate resource availability, moderate flexibility of response strategies, and partial use of technology.
- Limited response capability and resources - Limited response capability and resources describe a community with significant constraints that hinder effective and timely actions before, during, and after natural hazard events. Key characteristics of limited response capability include insufficiently trained personnel, poor communication systems, outdated or non-existent emergency plans, weak interagency coordination, scare and/or delayed resources, inflexibility, and minimal use of technology.

Recovery

Recovery times or the duration it takes for a community to return to normal or improved functioning after a natural hazard are a critical factor influencing the ability to adapt. Shorter recovery times indicate a more resilient system capable of quickly restoring essential services, infrastructure, and social functions, which enhances overall adaptive capacity. Faster recovery limits the period during which communities are vulnerable to secondary hazards, economic losses, and social disruptions, strengthening long-term adaptation while reducing stress and displacement for communities. Alternatively, prolonged recovery can strain resources, depleting financial, human, and material assets needed for future adaptation efforts, whereas quicker recovery preserves these resources.

Additionally, efficient recovery processes allow for timely incorporation of lessons learned into policies and practices, improving future adaptive responses. Rapid recovery supports economic continuity and reduces long-term financial burdens on individuals, businesses, and governments, facilitating investment in adaptive measures.

Recovery Ranking Criteria

The recovery time was considered Strong (short recovery time), Moderate (a moderate recovery time), or low (a long recovery time).

- Short recovery time - Short recovery time refers to the ability of a community to restore normal or improved functioning quickly after a natural hazard event. Characteristics of short recovery time include rapid restoration of essential services, quick reopening of critical infrastructure, efficient damage assessment and repair, effective mobilization, streamline administration processes, and minimal economic disruption. This timeframe is up to 2 months.
- Moderate recovery time - Moderate recovery time refers to a recovery period that is neither short nor long, typically spanning a few weeks or months. Characteristics of short recovery time include gradual restoration of essential services, phased reopening of critical infrastructure, systematic damage assessment and repair, mobilization with some delays, administration and regulatory processes have standard timelines, and some economic disruption. This timeframe is up to 4 months.
- Long recovery time - Long recovery time refers to an extended duration required for a community to return to normal or improved functioning after a natural hazard event. It often spans several months to years. Characteristics of long recovery time include prolonged disruption of essential services, delayed reopening of critical infrastructure, lengthy damage assessment and repair, slow mobilization of resources, cumbersome administration processes, and sustained economic impact. This timeframe is over to 4 months.

Hazard Results Summary

Following the evaluation of the planning documents and ordinances an overall adaptive capacity score was calculated per document to evaluate its strength to support the County's and municipalities' adaptive capacity. A score was also developed to determine the adaptive capacity per natural hazard by averaging the score for each reviewed document. This process shows which natural hazards the County and/or cities have a low, moderate, or strong overall adaptive capacity to address and mitigate.

TABLE 1 – ADAPTIVE CAPACITY SCORE PER HAZARD

Hazard	Adaptive Capacity – Strong/Moderate/Low
Coastal Erosion	Moderate
Drought	Moderate
Extreme Heat	Moderate
Inland Flooding	Strong
Storm Surge Flooding	Strong
Wildfire	Moderate
Wind	Moderate

No hazard-specific capabilities were scored as "**low**" in the assessment.

Based on the assessment, the county-wide capacity to address the Coastal Erosion, Drought, Extreme Heat, Wildfire, and Wind hazards reviewed in this assessment is "**moderate**". The following capabilities were noted as justification:

- Moderate capability scores were generally given for hazards that discussed specific hazards but did not have detailed policies to address hazard impacts or lacked strong reference to resources as indicated through document review and agency feedback.
- The moderate capability scores show that capacity exists for each of these hazard types, but that improvements could be made to further strengthen county-wide adaptive capacity. The recommendations are detailed in the Recommendations for Plan Integration section of this report.

Based on the assessment, the capacity to address the Inland Flooding and Storm Surge Flooding hazards reviewed in this assessment is "**strong**". The following capabilities were noted as justification:

- Strong capability scores were generally given for hazards that have a strong foundation of policies or resources as indicated through document review and agency feedback. For example, documents that address all or most of the hazards included in the evaluation.

TABLE 2 – HAZARDS ADDRESSED PER POLICY OR DOCUMENT

Policy/Document	Hazards						
	Coastal Erosion	Drought	Extreme Heat	Inland Flooding	Storm Surge Flooding	Wildfire	Wind
St. Lucie County Unified Local Mitigation Strategy	X	X	X	X	X	X	X
Draft St. Lucie Regional Resilience Plan	X	X	X	X	X	X	X
St. Lucie County Comprehensive Plan	X	X	X	X	X	X	X
St. Lucie County Code of Ordinances	X	X		X	X		
St. Lucie County Comprehensive Emergency Management Plan	X	X	X	X	X	X	X
Port St. Lucie Comprehensive Plan				X	X		
Port St. Lucie Code of Ordinances			X	X	X		
Port St. Lucie Comprehensive Emergency Management Plan	X	X	X	X	X	X	X
Fort Pierce Comprehensive Plan	X	X	X	X	X	X	X
Fort Pierce Code of Ordinances	X	X		X	X	X	X
St. Lucie Village Comprehensive Plan				X			
St. Lucie Village Code of Ordinances		X		X	X		
Port of Fort Pierce Consolidated Master Plan	X	X	X	X	X		X

Document Summaries

The following section details the scoring evaluation and results for each of the plan and ordinance documents based on considerations of all natural hazards and policies, mitigation strategies, response capability and resources, and post-event recovery. The adaptive capacity for each identified hazard and the jurisdiction's capability to address related actions was evaluated using the following classifications:

- Strong: Capacity exists and is in use.
- Moderate: Capacity exists but is not used effectively or could use some improvement.
- Low: Capacity does not exist or could use substantial improvement.

Thirteen documents provided the basis of review for this report. These were evaluated with a scoring system scale of 1 to 3 correlating to the Strong (2.1 to 3), Moderate (1.1 to 2), and Low (0 to 1) categories to reflect the strength of the document in supporting the county or municipality adaptive capacity.

Documents that are notable for supporting strong adaptive capacity for the County and municipalities, especially in areas of policy, response capability and resources, and mitigation strategy criteria include:

- **St. Lucie County Comprehensive Emergency Management Plan**
  - This document received a strong score as it has strong 'response and capability resources' information and moderately fulfilled criteria for the other review categories.
- **Port St. Lucie Comprehensive Emergency Management**
  - The plan received a strong score as it has strong information and planning across the policy, response and capability resources, and recovery categories.

The development of the St. Lucie County Regional Resilience Plan can be considered a step towards building additional regional capacity. This document, along with its supporting subdocuments can facilitate a stronger score building overall adaptive capacity for its policy recommendations and mitigation strategies, along with Moderate scores for the other categories.

Capability Assessment Surveys

As part of the St. Lucie Regional Resilience Planning effort, capability assessment surveys were submitted to the County, municipalities and St. Lucie Transportation Planning Organization to better incorporate their lived experience and overall thoughts on adaptive capacity. The responses provide helpful insight into how each agency approaches natural hazard policy, resources, response, recovery, and mitigation. The responses generally align with and reinforce findings identified through the review of multiple existing plans.

The assessments demonstrate a regional commitment to addressing natural hazards, particularly flood and hurricane risks, through integrated planning, resource management, and interagency collaboration. For example, St. Lucie County has incorporated hazard mitigation into its budgeting (as budget allows) and land use processes. Coordination among departments ensures that resilience is embedded across programs and projects, though continued improvement in interdepartmental communication and long-term resource capacity was noted as a priority. The St. Lucie TPO supports resilience through transportation planning that integrates considerations for sea-level rise, stormwater management, and environmentally sensitive areas. While the TPO does not construct or fund mitigation projects directly, its long-range planning and vulnerability assessments help guide infrastructure away from hazard-prone locations, supporting broader community resilience goals. There is an opportunity to include future weather-related risk and vulnerability projections into the planning. The City of Port St. Lucie Emergency Management Department demonstrates strong preparedness and response capabilities for all hazards identified in this review. The department conducts regular multi-hazard exercises, maintains policies for resource deployment, and applies lessons learned from after-action reviews to strengthen future operations. It also leads a robust public outreach program.

Collectively, these responses highlight a foundation for resilience across St. Lucie County and its partner agencies, with opportunities to expand hazard considerations, enhance coordination, and sustain adaptive capacity to meet evolving future conditions.

Document Overview

Table 3 provides a summary overview of each of the documents reviewed as part of the adaptive capacity assessment. Each cell summarizes the level of detail and focus applied to key risks.

TABLE 3 - PLAN COMPARISON MATRIX

Plan or Policy Document	Coastal Erosion	Drought	Extreme Heat	Inland Flooding	Storm Surge Flooding	Wildfire	Wind
St. Lucie County Unified Local Mitigation Strategy	Identifies beach and dune erosion as a major concern. Identifies 18 miles of "critically eroded" shoreline. Includes a County Beach Preservation Plan to guide re-nourishment and coastal management along with mitigation projects.	Recognizes drought as a hazard that impacts the County. Includes water-conservation goals, agricultural vulnerability, and the South Florida Water Management District's drought contingency plans.	Recognizes extreme temperatures as a hazard that impacts the County. Promotes outreach and sheltering for vulnerable populations, energy efficiency, and adaptation integration.	Flood hazard has the most detail and focus in this plan. Distinguishes riverine, flash, and inland flooding; includes FEMA Flood Insurance Rate Maps, repetitive-loss data, and vulnerability mapping. Identifies major mitigation actions.	Recognizes hurricanes and tropical storms as having the most potential impact within the County. Storm surge mapped with modeled tide heights up to 27.7 ft in Category 5 hurricanes. Identified mitigation projects.	Discusses burn probability in the County, Wildland-Urban Interface (WUI) risk maps, Firewise Communities, and fire-hazard classifications.	Describes potential high-wind impacts, debris, building performance, and code-based mitigation. Mainly addressed with storms.
St. Lucie County Resilience Vulnerability Assessments 2025	Identified as a major coastal risk affecting beaches, dunes, and built infrastructure. The RVA links erosion directly to sea-level rise and storm surge and notes chronic shoreline retreat as a threat to roads, utilities,	The hazard analysis defines drought as both meteorological and hydrological. Notes increasing frequency of seasonal water deficits and agricultural losses.	Identified as an emerging hazard affecting public health, labor productivity, and infrastructure. The assessment includes projected increases in heat index	Modeled extensively using NOAA Atlas 14 rainfall and HEC-RAS modeling for 25-, 100-, 500-year storms. Reinforces stormwater master-plan improvements, low-impact development standards, natural-land acquisition and restoration programs, and wetland restoration	Major focus throughout the assessment. Uses NOAA Intermediate-Low and Intermediate-High projections for 2040, 2070, 2100. Supported by maps and tables to identify impacted areas and potential inundation depths. Integrates with	Highlights wildfire risk in the western and southern county due to wildland-urban interface (WUI). Includes wildfire susceptibility maps and identifies moderate-to-high ignition zones. Suggests fuel-reduction programs,	Defines high-wind hazard, including hurricane and tornado events. Includes modeling Identifies structural vulnerability for older housing stock and critical infrastructure. Promotes building-code

Plan or Policy Document	Coastal Erosion	Drought	Extreme Heat	Inland Flooding	Storm Surge Flooding	Wildfire	Wind
	and cultural assets. Emphasizes living-shoreline stabilization and encourages restoration and management projects. Identifies adaptation strategies aligned with policies, response, resources, and recovery. Includes a vulnerability assessment of historical attributes to coastal storm-based hazards.	Includes vulnerability mapping and recommend-ations for recharge, conservation, and reuse. Identifies adaptation strategies aligned with policies, response, resources, and recovery.	days > 95 °F through 2070. Encourages programs, infrastructure updates, and considers vulnerable populations. Identifies adaptation strategies aligned with policies, response, resources, and recovery.	for storage. Includes a vulnerability assessment of historical attributes to coastal storm-based hazards. Identifies adaptation strategies aligned with policies, response, resources, and recovery.	FEMA NFIP CRS and Resilient Florida plans. Advocates for dune restoration, elevation of critical facilities, and protection of coastal roads and utilities. Includes recommended policies to increase resilience. Includes a vulnerability assessment of historical attributes to coastal storm-based hazards. Identifies adaptation strategies aligned with policies, response, resources, and recovery.	Firewise community outreach, prescribed-burn coordination, and maintaining defensible space. Identifies adaptation strategies aligned with policies, response, resources, and recovery.	compliance, retrofit, microgrid hardening, and wind-resistant design. Identifies adaptation strategies aligned with policies, response, resources, and recovery.
St. Lucie County Comprehensive Plan	Offers codes to require shoreline erosion considerations and mitigation strategies during development	Requirements for drought tolerant vegetation are included in the policy to decrease water	Not addressed.	Policies mandate flood-resistant construction for development. The County maintains consistency with policies of	Policies mandate flood-resistant construction and flood-zones for development. Development restrictions include	Policy directs the County to provide hazard-mitigation information, including wildfire safety, to the public and County	Although wind is not explicitly addressed, building-code compliance, coastal-construction

Plan or Policy Document	Coastal Erosion	Drought	Extreme Heat	Inland Flooding	Storm Surge Flooding	Wildfire	Wind
	within coastal areas.	consumption. Policy also enforces emergency drought and water management plans to conserve water resources and minimize long-term impacts.		participate in the National Flood Insurance Program and Community Rating System. Suggests monitoring of new cost-effective programs to minimize flood damage. Flooding must be considered in infrastructure and Capital Improvement decisions.	potential relocation away from storm-surge zones. Policy includes considerations for shelter space. Additionally, indicates that planning should include storm surge, and flooding must be considered in infrastructure and Capital Improvement decisions.	personnel. Integration with the County's Emergency Management and Local Mitigation Strategy ensures wildfire preparedness and outreach.	controls, and public-awareness programs mitigate high-wind and storm impacts.
St. Lucie County Code of Ordinances	Addresses St. Lucie River Erosion Control. Also includes coastal preservation policies and supports shoreline management programs.	Offers chapters supporting water shortages, water shortage plans, and landscaping for conservation.	Not addressed.	Addresses flood protection restrictions, flood resistant development, site plan review related to stormwater, floodplain management, wetlands protection, and coastal construction.	Floodplain management chapters address coastal high hazard zones and special flood hazard areas.	Not addressed.	Addresses wind resistant improvements, building code related information, debris removal post windstorm, coastal area protections, and coastal construction code requirements.
St. Lucie County Comprehensive Emergency	Addressed under flood- and storm-surge	Managed through coordination	Identified as a risk to St. Lucie County.	Flooding is extensively covered. Report details 100-	Storm surge and storm-related hazards are the	Reports on the County's responsibility to	Addressed through storms, tornados, and

Plan or Policy Document	Coastal Erosion	Drought	Extreme Heat	Inland Flooding	Storm Surge Flooding	Wildfire	Wind
Management Plan	management, coastal evacuation planning, and debris-management operations. Ties erosion to floodplain management and FEMA's National Flood Insurance Program.	with the Local Mitigation Strategy (LMS) and Emergency Support Function #11 (Food & Water), which handles commodity distribution and water supply during shortages	Public-health protection and sheltering provide indirect support through cooling shelters and medical monitoring during heat events.	and 500-year floodplains, rainfall-related drainage, and canal systems. Multiple Emergency Support Functions manage drainage, water-control, and emergency infrastructure. Mitigation Annex ties directly to FEMA's Floodplain Management program.	primary focus. Response framework coordinates with the National Hurricane Center (Hurrevac) model for storm-surge-based evacuation. Coastal flood protection and building elevation standards are included. Evacuation routes and shelter locations are mapped. Includes thorough public guidance for hurricane preparedness.	reduce wildland and structural fires. Mitigation and coordination through an Emergency Support Function and the Florida Forest Service. Includes prescribed-burn programs and Firewise community education.	severe thunderstorms. Includes detailed sections on protective actions. Building-code enforcement, coordination with National Hurricane Center data, and storm-tracking via Hurrevac support hurricane and wind mitigation.
Port St. Lucie Comprehensive Plan	Shoreline protection, setbacks and coastal system conservation are included in Comp Plan	Not addressed.	Not addressed. However, open space, vegetation, and conservation policies may indirectly mitigate heat risk	Focuses on drainage, flood mitigation, and conservation to address inland flooding indirectly.	The plan supports elevation standards, development controls in hazard zones, and protection of coastal infrastructure.	Not addressed.	Addresses briefly through hurricanes and storms.

Plan or Policy Document	Coastal Erosion	Drought	Extreme Heat	Inland Flooding	Storm Surge Flooding	Wildfire	Wind
Port St. Lucie Code of Ordinances	Addresses through soil, erosion, and sediment control and through floodplain and shoreline development limits.	Not addressed.	Not addressed.	Regulates development in flood hazard areas.	Establishes flood-hazard area standards, elevation and anchoring of structures, permits, and flood-resistant materials.	Not addressed.	Encourages storm shutters and hurricane protection devices regulated for wind protection.
Port St. Lucie Comprehensive Emergency Management Plan	Although the city itself is mainly inland, erosion is considered in coordination with St. Lucie County's LMS and coastal partners. Also managed indirectly through coordination with the County's Coastal Management programs, dune restoration, and the County's evacuation and storm-surge planning efforts.	Recognizes drought as a hazard that could affect the planning area. Addressed through water supply and conservation coordination under St. Lucie County's mitigation framework; supported by public-health and water utility contingency planning.	Recognizes extreme heat as a hazard that could affect the planning area. Managed via public-health coordination, cooling shelters, and emergency medical operations under Emergency Support Function #8 (Health and Medical) and ESF #6 (Mass Care).	Flood hazard is one of the primary focuses. Mitigation coordinated with the County LMS and stormwater master plans; evacuation and re-entry directed by the County Emergency Operations Center. Floodplain management and debris-removal guidance support recovery.	Addresses storm surge flooding through sea level rise. The city uses the *St. Lucie County Evacuation Zones and Routes Interactive Map* for surge planning. The city coordinates evacuation and sheltering with the County Department of Public Safety. Long-term risk reduction through grant and funding programs.	Notes wildfire as a hazard that could affect the planning area. Managed through Unified Command between City Manager's Office, St. Lucie County Fire District, and the Department of Forestry.	Addresses through tornadoes, hurricanes, and tropical storms. The plan includes detailed EOC activation and command procedures and public warning and evacuation processes. Federal funding and rebuilding programs are listed.
Fort Pierce Comprehensive Plan	Land use is regulated in	Some policies are in place in the land use	Not explicitly addressed; building code,	Infrastructure and Conservation elements implicitly	The Coastal Management element mentions	Wildfire is only briefly mentioned in a policy to	Not explicitly addressed, however, is

Plan or Policy Document	Coastal Erosion	Drought	Extreme Heat	Inland Flooding	Storm Surge Flooding	Wildfire	Wind
	coastal hazard areas.	and conservation sections that protect the shallow aquifer and potable water supply.	tree protection, and land use provisions may contribute indirectly.	address stormwater, drainage and floodplain development controls.	hazard mitigation via the Local Mitigation Strategy and managing development in coastal hazard areas.	increase public awareness and hazard mitigation.	implicitly addressed in the context of storms under Coastal Management.
Fort Pierce Code of Ordinances	Addresses coastal erosion through site impacts and shoreline development regulations for the protection of beaches and shorelines from erosion.	The code specifies policies to be followed when using water under drought conditions.	Not explicitly addressed. Building code, tree protection, and land use provisions may contribute indirectly.	The code sets regulations for development in special flood hazard areas. Stormwater run-off from new construction is managed, and stormwater management facilities must be maintained and avoid hazards.	Storm surge is not specified, however, floodplain management addresses development in coastal high hazard zones.	Wildfire is only briefly mentioned in a policy to increase public awareness and hazard mitigation.	Not explicitly addressed, However, structural standards imply mitigation of wind hazard.
St. Lucie Village Comprehensive Plan	The Coastal Management Element recognizes erosion as a threat to beaches and dunes. Policies call for protection and restoration of coastal systems, coordination with state and federal	Policies call for coordination with the South Florida Water Management District to update the town's Water Supply Facility Work Plan. Water supply evaluation and needs is mentioned, although there	Not addressed. However, vegetation, open-space, and air-quality policies provide incidental urban heat mitigation.	The Infrastructure Element and Future Land Use Element require stormwater management consistent with floodplain ordinances. Emphasis on limiting development in flood-prone areas.	The Coastal Management Element establishes the Coastal High Hazard Area (CHHA) and restricts development there. The County must consider sea-level rise, storm surge, and hurricane hazards when planning	Not addressed.	Addresses wind through hurricane considerations. Includes implementation considerations of evacuation plans, hazard-resistant building standards, and post-disaster redevelopment criteria.

