

Dear St. Marys Partners,

On behalf of the team working on the Georgia Sea Grant and City of St. Marys Flood Resiliency project, thank you for providing valuable input in identifying how St. Marys may be vulnerable to flooding, prioritizing where further analysis may be needed and exploring what opportunities may exist to make this historic community more resilient. Attached is an initial draft summarizing your feedback and our efforts thus far. We welcome your comments and suggestions before releasing this summary to the public. Please provide feedback by **Friday, September 5, 2014**. If you have any questions, please do not hesitate to contact me. My cell phone number is 305-542-8975.

Thank you again!

Jill

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Flood Vulnerability in St. Marys

Executive Summary #1

In 2013, St. Marys was selected as one of five locations in the country to undergo community planning through the National Sea Grant's Coastal Community Climate Adaptation Initiative program. The City of St. Marys, Georgia Sea Grant, North Carolina Sea Grant and the University of