Plan or Policy Document	Coastal Erosion	Drought	Extreme Heat	Inland Flooding	Storm Surge Flooding	Wildfire	Wind
	agencies, and limits on development that could accelerate erosion.	is conflicting comments about supply needs.			infrastructure and land use. Coordination with local planning and FEMA NFIP; elevation and evacuation policies is ensured. Consideration of the storm-surge model.		
St. Lucie Village Code of Ordinances	Coastal erosion specifically is not addressed, but multiple policies are in place to prevent soil erosion in development and land clearing. Additionally, vegetation protection, mangrove preservation, and coordination with for shoreline and dock permitting reduce erosion risks.	The code regulates year-round irrigation practices and establishes water-shortage emergency procedures. Promotes efficient irrigation, rain sensors, and drought-response variances; reduces long-term strain on potable-water supplies.	While not explicitly addressed, landscaping requires canopy trees, vegetative cover, and irrigation efficiency—all of which mitigate heat-island effects.	Mandates compliance with the Floodplain Management Ordinance, required consistency with the Comprehensive Plan and established drainage rules. Ensures first-floor elevations above flood levels; mandates drainage plan review and compliance with stormwater level-of-service standards.	Establishes elevation standards and dock construction limits. Designates the environmental protection areas and restricts development. Includes integration with FEMA NFIP standards; setbacks from bulkheads; coastal-high-hazard-area management via elevation and permitting requirements.	Not addressed.	Enforces building standards and the Florida Building Code. Requires durable exteriors and regulates Class "A" mobile homes to ensure hurricane-resistant construction. Reviews include storm-impact considerations, evacuation access, and requires hurricane-resilient design.
Fort Pierce Consolidated Master Plan	Acknowledges the port's exposure to	Water supply is minimally discussed,	Not addressed.	Identifies stormwater management and	Acknowledges that hurricanes, storm surge, and sea-	Not addressed.	Addresses wind through hurricanes and

Plan or Policy Document	Coastal Erosion	Drought	Extreme Heat	Inland Flooding	Storm Surge Flooding	Wildfire	Wind
	coastal erosion. It highlights shoreline stabilization, dredging management, and sediment control as key components of long-term port maintenance and infrastructure protection.	mainly through the discussion of potable water facility infrastructure. The only mention of water supply in a resource conservation aspect is through one mention of the negative effects from invasive species.		drainage improvements as critical to port operation and expansion. It notes that the port area's low elevation and proximity to tidal waters make it vulnerable to heavy rainfall and flooding, requiring enhanced drainage and infrastructure resilience. Incorporates stormwater master planning, green infrastructure, and compliance with stormwater standards to reduce flood risk.	level rise pose substantial threats to port operation. Integrates with FEMA floodplain standards and U.S. Army Corps of Engineers coastal risk assessments. Recommends hurricane hardening, shoreline restoration, and surge-adaptive infrastructure design.		tropical storm considerations. Includes provisions for emergency response coordination, building code compliance, and post-storm debris and dredging operations.

Notes:
EM = Emergency Management
CDBG = Community Development Block Grant
CHHA = Coastal High Hazard Area
FEMA = Federal Emergency Management Agency
NFIP = National Flood Insurance Program
WUI = Wildland Urban Interfaces

Recommendations for Plan Integration

The following section will discuss how each planning document can be integrated and updated to provide improved adaptive capacity for the County and municipalities through comprehensive evaluations and improvements.

St. Lucie County Unified Local Mitigation Strategy - 2021

Overview. The County Unified Local Mitigation Strategy plan identifies local natural and human caused hazards, assesses vulnerabilities to people and property, and establishes short- and long-term mitigation actions to reduce risk and increase community resilience. It includes natural hazard profiles for flooding, hurricanes/tropical storms, tornados, severe thunderstorms/lightning, wildfires, erosion and landslide and drought. The LMS also evaluates risk, assesses capability, prioritizes mitigation strategies, and includes a cost benefit review, plan monitoring, and public involvement methodology. The LMS also aligns local actions with state and federal mitigation goals to improve eligibility for mitigation grant funding.

Integration Opportunities. The plan can be improved by identifying specific hazard related policies to reduce impacts from hazard events. This would apply to all relevant hazards. The plan noted a general goal to evaluate policies related to natural hazards, but as specific hazards were not identified, this would be a beneficial next step for the County and municipalities. Adaptive capacity can be strengthened through further evaluation of deployment times for resources after disaster event and additional evaluations of recovery timeline goals.

Draft St. Lucie County Regional Resilience Plan - 2025

Subdocuments included in this review:

- St. Lucie County Cultural and Historical Vulnerability Assessment
- St. Lucie County Resilience Vulnerability Assessment – Phase I Flooding and Phase II Other Hazards
- St. Lucie County Data Gap Analysis Report
- CRS Class 4 Analysis
- Uniform Recommended Policies Document
- Draft St. Lucie County Regional Response Plan Adaptation Strategies

Overview. The 2025 Resilience Vulnerability Assessments (Phase I & II) and associated subdocuments evaluate the vulnerability of community-wide assets, land and populations to the risks posed by natural hazards, including sea level rise, flooding, storm surge, extreme heat, drought, wildfire, wind and coastal erosion. In addition, the assessment included a study that modeled ecosystem changes over time and provided a conservation approach to resilience in St. Lucie County through detailed planning, preservation, nature-based solution guidance, buffer recommendations and community partnerships.

The RVAs identify vulnerabilities using localized data, GIS-based modeling, exposure mapping, and sensitivity analyses. They are designed to support adaptive infrastructure investments and align current and future development with risk reduction. As part of the RVAs, a Data Gap Analysis was performed, highlighting data that was not available at the time of these assessments, with recommendations on data acquisition and management for future updates.

This draft plan outlines physical, nature-based, and policy-level recommended adaptation strategies through 2100. It includes actions such as building retrofits, floodproofing, managed retreat, shoreline stabilization, cooling infrastructure, and policy updates (e.g., zoning, design standards). The Draft RRP includes Uniform Policy recommendations that outline policies based on the findings of the vulnerability assessment and identified adaptation strategies. The goals address infrastructure, resilience, adaptation planning, data collection, capital planning, collaboration and outreach, funding adaptation, shoreline adaptation, water quality initiatives and community education and engagement. Through adoption of recommended policies and implementation of mitigation strategies, these work products will increase the participating jurisdiction's adaptive capacity.

Integration Opportunities. This adaptation strategies approach can be strengthened in the following ways. For response capability and resources, while some short-term post disaster actions were defined, specific hazard recovery approaches were not detailed, and deployment timelines were not discussed. Similarly, goal recovery timelines are not detailed, and the County would benefit from evaluating recovery timeline capabilities and goals. Implemented mitigation strategies can also be documented so that County agencies can determine which mitigation approaches have been effective to then aid in determining future mitigation needs. Overall, this document takes a strong approach to disaster mitigation and other County plans and policies would benefit from aligning with this plan.

The regional resilience vulnerability assessment contains both in-depth and broad information related to mitigation strategies by documenting implemented projects and a range of mitigation strategies for all the hazard types. The floodproofing, shoreline conservation, and improved stormwater approaches are means to reduce flood risk that should be implemented countywide where applicable. The RVAs do not address response capability and resources and minimally address recovery policy recommendations. It is essential that other County and Municipal documents and policies address these criteria and confirm that these mitigation approaches are included in the Comprehensive Plans and the Local Mitigation Strategy document. Enhanced data collection and management systems should be provided across various sectors to add value to comprehensive planning, hazard mitigation planning, and emergency planning initiatives.

St. Lucie County Comprehensive Plan - 2022

Overview. The St. Lucie County Comprehensive Plan integrates hazard mitigation with environmental protection and land use planning, particularly for vulnerable coastal and inland flood zones. It emphasizes development restrictions in Coastal High Hazard Area conservation of coastal and floodplain ecosystems, and implementation of the LMS to reduce vulnerability to hurricanes, storm surge, and flooding. The plan requires post-disaster redevelopment guidelines, coordinated evacuation planning, and infrastructure improvements to support resilience. Future development is steered away from high-risk zones, and sea level rise is acknowledged as a future planning concern, with policies encouraging shoreline stabilization and managed retreat where necessary. The County's Coastal Management and Conservation elements also prioritize maintaining natural buffers such as wetlands and dunes to reduce the impact of storms and erosion. It should be noted that the County is currently processing a Comprehensive Plan update and the pending update was not reviewed in the context of this analysis.

Integration Opportunities. The County Comprehensive Plan contains general discussions of policies within the plan related to most of the known hazards and includes considerations to use best available hazard data and update planning documents with new data. This plan addresses many policy components that the County can implement to address hazard mitigation and emergency management needs. The plan details and prioritizes hazard mitigation initiatives and plan collaboration in the County and region. Deployment timeframes are unknown, but a beneficial next step would be to determine goals for these timeframes post hazard event which factors into the low deployable resource's adaptive capacity score. The Post-Disaster Redevelopment plan is useful in addressing post-disaster policies and can be strengthened to ensure that it addresses all hazards of concern. While the comprehensive plan details post disaster recovery, development of a recovery task force, and post disaster assessments and repairs in the plan, the plan does not include timeframes, specific services, or other streamlining measures related to recovery. The plan can be strengthened by evaluating goal recovery times and measures. The mitigation strategies detail coordination for disaster preparedness, community education, and building code improvements and address natural hazards comprehensively with the exception of drought, which would benefit from further mitigation strategies. In addition, strategies for coordination could be included in the LMS to promote resilience.

St. Lucie County Code of Ordinances

Overview. The County's Code of Ordinances includes key regulatory frameworks aimed at reducing risk from natural hazards. For example, the Floodplain Management Ordinance (Appendix 6.05.00) applies to development wholly or partially within flood hazard areas and sets standards for subdivisions, filling, grading and other site improvements. In addition, the "Environment and Natural Resources" chapter (Article IV) declares as its purpose the control of activities that may cause contamination or pollution, as a means to protect public health, safety and welfare. These ordinances support resilience by regulating construction in flood zones, protecting natural buffer functions (e.g., floodplain forests, wetlands) and participating in the National Flood Insurance Program via community-rating efforts. Hazards such as extreme heat, and wildfire are not directly addressed through hazard-specific ordinance provisions.

Integration Opportunities. While the County ordinances include policies that address coastal erosion, drought, inland flooding, storm surge, and wind, there are no ordinances related to extreme heat and wildfire. To address extreme heat related ordinances, the County could consider heat-resilient building standards, urban heat island mitigation measures, landscape related ordinances, and cooling features for large new developments or public facilities. To address wildfire related impacts, the County could consider defensible space standards, vegetation management, fire-resistant building materials, and open-burning restrictions. These strategies could also be included in the LMS.

St. Lucie County Comprehensive Emergency Management Plan – 2023

Subdocuments included in this review:

- St. Lucie County Hurricane Preparedness Guide

Overview. The St. Lucie County Comprehensive Emergency Management Plan (CEMP) establishes a coordinated, all-hazards framework to reduce risks from natural and human-caused disasters

such as flooding, hurricanes, storm surge, erosion, drought, wildfires, and extreme temperatures. Its overarching goal is to protect lives, property, and the environment through prevention, preparedness, response, recovery, and mitigation. The plan integrates with the National Incident Management System (NIMS) and the Local Mitigation Strategy (LMS) to guide floodplain management, stormwater control, and evacuation planning. It emphasizes coastal and inland flooding reduction through canal drainage systems, flood-prone mapping, and resilient land-use patterns, while addressing coastal erosion via dune protection and shoreline restoration. Heat and drought are acknowledged under "extreme temperatures" and "drought" hazards but receive limited targeted actions beyond public health coordination and water-supply management. This plan is the primary County plan detailing response capability and resources, and recovery strategies and policies for the County and municipalities and is a critical plan for ensuring that the County is prepared for emergency response.

As part of St. Lucie County's Emergency Management strategies, the St. Lucie County Hurricane Preparedness Guide was developed to provide practical guidance for residents to reduce risk and protect life and property from natural hazards, including hurricanes, storm surge, coastal and inland flooding, and high winds. The guide's goal is to strengthen community preparedness through early planning, home fortification, evacuation readiness, and post-storm safety measures. It outlines steps for developing a hurricane plan, preparing emergency supply kits, reinforcing homes (e.g., roofs, doors, windows, trees), and safeguarding boats and pools. It also includes evacuation zones, shelter information, and transportation assistance, emphasizing protection of vulnerable groups and pets.

Integration Opportunities. The comprehensive emergency management plan addresses all natural hazards of concern included in this assessment and addresses all the adaptive capacity review criteria while achieving high scores in the response capability and resources category. The main integration opportunity is for the County, with the municipalities, to evaluate and determine goal timeframes for both response capability and resources, and recovery. Goal timeframes would aid the County in building upon the strong communication, emergency planning, preparedness activities, and response capabilities outlined in this plan. In addition, strategies for coordination could be included in the LMS to promote resilience.

The St. Lucie County Hurricane Preparedness Guide efficiently guides residents through some first steps to be taken before, during, and after a hurricane, building individual and community resilience. Opportunities exist that can lead to streamlining and centralizing this information. This includes providing links to additional information to support: current policies centered around hurricane resilience, availability of deployable resources, emergency management response actions, short and long-term recovery programs, potential strategies and incentives for homeowners or landlords to mitigate against hurricanes and related hazards, and preparedness guides for other hazards. The links could lead to a more permanent, centralized webpage that directs users to additional resources, such as the page for the St. Lucie County Comprehensive Emergency Management Plan. This way, resources can be updated, or information can be changed without the issue of broken links on the Hurricane Preparedness Guide.

Port St. Lucie Comprehensive Plan - 2020

Overview. The Port St. Lucie Comprehensive Plan provides a long-range policy framework for land use, infrastructure, conservation and coastal management, guiding how the city grows while protecting natural resources and addressing hazard exposure. Specifically, through its Conservation & Coastal Management element it directs development in higher-risk zones (such as low-lying or coastal hazard areas), incorporates open space and stormwater infrastructure standards, and preserves natural buffers (wetlands, shoreline, dunes) to reduce vulnerability to inland flooding, coastal flooding, storm surge and sea-level rise. It should be noted that Port St. Lucie is currently processing an update to its Comprehensive Plan and the new draft was not reviewed as part of this analysis.

Integration Opportunities. The Port St. Lucie Comprehensive plan addresses flooding storm surge and erosion. Drought, extreme heat, wildfire, and wind are mentioned but not addressed further in the plan. The city would benefit from including evaluations and policy approaches to all natural hazards and other hazards of concern. Additionally, the City could consider developing goal timeframes for deployment of resources, response, and recovery.

Port St. Lucie Code of Ordinances

Overview. The City of Port St. Lucie Code of Ordinances establishes several regulatory mechanisms that reduce risk to natural hazards, focusing mainly on flooding, storms, and drainage management. Chapter 152, Floodplain Management, is the core framework, setting standards for construction and land use within flood hazard areas, requiring elevation, anchoring, and flood-resistant materials for new and substantially improved structures. It aligns with FEMA's National Flood Insurance Program (NFIP) to protect life and property in high-risk zones. Other relevant provisions include Stormwater Utility regulations (Chapter 41, Article III) that ensure proper stormwater management and drainage to mitigate inland flooding, and Emergency Management provisions (Chapter 35) that define local authority for emergency response to hurricanes and related events.

Integration Opportunities. While the City ordinances include policies that address erosion, extreme heat, flooding, and storm surge, there are no ordinances related to drought, wildfire, and wind. To address drought, the City should consider water conservation standards, landscape and irrigation ordinances, commercial water use efficiency plans, and drought response triggers. To address wildfire-related impacts, the City should consider defensible space standards, vegetation management, fire-resistant building materials, and open-burning restrictions. To address wind-related impacts, the City could consider wind-resistant building standards, shelter standards, critical infrastructure hardening, tree and vegetation management, and utility pole and overhead line requirements.

Port St. Lucie Comprehensive Emergency Management Plan

Overview. The City of Port St. Lucie Comprehensive Emergency Management Plan (CEMP, 2021) provides an all-hazards framework for preventing, preparing for, responding to, and recovering from emergencies and disasters that threaten life and property. The plan's goal is to enhance community resilience through coordinated local, county, state, and federal efforts using the National Incident Management System (NIMS) and Incident Command System (ICS). It identifies natural hazards, including flooding, hurricanes, coastal erosion, drought, wildfires, and extreme

temperatures, and assigns lead agencies and command structures for each. Key mitigation efforts include flood control via canal systems, protection of sensitive ecosystems like the St. Lucie River and Indian River Lagoon, and participation in FEMA's Hazard Mitigation Grant Program. The plan emphasizes flooding and hurricane preparedness, while extreme heat and drought are acknowledged but less extensively addressed, primarily through general emergency response coordination rather than long-term adaptation policies

Integration Opportunities. The Port St. Lucie comprehensive emergency management plan addresses all natural hazards of concern included in the assessments and addresses all the adaptive capacity review criteria while achieving high scores in the policy, response capability and resources, and recovery categories. The main integration opportunity for the City is to strengthen the mitigation strategies by identifying needed mitigation projects to address hazard impacts. This recommendation is applicable across all of the identified hazards.

Fort Pierce Comprehensive Plan - 2019

Overview. The Fort Pierce Comprehensive Plan integrates hazard mitigation throughout multiple elements, with a clear emphasis on flood protection, stormwater management, and resilience in coastal areas. It incorporates the St. Lucie County Local Mitigation Strategy (LMS) and requires that new development in coastal high hazard areas (CHHAs) evaluate evacuation impacts and include mitigation to maintain evacuation times. Policies prohibit density bonuses in environmentally sensitive or CHHA zones and mandate elevation and floodproofing for development in the 100-year floodplain. The plan encourages green infrastructure, low-impact development, and adaptive strategies, including reduced greenhouse gas emissions, water-efficient buildings, and enhanced public access in coastal areas—all framed to increase the city's resilience to flooding, storm surge, high temperatures, and sea level rise. It should be noted that Fort Pierce is currently processing an update to its Comprehensive Plan and the new draft was not reviewed as part of this analysis.

Integration Opportunities. The Fort Pierce Comprehensive Plan can be improved across the response capability and resources and recovery criteria. A strength of the plan is the Capital Improvement project schedule which includes a prioritization approach for hazard mitigation initiatives. To build upon preparedness, outreach, interagency coordination, and building code improvement strengths, the City could consider developing goal timeframes for deployment of resources, response, and recovery. Additionally, if City planning documents included information on successful implemented mitigation strategies, that would aid the City in determining approaches to build upon previous successes and strengths.

Fort Pierce Code of Ordinances

Overview. The Fort Pierce Code of Ordinances addresses resilience and mitigation by establishing land-use and development standards, permitting and building requirements, and stormwater and floodplain management measures designed to reduce vulnerability to coastal storms, flooding, and other hazards. The ordinances incorporate floodplain regulations (elevation and construction standards in Special Flood Hazard Areas), stormwater drainage and erosion-control rules, coastal setback or buffer provisions, and requirements for infrastructure design and maintenance that support hazard resistance. The code also assigns responsibilities for enforcement, ties development review to hazard considerations (through zoning and permitting), and supports emergency preparedness and post-disaster recovery processes.

Integration Opportunities. While the city ordinances include policies that address coastal erosion, drought, inland flooding, storm surge, wildfire, and wind, there are no ordinances related to extreme heat. To address extreme heat related ordinances, the City could consider heat-resilient building standards, urban heat island mitigation measures, more targeted landscape related ordinances, and cooling features for large new developments or public facilities to build upon the current tree protection ordinances. Additionally, the hazards that were scored as low would benefit from stronger policies and regulations to both reduce potential impacts and strengthen the community's ability to respond to hazard events.

St. Lucie Village Comprehensive Plan – 2011 Update

Overview. St. Lucie Village's plan is highly focused on preserving its coastal, low-density residential character while mitigating risks from natural hazards, especially coastal flooding, storm surge, and sea-level rise. Nearly all of the eastern portion of the Village lies within the CHHA, and policies strongly discourage increased development density in this area. The plan promotes minimal development in flood-prone areas, maintains a development suitability analysis to avoid high-risk zones, and enforces a 0.5-acre minimum lot size to align with septic system safety requirements in areas with poor drainage. It includes detailed vulnerability mapping, emphasizes the conservation of coastal ecosystems, and outlines strict controls on marina and shoreline development to prevent erosion and flood damage. The Village's coordination with County and regional hazard planning (including the LMS) supports its efforts to manage risks from hurricanes, flooding, and hazard impacts.

Integration Opportunities. The mapping and data supporting the policies of the Comprehensive Plan are outdated. The team recommends updating mapping and data, including land use mapping, population projections, utility and infrastructure records. Mapping of vulnerable areas would be beneficial. Updates to objectives, priorities, and capital improvement projects should be made based on updated information.

St. Lucie Village Code of Ordinances

Overview. The St. Lucie Village Code of Ordinances addresses resilience and mitigation by establishing local regulations that guide land use, building standards, and stormwater/floodplain management to reduce vulnerability to coastal storms, flooding, and erosion. The code provisions include floodplain development controls (elevation and construction standards in special flood hazard areas), stormwater drainage and erosion-control requirements, coastal setbacks or buffers, and requirements for infrastructure maintenance and safe permitting. The code assigns enforcement responsibility to local officials, integrates hazard considerations into zoning and permitting processes, and supports emergency preparedness and recovery actions.

Integration Opportunities. The city ordinances include policies that directly address drought, inland flooding, and storm surge. Erosion, extreme heat, and wind are indirectly addressed through land and vegetation protections, tree canopy and landscaping policies, and building codes. There are no ordinances addressing wildfire. There is an opportunity to adopt more targeted policies with the intent of directly mitigate coastal erosion, extreme heat, wind, and wildfire. To address coastal erosion, the Town could consider coastal setback requirements, targeted vegetation and habitat conservation, and erosion monitoring approaches. To address extreme heat related ordinances, the Town could consider heat-resilient building standards, landscape related ordinances, and

other cooling features. To address wildfire-related impacts, the Town could consider defensible space standards, vegetation management, fire-resistant building materials, and open-burning restrictions. To address wind-related impacts, the Town could consider wind-resistant building standards, shelter standards, and targeted tree and vegetation management. Additionally, the scores for the hazards that were addressed were generally low and would benefit from stronger policies and regulations to both reduce potential impacts and strengthen the community's ability to respond to hazard events.

Port of Fort Pierce Consolidated Master Plan

Overview. The Fort Pierce plan prioritizes sustainable land use and infrastructure planning to mitigate risk in the Coastal High Hazard Area (CHHA) and flood-prone zones. Policies prohibit development that increases density in CHHAs and environmentally sensitive areas, and support building elevation, floodproofing, and low-impact development techniques. The plan incorporates the Local Mitigation Strategy (LMS), advances stormwater master planning, and promotes energy-efficient and heat-resilient structures, green space, and tree cover to reduce risks from flooding, storm surge, and extreme temperatures.

Integration Opportunities. The Port of Fort Pierce consolidated master plan primarily addresses coastal erosion, flooding, and storm surge, as these hazards align with the planning area. However, wind and extreme heat could be impactful to the Port, and therefore the plan would benefit from additional considerations for these hazards. The Fort Pierce Comprehensive Plan includes more detail on all natural hazards, so the Port Master Plan could consider evaluating and including mitigation approaches that are included in the City's comprehensive plan. Additionally, while this plan primarily addresses policy, the plan would benefit from identifying additional mitigation strategies to reduce risk to the Port.

General Recommendations for Integration of Policies and Plans to Increase Resilience

- Recommend determining specific timeframes for deploying resources, response, and recovery to include goals to potentially increase response and deployment time and reduce recovery timelines.
- Many plans reference hazards in general terms. It is recommended that plans clearly identify and specify the hazards considered during planning, preparedness, and mitigation activities.
- For the hazards that scored in the "moderate" range, including coastal erosion, drought, extreme heat, wildfire, and wind, the review criteria suggest that improvements to policy, response capability and resources, recovery, and mitigation strategies should be considered and reviewed. While some hazards, including flooding and hurricanes risk, are commonly addressed, other potential hazards are often overlooked or not as explicitly integrated into the planning process. It is recommended that the jurisdictions also emphasize and incorporate coastal erosion, drought, extreme heat, wildfire, and high wind events into future planning and mitigation efforts to ensure a more comprehensive approach to adaptation and resilience.

- Recommend interdepartmental reviews and coordination where possible in the planning process to ensure a shared vision and promote efficiency, resource sharing, and aligned implementation.
- The budgeting section for the Transportation Planning only supports mitigation in roadway improvements that are included in the Long-Range Transportation Plan. The plan is based on population projections and driver behavior/patterns and does not consider limiting extensions into areas that are vulnerable to natural hazards.
- Update plans to reflect actual operations as needed.

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APPENDIX D: WATERSHED MAPPING

Watershed Mapping

St. Lucie County faces significant stormwater management challenges due to its flat topography, high groundwater table, limited soil storage, and high tidal surges, which hinder natural drainage and infiltration and lead to frequent ponding and reduced conveyance performance. **Figure 1** represents the watershed basins located within St. Lucie County (SLC).

Two Resilience Vulnerability Assessments (RVA) were conducted, in which flooding and other natural hazards were modeled and mapped using GIS-based data. These RVAs show potential increases in impacts from sea level rise, and tidal, storm surge, and rainfall-induced flooding in all SLC watersheds and especially along the coast, inland along the St. Lucie River, as well as other low-lying areas. **Figure 2 through Figure 5** show the impacted areas and depth of flooding in present day and future scenarios.

Compounded by population growth and urban development these factors heighten flood risk and contribute nutrient-laden runoff that impairs St. Lucie County water bodies. The updated SLC Stormwater Master Plan aims to guide infrastructure investments and management strategies to improve flood protection, meet regulatory requirements, and reduce pollutant and nutrient loads to protect water quality and community resilience.

Effective stormwater programs analyze basin topography, soils, land cover, hydrology, and tidal/groundwater interactions; then deploy a mix of gray and green infrastructure, regulatory measures, maintenance plans, and monitoring at the basin scale to reduce flooding, improve water quality, and protect ecosystems.

Watershed basins are fundamental units for effective stormwater management because they define how and where water flows, accumulates, and interacts with the landscape and built environment.

Key reasons they matter:

- Hydrologic control: Basins determine runoff generation, peak flow timing, and flow pathways; understanding basin boundaries and characteristics is essential to predict flood risk and design conveyance systems.
- Storage and attenuation: Natural and engineered basins (ponds, wetlands, detention areas) provide temporary storage that reduces peak flows, delays runoff, and lowers downstream flood risk.
- Water quality treatment: Basin-scale features capture sediments, nutrients, and pollutants—allowing settling, biological uptake, and filtration—so basins are primary locations for implementing best management practices (BMPs).
- Scale for planning and regulation: Watersheds provide a logical geographic scale for planning, permitting, monitoring, and compliance with regulatory requirements (e.g., total maximum daily loads, MS4 permits).

- Ecosystem services and habitat: Basins with wetlands, riparian zones, and vegetated buffers support biodiversity, recharge groundwater, moderate temperatures, and improve water chemistry.
- Integrated infrastructure siting: Basin analysis guides where to place stormwater infrastructure (pumps, culverts, retention/detention, green infrastructure) for greatest effectiveness and cost-efficiency.
- Prioritization and targeting: Assessing basins helps identify high-risk or high-impact areas (e.g., chronic flooding, pollutant hotspots) so investments can be prioritized.
- Resilience to climate variability: Basin-based designs can be adjusted for changing rainfall intensity, sea-level rise, and tidal influences to maintain protection over time.
- Community and land-use coordination: Watershed basins cross jurisdictional and land-use boundaries; managing at the basin scale fosters coordination among municipalities, developers, and resource agencies.

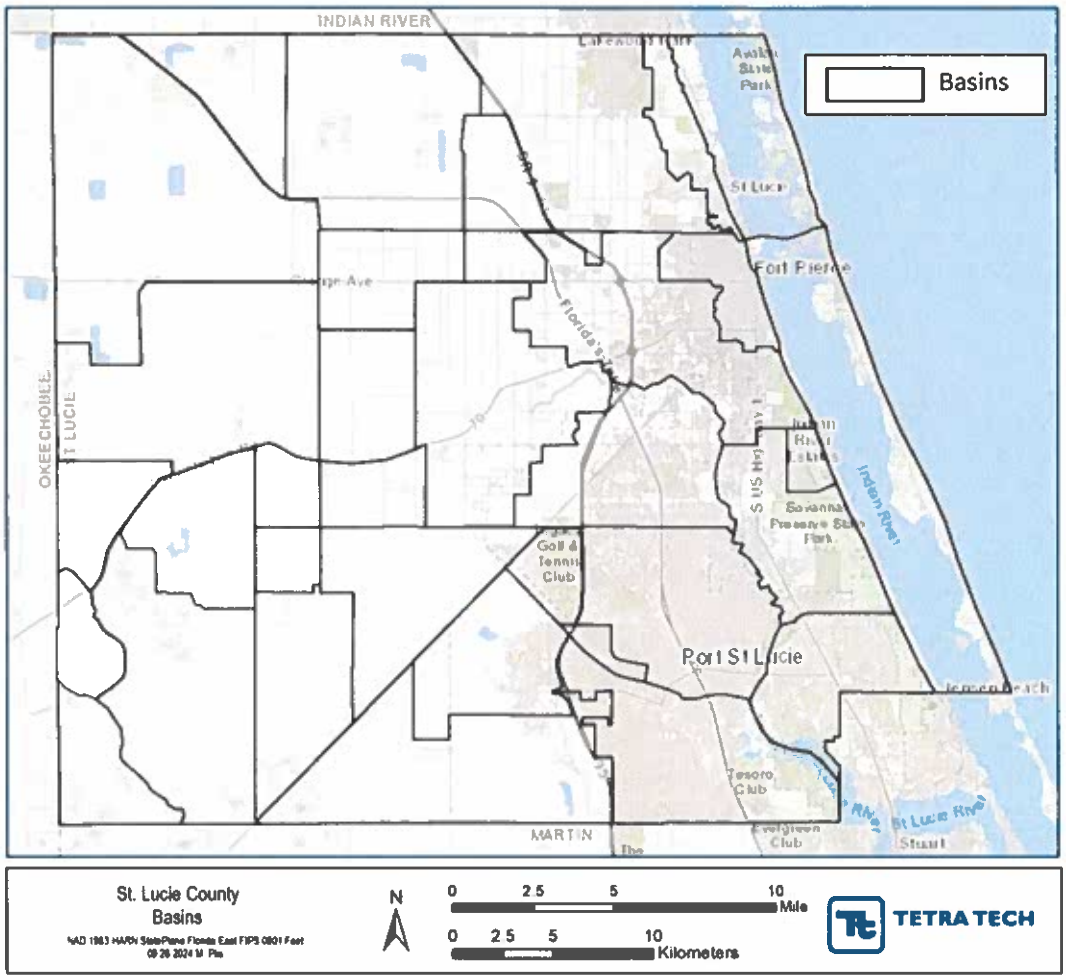


Figure 1. St. Lucie County Basins

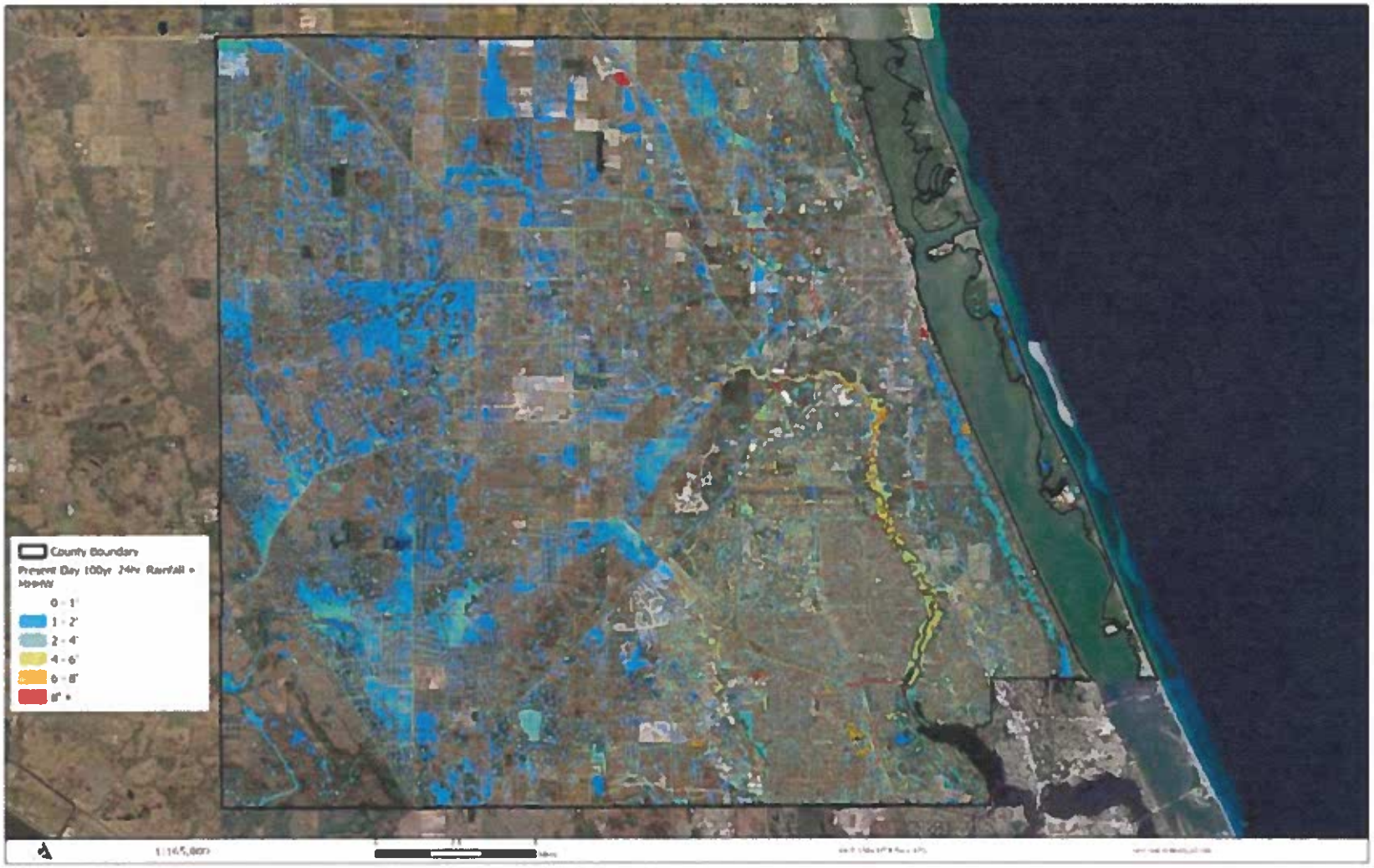


Figure 2. Present Day – 100-Year/24-Hour Rainfall-Induced Flooding Depths

Figure 3. Year 2070 – 100-Year/24-Hour Rainfall + NOAA Intermediate Low Sea Level Projections

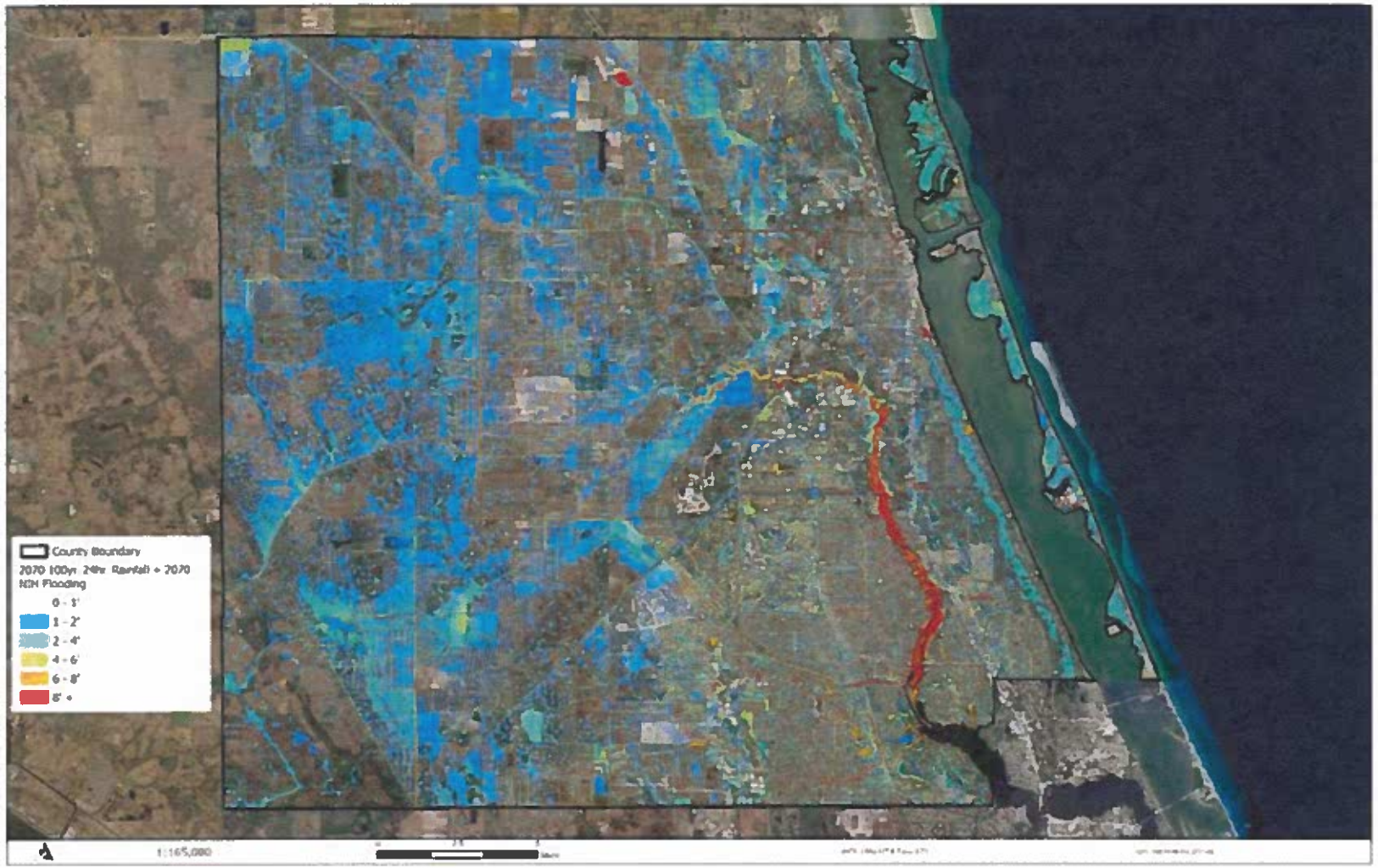


Figure 4. Year 2070 – 100-Year/24-Hour Rainfall + NOAA Intermediate High Sea Level Projections

Figure 5. Present Day – Category 1 and 5 Hurricane Impact Areas

APPENDIX E: TREE CANOPY ANALYSIS

Tree Canopy Analysis

St. Lucie County undertook a comprehensive tree canopy assessment to better understand the distribution, density, and ecological function of its urban forest. This initiative supports the County's broader resilience and sustainability goals by identifying areas with limited canopy coverage and informing future greening strategies that can help mitigate extreme heat, improve air quality, and enhance stormwater absorption.

The assessment utilized publicly available aerial 2018 LiDAR data sourced from the U.S. Geological Survey. Vegetative structures with a minimum vertical extent of 6 feet were analyzed to delineate tree canopy coverage across both public and private lands. Utilizing an automated processing pipeline, integrated with advanced LiDAR classification software, canopy features were extracted. The process involved isolating vegetation returns from the LiDAR point cloud, classifying points that met the height threshold, and generating a Canopy Height Model to represent the spatial distribution and elevation of canopy features. The Canopy Height Model was then converted into vector format for geospatial analysis within a GIS environment. Quality assurance and quality control procedures were applied to ensure spatial accuracy and classification integrity.

The validated dataset was used to calculate canopy coverage metrics across the County. St. Lucie County has a total land area of 369,795 acres, of which 62,989 acres are covered by tree canopy, equating to an overall canopy coverage of 17 percent (Error! Reference source not found. and Error! Reference source not found.). Within the municipalities, St. Lucie Village stands out with 55 percent canopy coverage across its 531 acres. Port St. Lucie, with a land area of 76,963 acres, has 13,099 acres of canopy, equating to 17 percent coverage. Fort Pierce, covering 16,241 acres, has 5,572 acres of canopy, representing 34 percent coverage. Unincorporated St. Lucie County contains 276,060 acres of land and has 44,027 acres of canopy, equating to 16 percent coverage. Maps displaying the tree canopy coverage for SLC as well as the municipalities are displayed in **Figure 3** through **Figure 6**.

Tree canopy is recognized as a vital component of the County's and the municipalities' resilience efforts. It plays a key role in reducing urban heat island effects, sequestering carbon emissions, and managing stormwater runoff. The resulting maps and data products from this assessment will support decision-making around land use planning, environmental protection, and adaptation, while also guiding future tree planting and preservation efforts on County- and municipal-owned properties.

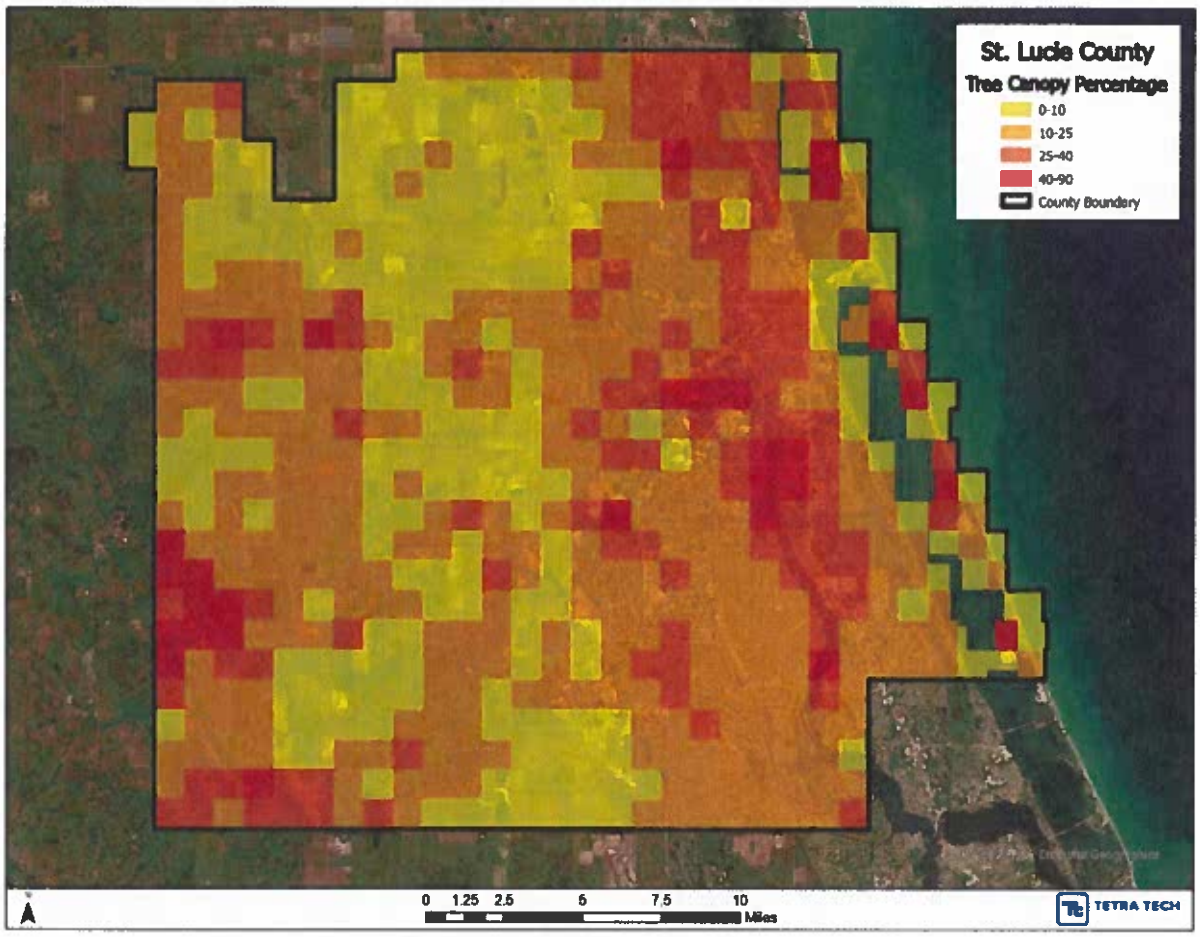


Figure 1. St. Lucie County Tree Canopy Percentage Map

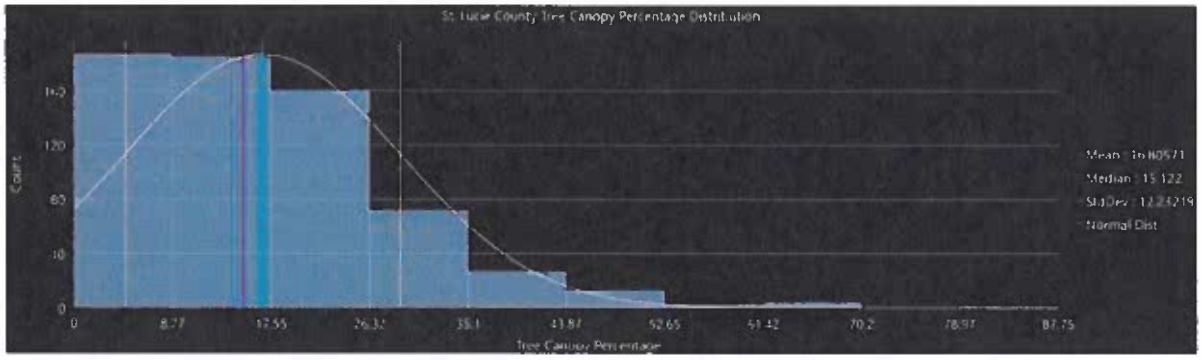


Figure 2. St. Lucie County Tree Canopy Percentage Distribution

Figure 3. St. Lucie County Tree Canopy Coverage

Figure 4. St. Lucie Village Tree Canopy Coverage

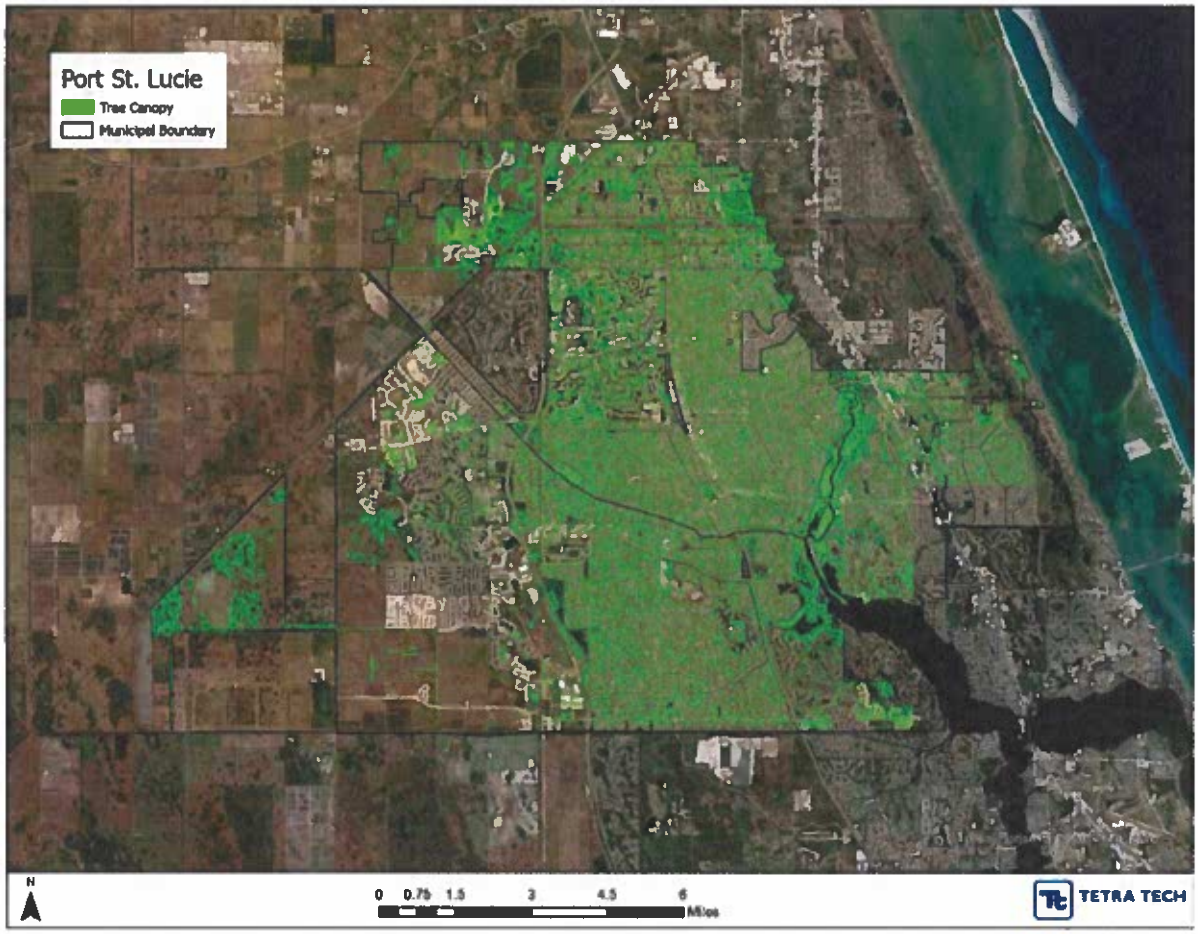


Figure 5. Port St. Lucie Tree Canopy Coverage

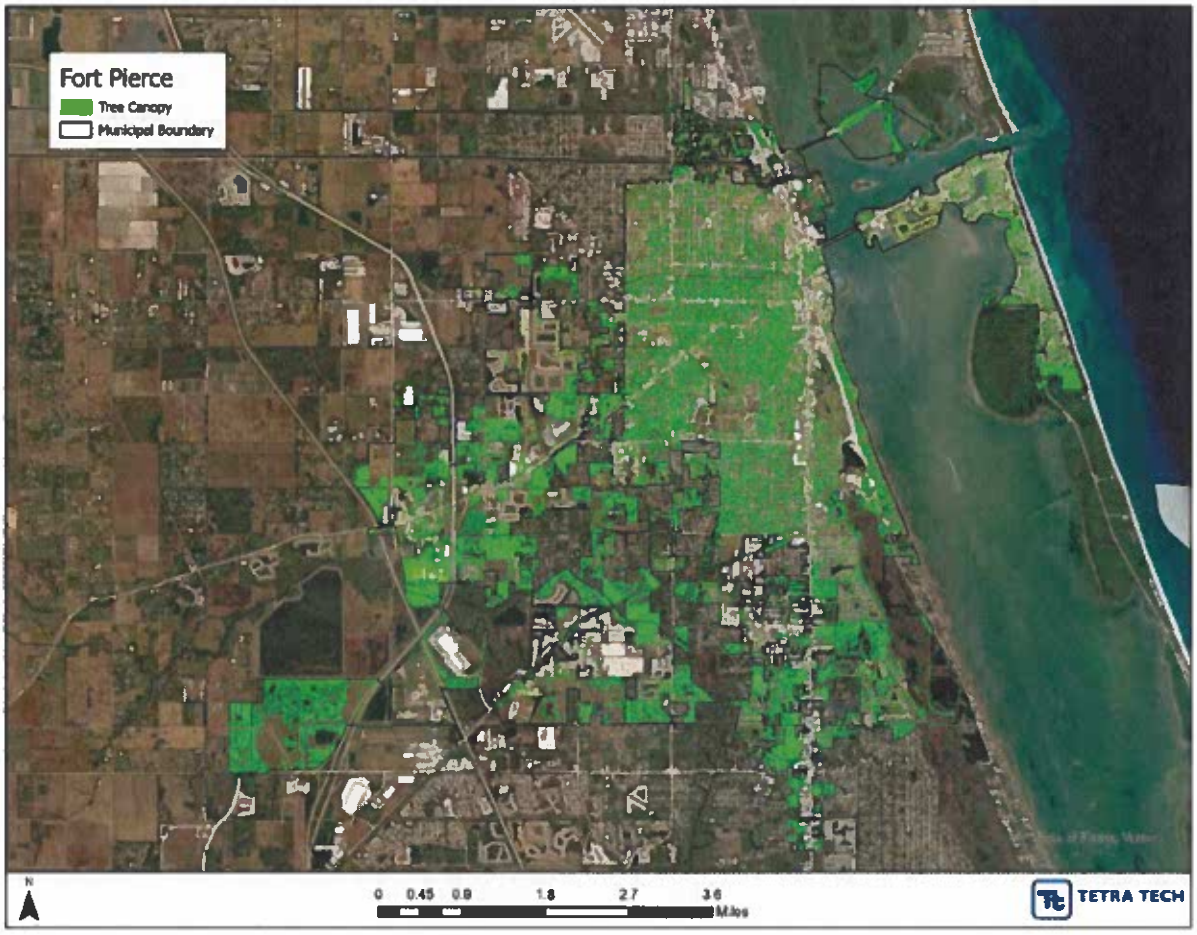


Figure 6. Fort Pierce Tree Canopy Coverage

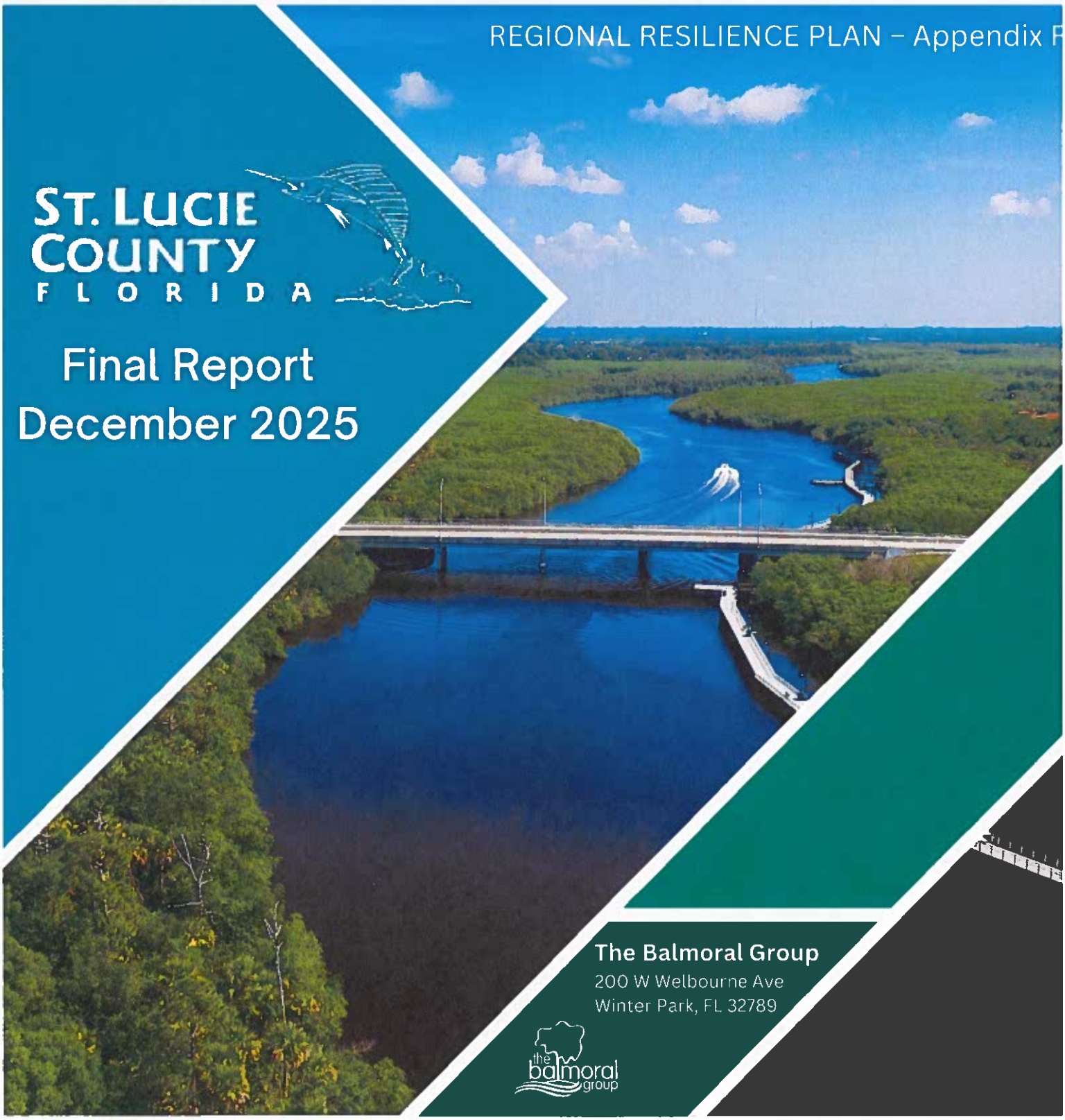
APPENDIX F: ST. LUCIE COUNTY VULNERABILITY ASSESSMENT & REGIONAL RESILIENCE PLAN BENEFIT COST ANALYSIS

St. Lucie County Vulnerability Assessment & Regional Resilience Plan Benefit Cost Analysis

REGIONAL RESILIENCE PLAN – Appendix F

ST. LUCIE COUNTY
FLORIDA

Final Report
December 2025



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Disclaimer

The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of St. Lucie County.

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Executive Summary

St. Lucie County's conservation lands provide measurable economic value to the community by reducing flood risk, protecting public infrastructure, and enhancing long-term resilience. This study evaluates the economic value and return on investment associated with the permanent preservation of several conservation lands within St. Lucie County and the flood reduction ecosystem services they provide.

To support the Vulnerability Assessment and Regional Resilience Plan, The Balmoral Group conducted a benefit–cost analysis focused on avoided flood damage. To ensure transparency and fiscal discipline, the analysis compares preserved lands to a realistic alternative scenario in which the properties are developed in patterns similar to nearby areas.

Flood protection benefits were estimated using InVEST™, a modeling tool that calculates the volume of floodwater retained under scenarios with and without natural protective processes intact. The analysis incorporated detailed land cover data from the Florida Fish and Wildlife Conservation Commission to identify specific habitat and vegetation types. Across the six sites evaluated, results indicate that lands in their natural state retain more than 383 million gallons of floodwater annually. Comparing total ecosystem service benefits with total costs—including personnel, operating, and capital expenditures—yielded positive and significant benefit–cost ratios (BCRs) for all St. Lucie County preserves included in this study. In every case, BCRs exceeded 1.0, with benefits outweighing costs by factors ranging from 1.5 to 4.6.

Total costs and benefits were estimated over a ten-year period (2016-2025), with results summarized in **Table 1**. Across all six sites, projected flood retention benefits over the next decade are nearly $14 million, compared with approximately $5 million in total land operation and management costs. The resulting overall BCR is 2.6, meaning that flood mitigation benefits alone—relative to a non-preservation scenario—generate approximately $2.60 in community benefits for every $1.00 invested.

Table 1. Flood Benefit Cost Analysis Over a 10-year Planning Horizon with a 7% Discount Rate

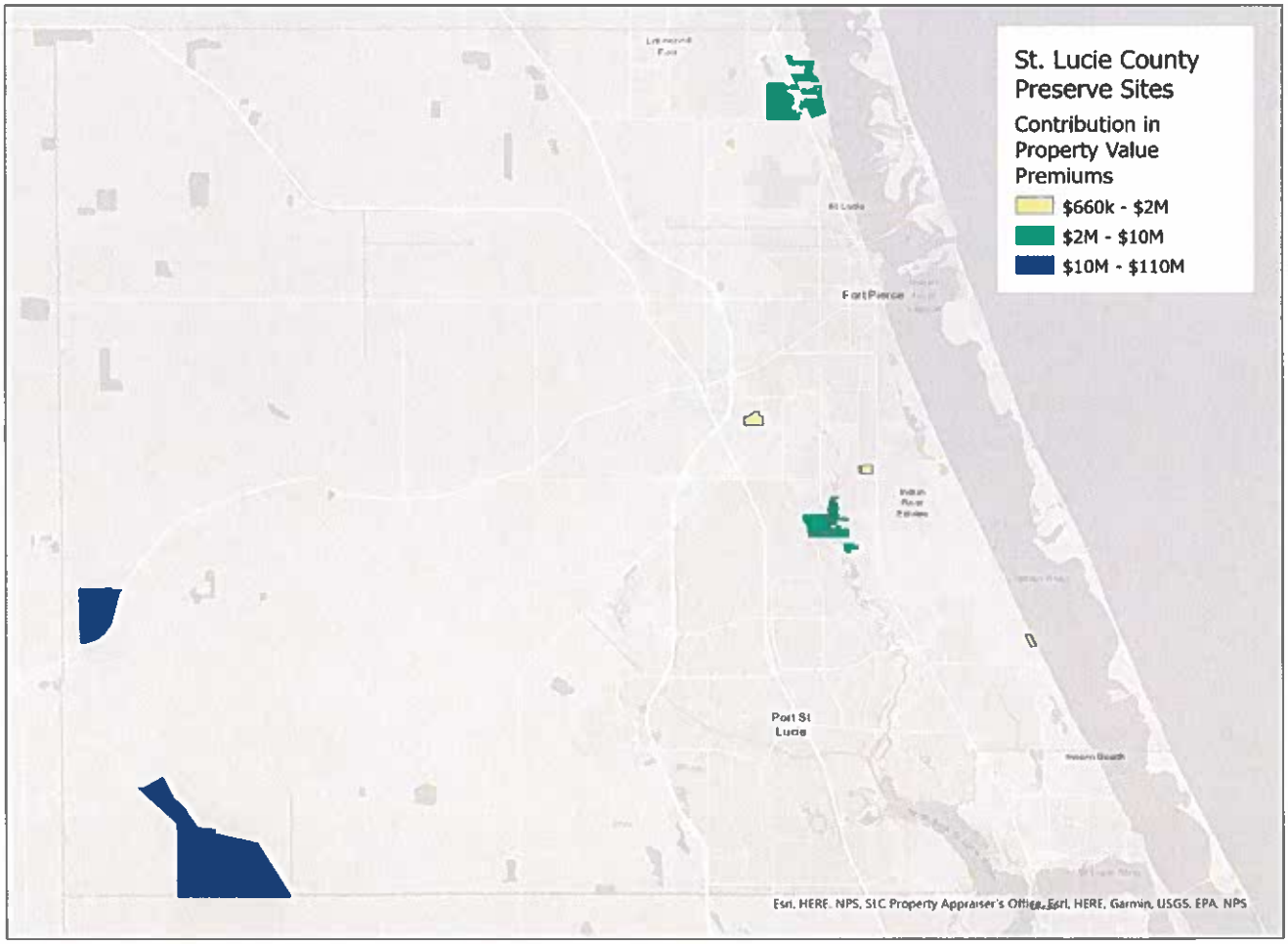
Selected Sites	Flood Benefits (Relative to Base Case)	Total Costs	BCR
Ancient Oaks Preserve	$87,310	$46,810	1.9
Atlantic Coastal Ridge sites	$3,377,029	$773,812	4.4
Bluefield Ranch and Cypress Creek Preserves	$8,105,017	$3,993,592	2.0
George LeStrange Preserve	$144,556	$95,161	1.5
North Fork Greenway	$1,997,797	$434,533	4.6
Southeast County	$61,198	$30,731	2.0
Total	$13,772,907	$5,374,638	2.6

Source: TBG Work Product based on data provided by St Lucie County, FWC (2023) and FEMA (2022).

Importantly, these findings represent a conservative, lower-bound estimate of the economic value of conservation lands. The analysis excludes a substantial suite of additional ecosystem services. These excluded benefits include pollutant load reduction and associated water treatment savings; public values related to improved wildlife habitat and water quality beyond direct cleanup costs; recreational and eco-tourism revenues; and property value premiums for parcels located on or near waterways and conservation lands.

For example, although not included in the benefit–cost results presented above, property value premiums associated with proximity to the assessed sites are estimated at approximately $131 million based on FEMA studies. These increased property values contribute directly to the County's tax base and long-term fiscal stability. Inclusion of these and other excluded benefits would be expected to materially increase estimated returns and further strengthen the economic case for permanent land conservation.

Figure 1. Map of St. Lucie County Preserve Sites Property Value Premiums



Source: TBG Work Product

Benefit-Cost Analysis: General Overview

Costs

For this analysis, annual costs were calculated using the 10-year average (2016 to 2025) of the Environmental Resource Department (ERD) Lands Budget, which accounts for Personnel, Operating Budget, and Capital expenses. The average annual cost to maintain and operate preserves in St. Lucie County was estimated to be about $1,385,101 per year.

The 10-year annual average cost was then prorated by acreage share to assign costs to selected preserve sites. Preserves total about 9,892 acres within St. Lucie County, based on land use GIS data. Taking the share of preserve acreage of each site evaluated in the study and dividing it by the total St. Lucie County preserve acreage allowed for the annual average cost to be prorated to each site.

All costs and benefits were evaluated over a 10-year period using a standard 7% discount rate.

Benefits

Alternative Preservation Case Benefits

The primary benefit evaluated in this study is flood damage reduction. Natural lands absorb and store stormwater, reducing flooding impacts on homes, businesses, roads and other public infrastructure.

Benefits attributable to St. Lucie County Preserves were assessed on a per acre basis for qualifying land cover (Forest, Coastal Wetland, Inland Wetland, Riparian, Rural Open Green Space, and Urban Open Green Space) for flood protection provided by natural processes from intact land.

The most recent Federal Emergency Management Agency (FEMA) Ecosystem Service Values were used to quantify Flood Protection values on an annual and per site basis. Flood and Storm Hazard Risk Reduction values are estimated by FEMA using meta-analysis, or a compilation of numerous peer-reviewed studies based on decades of observed storm damage data. **Table 2** summarizes the value per acre of flood protection provided by each land cover type annually based on FEMA estimates. Across all six sites included in the analysis, total flood protection benefits are estimated at $13,700,000.

Ecosystem service values were applied to preserve acres on an annual basis for both the Alternative Presentation Case and Base Case over a 10-year planning horizon (with a 7% discount rate).

Table 2. Land Cover and Associated FEMA value, Avoided costs, Flood Reduction

Land Cover	2025 Value per acre
Riparian	$7,132
Urban Open Green Space	$372
Rural Open Green Space	$0
Forest	$434
Coastal Wetland	$1,220
Inland Wetland	$1,490

Source: FEMA (2022).

Property Value Benefits (Not Included in the Benefit-Cost Results)

Property value improvements for parcels nearby to permanently preserved land in Florida is well-established in research and is also valued in FEMA studies. While not directly included in the analysis herein, aesthetic values are estimated in FEMA studies for the values that open space and natural lands convey to nearby residents. The property value improvements represent a public willingness to pay for proximity to these lands, reflected across the land cover types as shown in **Table 3.**

While these property value benefits were not included in the formal benefit-cost calculations to maintain a conservative approach, a high-level estimate was conducted to illustrate their magnitude. Across the six sites, property value improvements attributable to proximity to conservation lands are estimated at nearly $131 million. These higher property values directly support the County's tax base and long-term fiscal health.

Table 3. Property Value Improvements based on FEMA estimates, by land cover type

Land Cover	2025 Value per acre
Riparian	$904
Urban Open Green Space	$8,261
Rural Open Green Space	$8,845
Forest	$1,741
Coastal Wetland	$1,942
Inland Wetland	$1,536

Source: FEMA (2022).

Base Case Benefits

The Base Case assumes that without preservation, the site would be subject to development similar to surrounding and nearby parcels. In the developed scenario, sites are estimated to retain ecosystem services of about 27% (natural areas), with the remaining 73% converted to developed and other areas.

Cooperative Land Cover (CLC) data from the Florida Natural Areas Inventory (FNAI) was used to represent land cover in the preserve site groups and in parcels adjacent to the preserve sites. The CLC land use data provides detailed habitat type information for natural areas and developed lands. FNAI data were used in conjunction with data and information provided by the County to assemble the spatial coverage of the six site groups listed below:

- Ancient Oaks Preserve
- Atlantic Coastal Ridge Sites
- Bluefield Ranch and Cypress Creek Preserves
- George LeStrange Preserve
- North Fork Greenway
- Walton Scrub Preserve

Some site groups were represented by a single preserve area (example: George LeStrange) and some site groups were a collection of several preserve areas (example: Atlantic Coastal Ridge Sites).

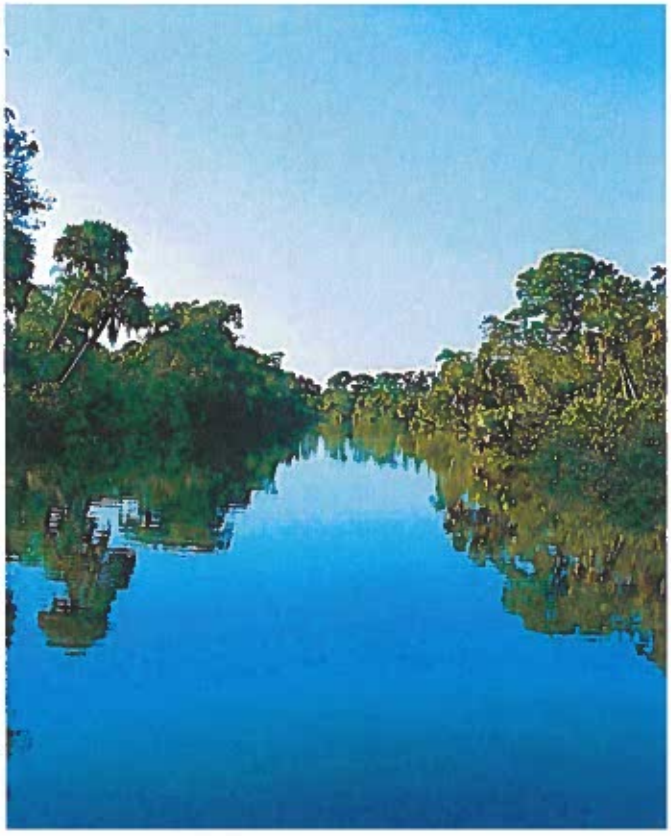
CLC data were intersected with 1) areas representing the six site groups, and 2) property appraiser parcel boundaries adjacent to the preserve areas (within one quarter mile). A crosswalk between the CLC

habitat types (about 230 unique habitats) and FEMA's ecosystem service habitat types (eight habitats) was completed in order to assign FEMA annual ecosystem service values based on the FEMA habitat description.

Benefit-Cost Ratios

After summing Costs and Benefits for each Preserve, BCRs were calculated relative to base case by dividing Total Benefits (minus Base Case) by Total Costs. In all cases, BCRs were well above 1.0, meaning benefits exceed costs. The results of the individual Preserve groups are detailed in the following sections. Figure 2 shows an example of the North Fork Greenway site with natural features that provide multiple benefits to the St. Lucie County area.

Figure 2. North Fork Greenway - Habitat



Source: St. Lucie County

Benefit-Cost Analysis: Preserve Groups

Ancient Oaks Preserve

Ancient Oaks Preserve is a 48-acre preserve comprised of a 35-acre natural area adjacent to a 13-acre recreational park, located north of Midway Road in White City. The Preserve was acquired by St. Lucie County in 2002 through the local Land Acquisition Bond and grant funding from Florida Communities Trust. The site is comprised of a hydric hammock, depressional marsh, and mesic flatwoods ecosystem, which houses live oaks, laurel oaks, slash pines, and cabbage palms. The site features a one-mile nature trail, interpretive signage, bicycle stands, benches, and picnic tables.

The Ancient Oaks Preserve Wet Pond project was constructed in the southwest corner of the Preserve, to treat stormwater runoff before entering the North Fork of the St. Lucie River via the Merritt Ditch. Since existing ditches were not equipped with any prior treatments, this project was designed to mimic nature and maximize nutrient removal by implementing the best management practices for water quality treatment, including bioswales, littoral zones, soil stabilization, native wetland, and buffer planting. The installation of the wet pond project is expected to realize a 33% reduction efficiency for nitrogen and 62% reduction efficiency for phosphorus.

Figure 3. Ancient Oaks Preserve - Habitat

Source: St. Lucie County

Ancient Oaks Preserve BCR

Costs were quantified for the Ancient Oaks Preserve by estimating the share of ERD's average annual budget that is attributable to the area (0.5%). Budgetary costs include Personnel, Operating Budget, and Capital Costs, totaling $46,810 over a 10-year planning horizon at a 7% discount rate (**Table 4**). Flood reduction benefits were estimated from FEMA Ecosystem Service Values and applied on a per acre basis to areas within the preserve by Land Cover Category (Forest and Urban Open Green Space), totaling $87,310 relative to the Base Case. The BCR for the Ancient Oaks Preserve is 1.9 including Flood Protection Benefits.

Table 4. Summary Benefit-Cost Analysis, Ancient Oaks Preserve

Costs, relative to base case/status quo:	10-year Horizon at 7% Discount Rate
Personnel, Operating Budget, and Capital Costs	$46,810
Total Costs (10-year period, in 2025 dollars)	**$46,810**
Benefits, relative to base case/status quo:	10-year Horizon at 7% Discount Rate
Avoided Costs – Flood Protection	$87,310
Total Net Benefits (10-year period, in 2025 dollars)	$40,500
Benefit-cost ratio: Flood Protection Benefits Only	1.9

Source: TBG Work Product

Figure 4. Ancient Oaks Preserve - Habitat

Source: St. Lucie County

Atlantic Coastal Ridge Sites

The Atlantic Coastal Ridge area includes Indrio Savannahs, Indrio Scrub, Lake Indrio, D.J. Wilcox and Harbor Branch sites covering around 787 acres total. These preserves represent the most northern sites of the projects selected for CBA analysis, an area currently facing extreme development pressures. These sites are comprised of tidal swamp, hydric hammock, bay gall swamp, mesic and scrubby flatwoods, depressional marsh, wet prairie, and scrub habitats.

The area is important for providing habitat to threatened and endanger species, as well as providing groundwater recharge and flood attenuation. Restoration of native vegetation has fostered habitats fit for nesting and foraging activities of native wildlife, while culverts work to mimic natural tidal activity. Enhancement of wetlands are underway to mitigate impacts from previous alterations to the system. In addition, these preserves provide connections to the East Coast Greenway, a natural corridor extending from Maine to the Florida Keys.

The greater Atlantic Coastal Ridge Area includes a designated State Aquatic Preserve, Outstanding Florida Water body, and a Strategic Habitat Conservation Area for wading birds. The sites provide habitat for many critical species that are rare or endangered, including the Florida Scrub-Jay (federally threatened), gopher tortoise (FWC-designated as threatened), Wood Stork (federally threatened), and Snail Kite (federally endangered), as well as the Lakela's Mint (federally endangered / critically endangered). All of these species rely on specific ecological conditions, showcasing the need for adequate conservation and management strategies.

In addition to the environmental and hydrological benefits, multiple recreational and aesthetic attributes provide additional benefits for residents and visitors. Main features include boardwalks for sightseeing and nature observations, canoe and kayak launches, nature trails, as well as fishing and paddling opportunities all designed to encourage appreciation for conservation efforts in this area.

Figure 5. Atlantic Coastal Ridge Sites - Gopher Tortoise

Source: St. Lucie County

Atlantic Coastal Ridge Sites BCR

Costs were quantified for the Atlantic Coastal Ridge Sites by estimating the share of ERD's average annual budget that is attributable to the area (8.0%). Budgetary costs include Personnel, Operating Budget, and Capital Costs, totaling $773,812 over a 10-year planning horizon at a 7% discount rate (**Table 5**). Flood reduction benefits were estimated from FEMA Ecosystem Service Values and applied on a per acre basis to areas within the preserves by Land Cover Category (Forest, Coastal Wetland, Inland Wetland, Riparian, Rural Open Green Space, and Urban Open Green Space). The BCR for the Atlantic Coastal Ridge Sites is 4.4 including Flood Protection Benefits.

Table 5. Summary Benefit-Cost Analysis, Atlantic Coastal Ridge Sites

Costs, relative to base case/status quo:	10-year Horizon at 7% Discount Rate
Personnel, Operating Budget, and Capital Costs	$773,812
Total Costs (10-year period, in 2025 dollars)	**$773,812**
Benefits, relative to base case/status quo:	10-year Horizon at 7% Discount Rate
Avoided Costs – Flood Protection	$3,377,029
Total Net Benefits (10-year period, in 2025 dollars)	$2,603,218
Benefit-cost ratio: Flood Protection Benefits Only	4.4

Source: TBG Work Product

Figure 6. Atlantic Coastal Ridge - Habitat

Source: WikiCommons

Bluefield Ranch and Cypress Creek Preserves

Bluefield Ranch and Cypress Creek Preserves include 4,060 acres and are comprised of flatwood hammock, depressional marsh, and baygall habitats.

Wildlife is plentiful, including bobcats, wild turkey, deer. The purpose of land management is to conserve natural habitats, protect and enhance water quality, and encourage recreational utilization of the area. The preserves are also crucial for natural water storage. Continued restoration efforts such as the conversion of pasture to wet/dry prairie, hydrologic restoration, and a prescribed fire regime aim to combat the negative hydrological impacts from timber harvesting and poor drainage practices that resulted in diminished swamp habitat and altered soil composition.

Figure 7. Bluefield Ranch and Cypress Creek Preserves - Habitat

Source: St. Lucie County

Bluefield Ranch and Cypress Creek Preserves BCR

Costs were quantified for the Bluefield Ranch and Cypress Creek Preserves by estimating the share of ERD's average annual budget that is attributable to the area (41.1%). Budgetary costs include Personnel, Operating Budget, and Capital Costs (**Table 7**). Flood reduction benefits were estimated from FEMA Ecosystem Service Values and applied on a per acre basis to areas within the preserves by Land Cover Category (Forest, Coastal Wetland, Inland Wetland, and Rural Open Green Space). The BCR for Bluefield Ranch and Cypress Creek Preserves is 2.0 including Flood Protection Benefits.

Table 6. Summary Benefit-Cost Analysis, Bluefield Ranch and Cypress Creek Preserves

Costs, relative to base case/status quo:	10-year Horizon at 7% Discount Rate
Personnel, Operating Budget, and Capital Costs	$3,993,592
Total Costs (10-year period, in 2025 dollars)	**$3,993,592**
Benefits, relative to base case/status quo:	10-year Horizon at 7% Discount Rate
Avoided Costs – Flood Protection	$8,105,017
Total Net Benefits (10-year period, in 2025 dollars)	$4,111,426
Benefit-cost ratio: Flood Protection Benefits Only	2.0

Source: TBG Work Product

Figure 8. Bluefield Ranch and Cypress Creek Preserves - Habitat

Source: St. Lucie County

George LeStrange Preserve

The George LeStrange Preserve is a 97-acre natural area that runs alongside Ten Mile Creek with diverse natural communities on display including pine, mesic and scrubby flatwoods, floodplain forest, and palm hammocks. Located at the center of the preserve is Lake Zobel, a 37.5 acre "catch-and-release" lake with a canoe launch providing recreational access, with additional trails through the wetland area. The unique landscape of the area provides shelter and protection for wildlife, as well as flood protection and water quality benefits due to stormwater drainage and leveling efforts. An additional benefit of this project area includes connections to the North Fork St. Lucie River Greenway, which protects natural habitats and provides additional recreational opportunities for visitors and residents.

Figure 9. George LeStrange Preserve - Habitat

Source: St. Lucie County

George LeStrange Preserve BCR

Costs were quantified for the George LeStrange Preserve by estimating the share of ERD's average annual budget that is attributable to the area (1.0%). Budgetary costs include Personnel, Operating Budget, and Capital Costs (**Table 8**). Flood reduction benefits were estimated from FEMA Ecosystem Service Values and applied on a per acre basis to areas within the preserve by Land Cover Category (Forest, Inland Wetland, Riparian, Rural Open Green Space, and Urban Open Green Space). The BCR for the George LeStrange Preserve is 1.5 including Flood Protection Benefits.

Table 7. Summary Benefit-Cost Analysis, George LeStrange Preserve

Costs, relative to base case/status quo:	10-year Horizon at 7% Discount Rate
Personnel, Operating Budget, and Capital Costs	$95,161
Total Costs (10-year period, in 2025 dollars)	**$95,161**
Benefits, relative to base case/status quo:	10-year Horizon at 7% Discount Rate
Avoided Costs – Flood Protection	$144,556
Total Net Benefits (10-year period, in 2025 dollars)	$49,395
Benefit-cost ratio: Flood Protection Benefits Only	1.5

Source: TBG Work Product

North Fork Greenway

The North Fork area includes the Petravice, Captain Hammond's Hammock, and Citrus Hammock Preserves, as well as Idabelle Island and the Oxbow Eco-Center. Sitting on a total of 442 acres, these areas are comprised of various natural lands including hydric and hardwood hammock, floodplain swamp and forest, scrubby and mesic flatwoods, and depressional marsh habitats. Residing in these areas are a variety of wading birds, migratory species, waterfowl, and other woodland wildlife.

In addition to environmental restoration and protection throughout the North Fork Greenway, physical improvements include educational kiosks, hiking and multi-use trails, picnic areas and other features that foster engagement and observation of the native wildlife.

The Oxbow Eco-Center is particularly popular and is the County's most visited preserve. The Center offers hundreds of educational programs to adults and youth throughout the year, as well as special events, including 5K runs and the largest Earth Day Festival in the area.

Figure 10. North Fork Greenway - Recreation

Source: St. Lucie County

North Fork Greenway BCR

Costs were quantified for the North Fork Greenway by estimating the share of ERD's average annual budget that is attributable to the area (4.5%). Budgetary costs include Personnel, Operating Budget, and Capital Costs (**Table 10**). Flood reduction benefits were estimated from FEMA Ecosystem Service Values and applied on a per acre basis to areas within the preserve by Land Cover Category (Forest, Inland Wetland, Riparian, Rural Open Green Space, and Urban Open Green Space). The BCR for the North Fork Greenway is 4.6 including Flood Protection Benefits.

Table 8. Summary Benefit-Cost Analysis, North Fork Greenway

Costs, relative to base case/status quo:	10-year Horizon at 7% Discount Rate
Personnel, Operating Budget, and Capital Costs	$434,533
Total Costs (10-year period, in 2025 dollars)	**$434,533**
Benefits, relative to base case/status quo:	10-year Horizon at 7% Discount Rate
Avoided Costs – Flood Protection	$1,997,797
Total Net Benefits (10-year period, in 2025 dollars)	$1,563,263
Benefit-cost ratio: Flood Protection Benefits Only	4.6

Source: TBG Work Product

Walton Scrub Preserve

Walton Scrub Preserve spans approximately 31 acres, located between the IRL and the basin marshes of Savannas Preserve State Park. This region features a blend of scrub and maritime hammock ecosystem ecosystems. Enhancements to the area include hiking trails, interpretive signage, and facilities for bicycles. Proposed improvements include a fishing pier, picnic spots, an open-air pavilion, and restrooms. A 60-foot observation tower is currently under construction, which will offer breathtaking views of the IRL and the adjacent Savannas State Park.

The ecosystems present in Walton Scrub Preserve, including sand pine scrub, maritime hammock, slope forest, and mangrove, along with the nearby seagrass beds, which are meticulously preserved and managed to ensure the sustainability of these natural communities. Regular treatments for exotic species and mechanical reductions are carried out. The removal of exotic vegetation is essential for protecting the area's native biodiversity. Techniques such as roller chopping and grinding are used as alternatives to prescribed burns. These methods benefit the local communities by promoting nutrient cycling, fostering healthy plant regrowth, managing diseases among native species, eradicating invasive plants, and reducing wildfire risks.

At present, this site is part of a shoreline restoration project, which includes the establishment of a 3-quarter acre oyster reef, the planting of a one-acre seagrass bed, and restoration of mangroves and salt marsh vegetation along the eroding shoreline.

The natural communities on-site provide various environmental and ecological benefits such as natural filters for water quality, flood control, biodiversity conservation, and a myriad of recreational opportunities.

Figure 11. Walton Scrub Preserve – Sand Habitat

Source: St. Lucie County

Walton Scrub Preserve BCR

Costs were quantified for the Walton Scrub Preserve area by estimating the share of ERD's average annual budget that is attributable to the area (0.3%). Budgetary costs include Personnel, Operating Budget, and Capital Costs (**Table 12**). Flood reduction benefits were estimated from FEMA Ecosystem Service Values and applied on a per acre basis to areas within the preserve by Land Cover Category (Forest, Coastal Wetland, Inland Wetland, Riparian, Rural Open Green Space, and Urban Open Green Space). The BCR for the Walton Scrub Preserve area is 2.0 including Flood Protection Benefits.

Table 9. Summary Benefit-Cost Analysis, Walton Scrub Preserve

Costs, relative to base case/status quo:	10-year Horizon at 7% Discount Rate
Personnel, Operating Budget, and Capital Costs	$30,731
Total Costs (10-year period, in 2025 dollars)	**$30,731**
Benefits, relative to base case/status quo:	10-year Horizon at 7% Discount Rate
Avoided Costs – Flood Protection	$61,198
Total Net Benefits (10-year period, in 2025 dollars)	$30,467
Benefit-cost ratio: Flood Protection Benefits Only	2.0

Source: TBG Work Product

Figure 12. Walton Scrub Preserve - Habitat

Source: St. Lucie County

Results

Table 13 summarizes annual average costs for all preserve groups, while **Table 14** shows projected annual costs discounted to current dollars over a 10-year planning horizon.

Table 10. Annual Average Cost, Prorated by Acreage Share

Selected Sites	Acreage	Share of Acreage	Average Annual Cost, Prorated by Acre Share
Ancient Oaks Preserve	48	0.5%	$6,665
Atlantic Coastal Ridge Sites	787	8.0%	$110,173
Bluefield Ranch and Cypress Creek Preserves	4,061	41.1%	$568,598
George LeStrange Preserve	97	1.0%	$13,549
North Fork Greenway	442	4.5%	$61,868
Walton Scrub Preserve	31	0.3%	$4,375
Total: Selected Sites	5,465	55.2%	
Total: St. Lucie County Parks and Preserves	9,892	100.0%	

Source: TBG Work Product, St. Lucie County

Table 11. Total Costs Over 10-year Planning Horizon with a 7% Discount Rate

Selected Sites	Total Costs, 1-year	Total Costs, 10-year
Ancient Oaks Preserve	$6,665	$46,810
Atlantic Coastal Ridge Sites	$110,173	$773,812
Bluefield Ranch and Cypress Creek Preserves	$568,598	$3,993,592
George LeStrange Preserve	$13,549	$95,161
North Fork Greenway	$61,868	$434,533
Southeast County	$4,375	$30,731
Total	$765,228	$5,374,638

Source: TBG Work Product, St. Lucie County

Table 15 summarizes Base Case acreage assumptions for all preserve groups, while **Table 16** shows projected annual benefits discounted to current dollars over a 10-year planning horizon for the Alternative (Preservation) Case.

Table 12. Acreage by Ecosystem Type

FEMA LULC	Acreage	Share of Acreage
Developed and Other Areas	**86,991**	**73%**
Natural Areas	**32,488**	**27%**
Beaches and Dunes	227	0%
Coastal Wetland	593	0%
Forest	5,282	4%
Inland Wetland	5,682	5%
Riparian	351	0%
Rural Green Open Space	18,868	16%
Urban Green Open Space	1,486	1%
Grand Total	119,479	100%

Source: TBG Work Product, St. Lucie County, FEMA

BCRs were calculated for each preserve relative to base case by dividing Total Benefits (minus Base Case) by Total Costs (**Table 16**). In all cases, BCRs were well above 1.0, meaning benefits exceed costs.

Table 13. Total Benefit Cost Ratios Over 10-year Planning Horizon with a 7% Discount Rate

Selected Sites	Total Benefits (Relative to Base Case)	Total Costs	BCR
Ancient Oaks Preserve	$87,310	$46,810	1.9
Atlantic Coastal Ridge sites	$3,377,029	$773,812	4.4
Bluefield Ranch and Cypress Creek Preserves	$8,105,017	$3,993,592	2.0
George LeStrange Preserve	$144,556	$95,161	1.5
North Fork Greenway	$1,997,797	$434,533	4.6
Walton Scrub Preserve	$61,198	$30,731	2.0
Total	$13,772,907	$5,374,638	2.6

Source: TBG Work Product

Assessing Total Flood Benefits against Total Costs (Personnel, Operating Budget, and Capital Costs) yielded positive and significant Benefit-Cost Ratios (BCRs) for the selected St. Lucie County Preserves in the study. In all cases, BCRs were above 1.0, meaning benefits exceed costs, ranging from 1.5 to 4.6.

Benefits of flood retention were based on modeling using InVEST™, which estimates volumes of flood water retained with and without natural protective processes intact[1]. The modeling uses detailed FWC

[1] Integrated Valuation of Ecosystem Services and Tradeoffs, an ecosystem services modeling platform

land cover data to identify specific habitat and vegetation types for the analysis, resulting in more than 484 million gallons in flood waters being retained each year by the six sites assessed remaining in their natural state.

Across all six sites, total flood retention benefits estimated over the next ten years exceed $13.7 million, against total costs of operating and managing the lands at more than $5 million. The overall BCR is 2.6, meaning that flood benefits alone, relative to a non-preservation scenario, generate $2.60 in benefits for every $1.00 spent.

In addition, modeling finds that property value improvements for parcels nearby to the sites are estimated at approximately $131 million, based on FEMA studies. These premiums contribute directly to County tax rolls, generating additional public value.

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APPENDIX G: NATIONAL FLOOD INSURANCE PROGRAM COMMUNITY RATING SYSTEM REVIEW

September 11, 2025

Achieving Flood Insurance Rate Reduction through FEMA's National Flood Insurance Program

FEMA's Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirements of the National Flood Insurance Program (NFIP). In Community Rating System communities, NFIP flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community's efforts. SLC and the municipalities recognize the importance of floodplain management as a community-based effort to prevent or reduce the risk of flooding, resulting in a more resilient community and reducing the financial impacts of flooding. For each higher Class rating a local government obtains (higher class rating receives a 'lower class number'), the entire community receives 5 percent off their NFIP flood insurance premiums. Currently, the City of Fort Pierce maintains a Class 6 rating, and St. Lucie County and Port St. Lucie a Class 5 rating, resulting in a 20 percent and 25 percent reduction in flood insurance rates for the entire community.

To advance to a CRS Class 4 rating, a community must not only earn over 3,000 CRS points but also meet a series of rigorous prerequisites outlined in the 2025 CRS Coordinator's Manual. These include maintaining a Building Code Effectiveness Grading Schedule (BCEGS) classification of 4/4 or better, enforcing higher regulatory standards such as a 1-foot freeboard requirement for all new construction throughout the Special Flood Hazard Area, and adopting a floodplain management plan that earns at least 50 percent of the maximum credit under Activity 510. Additional requirements include earning substantial credit for protecting natural floodplain functions and implementing life safety measures such as flood warning systems and dam failure threat mapping.

CRS Class 4 Prerequisites and Recommendations for St. Lucie County

St. Lucie County currently meets many of these prerequisites, including a BCEGS rating of 3/3, maintaining flood insurance on community-owned properties, and earning 794 points under Activity 430 for higher regulatory standards. The County also exceeds the required credit thresholds in floodplain planning steps 2, 5, and 8, and has earned 128 points for protecting natural floodplain functions through open space preservation, water quality improvements, and erosion control.

Despite these accomplishments, various gaps remain that must be addressed to achieve Class 4 status. The County must prepare and adopt a qualifying Watershed Master Plan that meets CRS criteria, including managing runoff from 100-year storm events and covering at least 50 percent of projected growth areas. Additionally, the County must provide dam failure threat mapping per Activity 630, which includes identifying areas that would be flooded by the failure of high-hazard-potential dams and the critical facilities that would be affected. Improvements are also needed in elevation certificate management, specifically achieving ≥90 percent accuracy and increasing credit for certificate procedures.

To reach the 3,000-point threshold and strengthen its CRS standing, SLC can pursue several strategic enhancements. These include updating the Program for Public Information to incorporate stakeholder-endorsed outreach projects under Activity 330, enhancing GIS datasets under Activity 440 by adding natural hazard layers, floodplain data in tax assessments, and building elevation data. Under Activity 540, the County can develop standard operating procedures for inspection and

maintenance of natural drainage systems, problem sites, and County-owned storage basins. Additional credit opportunities exist through stream dumping regulations and capital improvement programs. Continued pursuit of TsunamiReady status under Activity 610 and coordination with state dam safety programs and critical facility operators under Activity 630 will further support life safety measures and resilience goals. Together, these actions will not only position St. Lucie County to achieve a CRS Class 4 rating but also enhance its overall flood resilience, reduce financial impacts on residents, and align with broader regional sustainability and hazard mitigation objectives. The full CRS analysis can be found within Appendix B.

CRS Prerequisites for CRS Class 4

2025 CRS Coordinators Manual

The *2025 Community Rating System (CRS) Coordinators Manual* establishes enhanced expectations and prerequisites for communities seeking to achieve or maintain a CRS Class 4 or better designation. This classification recognizes jurisdictions that demonstrate exceptional commitment to floodplain management through comprehensive programs that minimize flood losses, protect life and property, preserve natural floodplain functions, and prevent future flood damage.

Achieving a Class 4 rating requires not only the accumulation of sufficient CRS points but also verification that the community's regulatory, planning, and operational frameworks meet the highest standards of FEMA's National Flood Insurance Program (NFIP). Advancing from a Class 5 to a Class 4 provides a significant benefit to property owners, increasing the NFIP flood insurance premium discount from 25% to 30%, resulting in substantial annual savings across the community.

This report summarizes the prerequisites and performance measures for achieving a Class 4 CRS rating and evaluates the County's current progress toward those benchmarks. It identifies existing accomplishments, outlines areas where additional documentation or program enhancements are needed, and recommends targeted strategies to both meet the Class 4 prerequisites and achieve the 3,000-point threshold for advancement. By strengthening watershed management, enhancing life safety planning, and expanding natural floodplain protection, the County can continue to position itself as a regional leader in resilience and proactive flood risk reduction.

In order to achieve and maintain a **Class 4 or better** CRS classification, a community must both (1) earn enough points for the class and (2) meet the following prerequisites:

- **Meet all Class 6 prerequisites.**
- **Maintain a BCEGS classification of 4/4 or better.**
- **Demonstrate actions to eliminate or minimize future flood losses.**
  To do this, a Class 4 or better community must receive credit for the following CRS activities:

Activity 430 – Higher Regulatory Standards

- The community must enforce higher standards for managing new development in the floodplain.
- Requirements include:

    1. Adoption and enforcement of at least a **1-foot freeboard requirement** (including equipment and mechanical items) for all new construction, substantial improvements, and reconstruction due to substantial damage. This also applies to buildings allowed to be floodproofed, throughout the SFHA (except in areas receiving OSP credit under Activity 420).
    2. In unnumbered A, AO, and V Zones, the community must first determine a base flood elevation (BFE) using techniques credited under Activity 410 (Flood Hazard Mapping).

The community must earn **at least 700 points (after impact adjustment)** under other elements of Activity 430 and under Sections 422.a, f, and g of Activity 420 (Open Space Preservation).**Activity 450 – Stormwater Management**

- The community must receive credit under Section 452.b for its watershed management plan(s) (WMP):

    1. **WMP1:** 90 points (before impact adjustment) for meeting all credit criteria for WMP.
    2. **WMP2:** 30 points (before impact adjustment) for managing runoff from all storms up to and including the 100-year event, ensuring no increase in downstream flood flows.
    3. **Impact Adjustment:** rWMP = 0.5 or greater. Alternatively, at least 50% of the watershed area expected to see future growth must be covered by one or more credited watershed management plans.

Activity 510 – Floodplain Management Planning

- The community must adopt and implement a floodplain management plan that earns **at least 50% of the maximum credit** under Activity 510 (after impact adjustment).
- This 50% threshold must also include at least **50% of the available points** in **planning steps 2, 5, and 8.**

Natural Floodplain Functions

- Obtain a minimum of **100 credit points (after impact adjustment)** from one or a combination of the following elements:

    - **420 – Natural Functions Open Space (NFOS)**
    - **420 – Natural Shoreline Protection (NSP)**
    - **430 – Prohibition of Fill (DL1)**
    - **440 – Additional Map Data (AMD12) – Natural Functions Layer**
    - **450 – Stormwater Management** credits for:

- Managing the volume of stormwater runoff (SMR, DS bonus credit)
- Low Impact Development (LID)
- Watershed Management Plan (WMP), credit items 3, 5, 6, and 7
- Erosion and Sediment Control (ESC)
- Water Quality (WQ)

- **510 – Natural Floodplain Functions Plan (NFP)**

Life Safety Measures

Communities must:

- Obtain some credit under **Activity 610 – Flood Warning and Response.**
- Provide a **description of dam failure threats**, including a map of all areas that would be flooded by the failure of each high-hazard-potential dam, plus the types of buildings and critical facilities that would be affected (per Activity 630, Section 631.b).

St. Lucie County Comparison to CRS Class 4 Prerequisites Table

To simplify the CRS Class 4 Prerequisites, the chart below lists prerequisites and compares the requirement to St. Lucie County's current accomplishments under the CRS program.

Class 4 Prerequisite	Credit	Met
Community agreed to show any draft LiMWAs on the final FIRM, if applic.		X
Enough points to warrant the Class (3,000+)	2,519	
If one or more rep loss properties, actions set in Sections 501-504 are met		X
All flood insurance policies on community owned properties are maintained		X
BCEGS of 4/4 or better	3/3	X
Activity 310 Elevation Certificates		
Maintain all required floodplain-related construction certificates		X
≥ 90% accuracy on construction certificates during annual review		X
Credit for construction certificate management procedures (CCMP)	38	
Activity 430 Higher Regulatory Standards		
1ft Freeboard throughout the SFHA		X
≥ 700 pts. in all other 430 elements, including 422.a., e., and f. in 420 Open Space Preservation (after to imp. adj.)	794	
430—Development limitations (DL),		
430—Freeboard (FRB),	65	
430—Cumulative substantial improvements (CSI),		
430—Lower substantial improvements (LSI),		
430—Protection of critical facilities (PCF),		
430—Enclosure limits (ENL),		
430—Building codes (BC),	78	

Class 4 Prerequisite	Credit	Met
430—Local drainage protection (LDP),	60	
430—Manufactured home parks (MHP),		
430—Coastal A Zones (CAZ),		
430—Special flood-related hazards regulations (SHR),		
430—Other higher standards (OHS),		
430—Regulations administration (RA),	20	
420—Open space preservation (OSP),	507.5	
420—Open space incentives (OSI),	15	
420—Low-density zoning (LZ).	48	
Activity 450 Watershed Master Plan (WMP)		
Adopt a Watershed Management Plan		
90 pts. for meeting all WMP prerequisites		
30 pts. for 452.b.2 (managing all storms up to and including 100-yr. event)		
rWMP = 0.5 or greater (or show that WMP covers watersheds that comprise at least 50% of its growth)		
Activity 510 Floodplain Management Plan (FMP)		
Adopt a Floodplain Management Plan		X
≥ 50% of the maximum credit under Activity 510 after imp. adj. (≥ 191 pts.)	251	X
≥ 50% of available pts. in Planning Step 2 (≥ 60 pts.)	81	X
≥ 50% of available pts. in Planning Step 5 (≥ 26 pts.)	27	X
≥ 50% of available pts. in Planning Step 8 (≥ 30 pts.)	45	X
Natural Floodplain Functions		
At least 100 pts. (after impact adjustment) from one or a combination of the following elements:	128	X
420 – Natural functions open space (NFOS)	84	
420 – Natural shoreline protection (NSP)		
430 – Prohibition of fill (DL1)		
440 – Additional map data (AMD) natural functions layer	14	
450 – Managing the volume of stormwater runoff (SMR – DS)		
450 – Low impact development (LID)		
450 – Watershed management plan (WMP), Credit point items 3, 5, 6 and 7		
450 – Erosion and Sediment Control (ESC)	10	
450 – Water Quality (WQ)	20	
510 – Natural floodplain functions plan (NFP)		
Life Safety Measures		
610 – obtain some credit under this Activity	255	X
620 – meet prerequisite 621.b(2) [map of all areas protected by levees]		N/A
630 – meet prerequisite 631.b(1) [map of all areas flooded by the failure of a high hazard dam and critical facilities that would be flooded.]		

** The community may propose alternative approaches to these prerequisites that are more appropriate for local conditions.

Recommendations for Achieving a CRS Class 4 Prerequisites

Activity 450 Watershed Master Planning

Prepare and adopt a qualifying Watershed Master Plan that meets the CRS qualifications for credit. The plan would need to have an area ratio of .05 or greater and show that the plan covers watersheds that comprise at the 50% of its growth.

Life Safety

High Hazard Dam - Have a description of the dam failure threat, including a map of all areas that would be flooded by the failure of each high-hazard-potential dam that affects the community, and the types of buildings (residential, commercial, etc.) and critical facilities that would be flooded. This is the same as activity credit criteria (2) under Activity 630 (Dams), Section 631.b.

Recommendations for Increasing CRS Score to Achieve 3,000 CRS Points

Activity 330 – Outreach

Stakeholder Delivery (Max 50 points)

- **Opportunity:** Update the Program for Public Information (PPI) to include **stakeholder-endorsed outreach projects.**
- **Benefit:** Strengthens PPI and Outreach Projects scoring while also increasing stakeholder engagement.

Activity 440 – Flood Data Maintenance

Additional Map Data (Max 30 points)
Add the following datasets to the GIS:

- Other natural hazards (**AMD7**)
- Floodplain data in the tax assessment database (**AMD9**)
- Old FIRMs (**AMD10**)
- Building elevation data (**AMD13**)

Activity 450 – Stormwater Management

Watershed Master Plan (Max 120 points)

- **Opportunity:** Develop a **Watershed Master Plan** in coordination with the **Vulnerability Assessment** and **Regional Resilience Plan**.
- **Benefit:** Integrates resilience planning and maximizes watershed-based credit.

Activity 540 – Drainage System Maintenance

- **Channel Debris Removal (Max 200 points):** Develop **SOPs for inspection and maintenance** of natural drainage system components.
- **Problem Site Maintenance (Max 50 points):** Develop SOPs for inspection and **more frequent maintenance** of drainage problem sites.
- **Storage Basin Maintenance (Max 120 points):** Develop SOPs for inspection of **County-owned storage basins**.
- **Capital Improvement Program (Max 70 points):** Credit possible if the County funds drainage projects **and** receives credit for problem site maintenance.
- **Stream Dumping Regulation (Max 30 points):** Local and state regulations may be credited **if channel debris removal is credited**.

Resources:

- *CRS Credit for Drainage System Maintenance Quick Guide*
- *CRS Credit for Drainage System Maintenance*

Activity 610 – Flood Warning and Response

TsunamiReady (Max 30 points)

- Continue to pursue **TsunamiReady status** from the National Weather Service.

Activity 630 – Dams

- **State Dam Safety Program (Max 45 points):** Credit based on state's program.
- **Dam Failure Threat Recognition System (Max 30 points):** Program to notify EM when threat arises.
- **Dam Failure Warning (Max 35 points):** Program to disseminate public warning.
- **Dam Failure Critical Facilities Planning (Max 20 points):** Coordination with **critical facility operators** for dam failure warning/response.

APPENDIX H: PUBLIC WORKSHOP SURVEY RESULTS

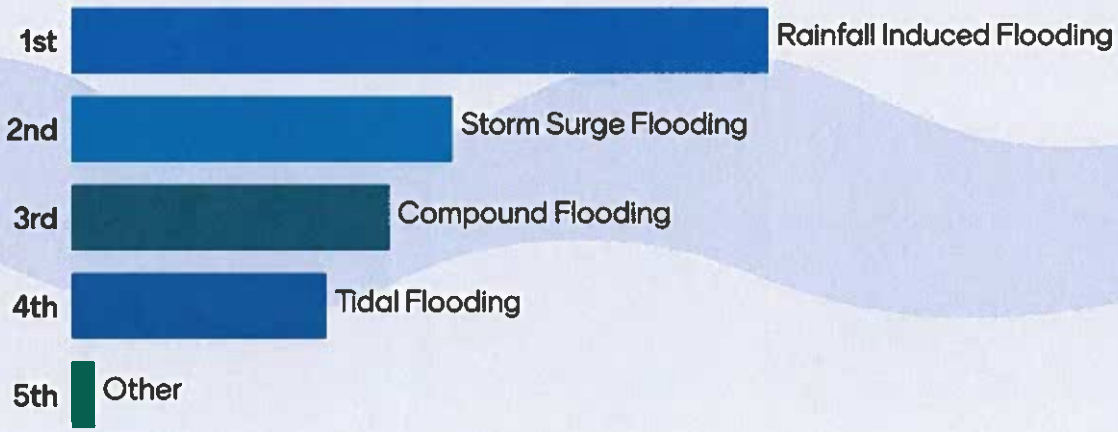
May 2025 Public Workshop

Mentimete

Have you observed flooding in your neighborhood?

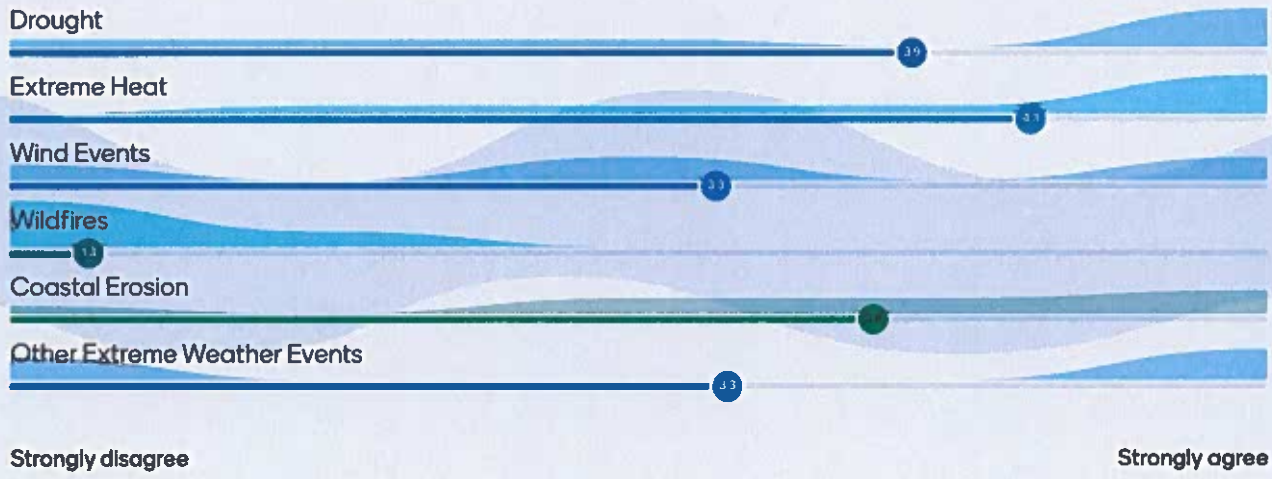
Mentimeter

What type of flooding have you observed throughout St, Lucie County?



Mentimeter

Have you observed other extreme weather events?



Mentimeter

What type of community assets are important to you and your family during or after an emergency event?

Hospital

Hospitals

Hospital, grocery store

Home, hospital, roads, gas stations, grocery stores and hardware stores.

gas station, FPL

Roads, communication platforms, EOC updates, hospitals, gas stations.

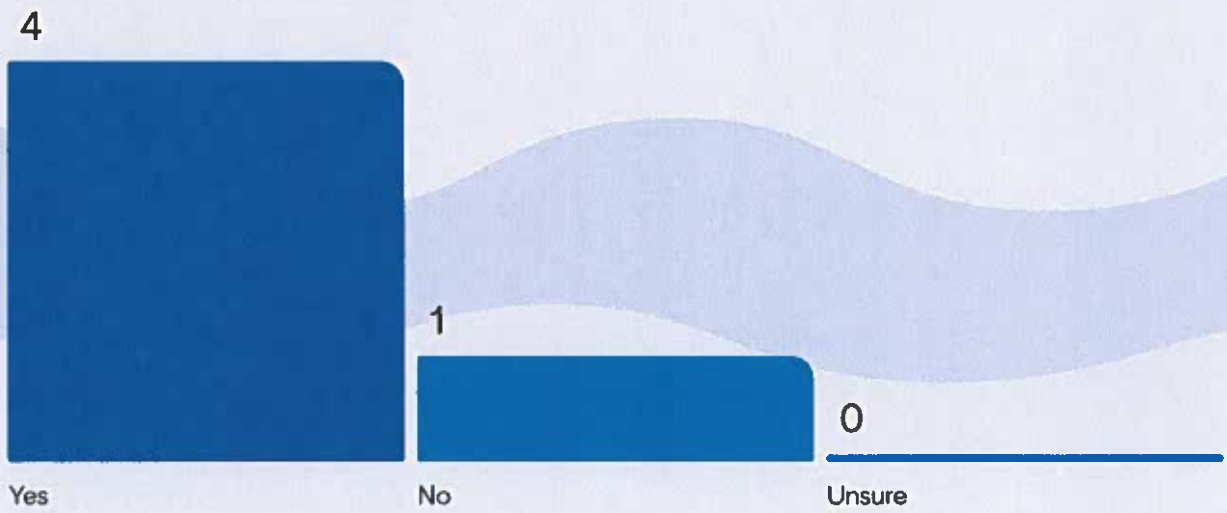
Roads, Hospitals, Emergency Responders, Fuel Stations, Grocery stores

Hospital, Gas station, grocery stores.

May 2025 Public Workshop

Mentimeter

Have you observed flooding in your neighborhood?



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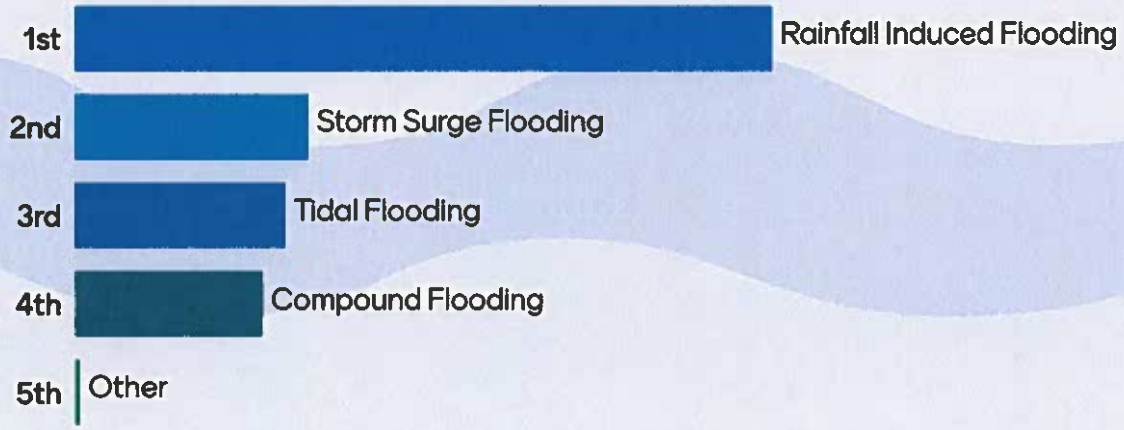

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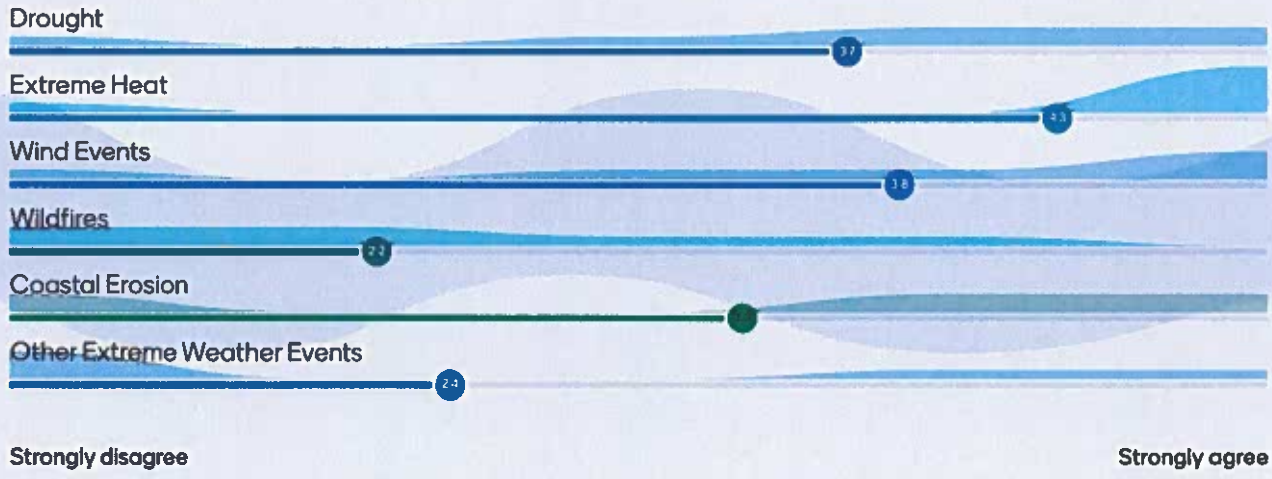


Mentimeter

What type of community assets are important to you and your family during or after an emergency event?

Communication, hospitals, water

Electricity & clean water.

Publix and gas stations

Gas stations

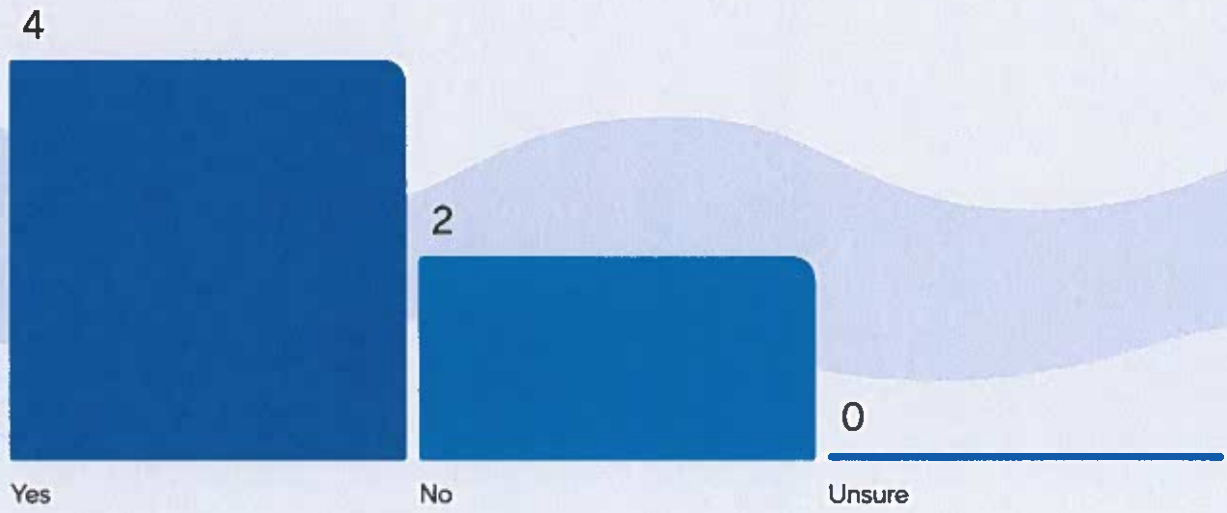
Cell phone towers

Electricity, roadways, shelters, distribution centers, communications, hospitals, gas stations

May 2025 Public Workshop

Mentimeter

Have you observed flooding in your neighborhood?



Mentimete

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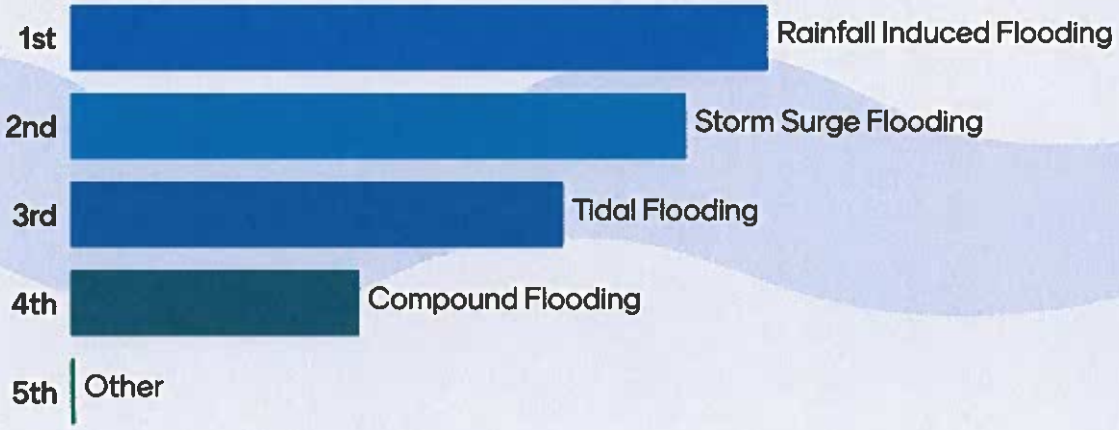
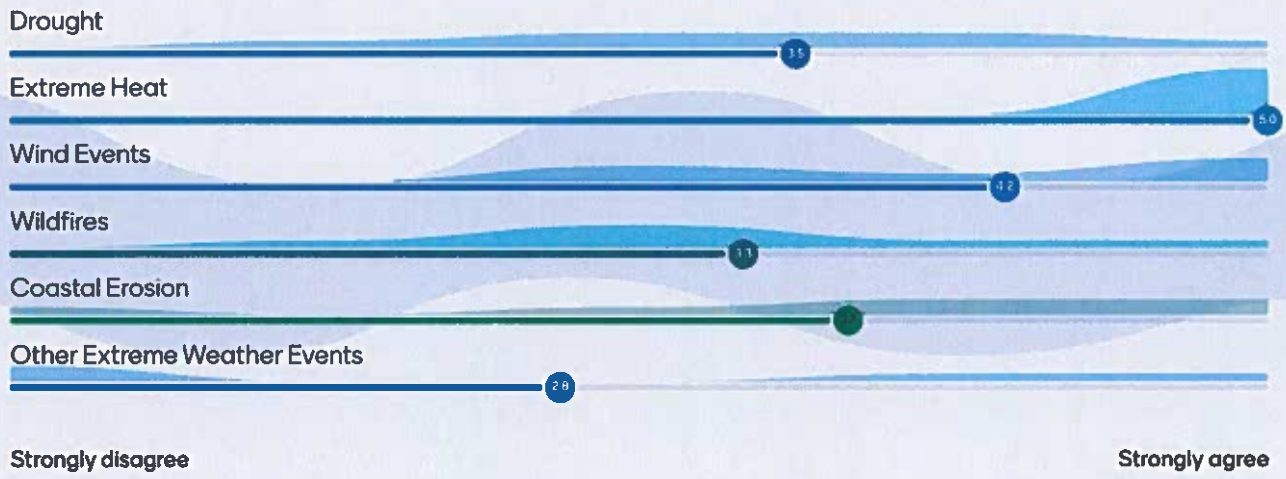


Mentimeter

Have you observed other extreme weather events?



Mentimeter

What type of community assets are important to you and your family during or after an emergency event?

Costco	Gas stations	Parks and library.	Grocery
Bank	Electricity, water, medical, roads,	Urgent care	Schools

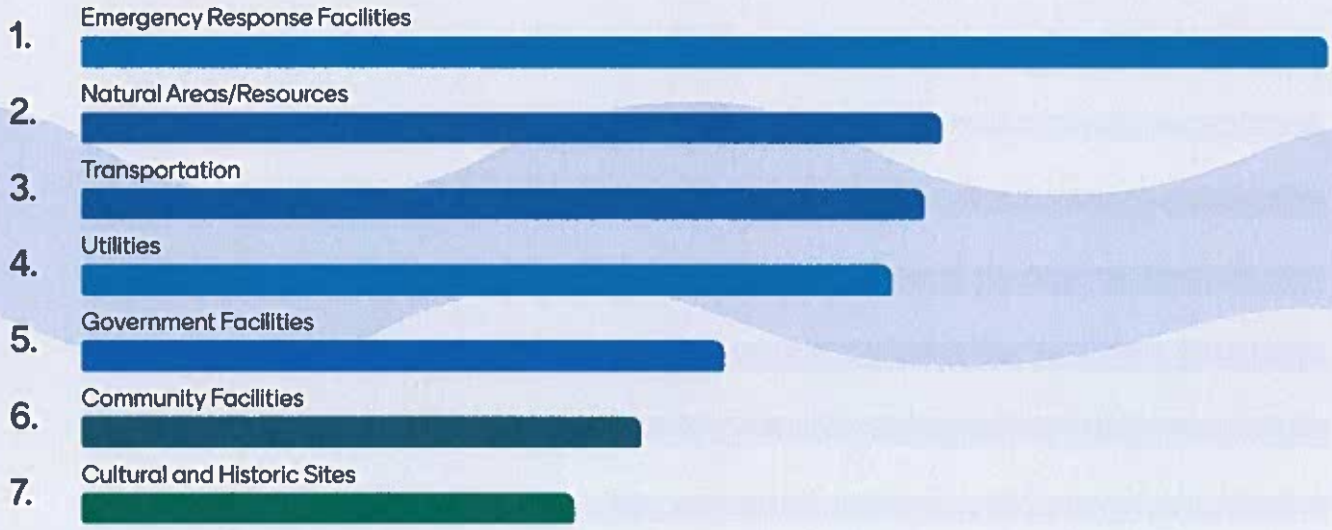
Mentimeter

What type of community assets are important to you and your family during or after an emergency event?

Communications, electricity, utilities, highways and roads, access to food, schools,

Mentimeter

Which types of assets should be prioritized for climate adaptation efforts?



October 2026 Public Workshop

Mentimete

How is your community impacted when critical assets are inaccessible as a result of a climate event?

Life safety	Life safety	Life safety	Hospitals
Lack of resources and access to required facilities	Parents cannot work due to businesses being closed, but even when they are back Oppenheimer, they cannot work until schools are opened	Major health issue	Emergency services are threatened.

Mentimete

How is your community impacted when critical assets are inaccessible as a result of a climate event?

Depressed economy

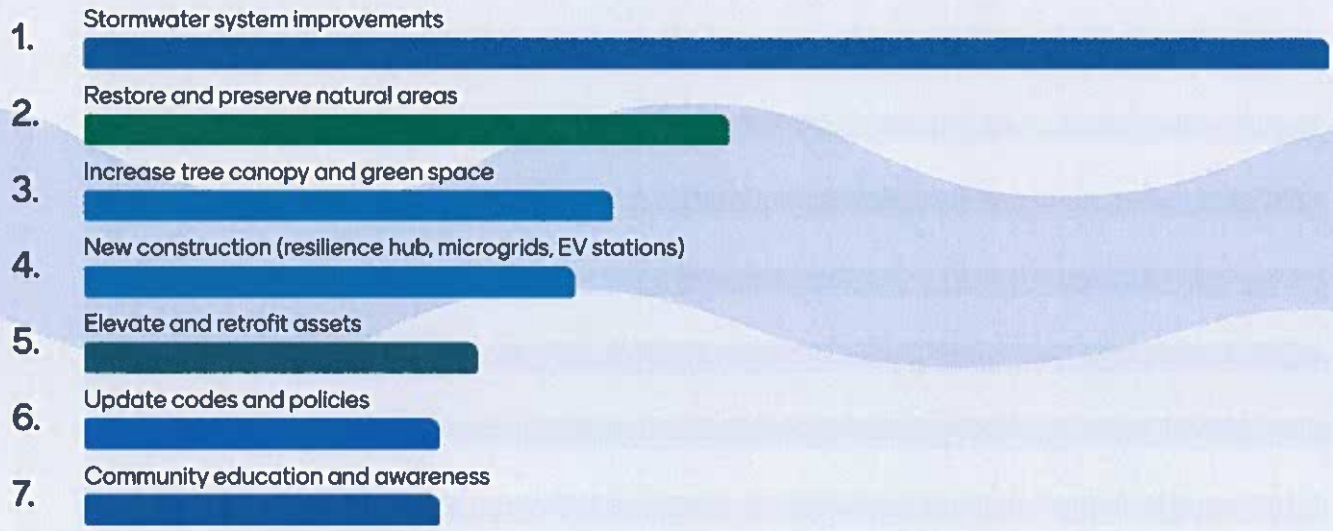
Lack of resources

Concerns for the elderly and special needs populations are at a severe disadvantage. Heat, food etc are major concerns.

Electricity is necessary for medically vulnerable

Mentimeter

Which adaptation efforts would you like to prioritize for your community?



November 2025 Public Workshop

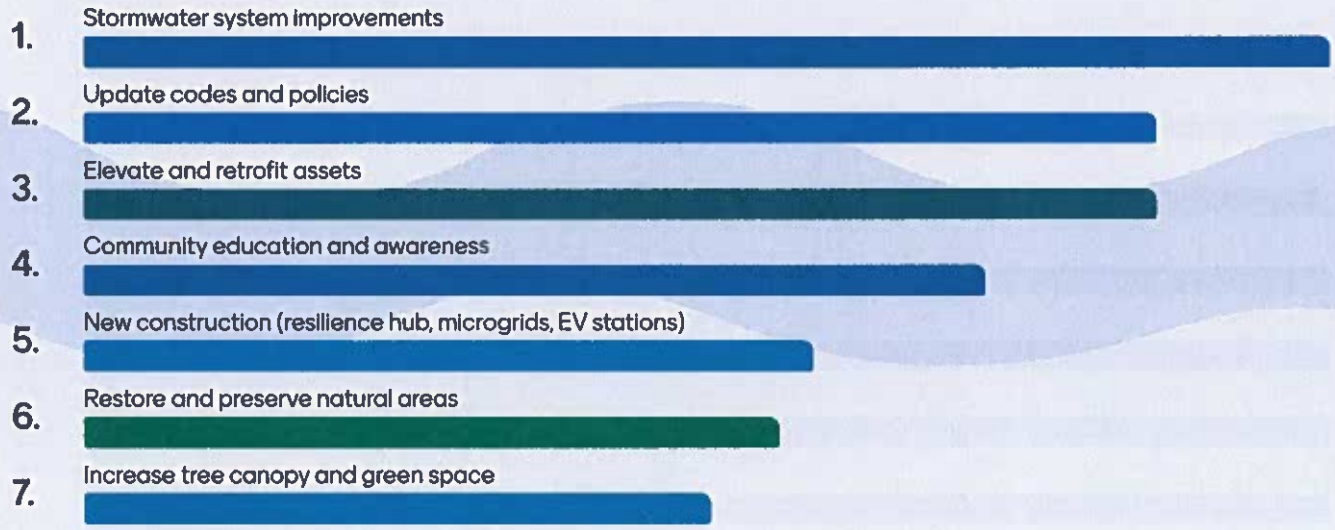
Mentimeter

Which types of assets should be prioritized for climate adaptation efforts?

Mentimeter

How is your community impacted when critical assets are inaccessible as a result of a climate event?

- People suffer
- Housing damage "loss of utilities Financial hardship
- It makes for tougher recovery when the community isn't able to access critical services.
- Debris management
- Emotionally, Health and well being plus Financially
- People move away
- Deeper sense of loss and emotional toll

Mentimete

Which adaptation efforts would you like to prioritize for your community?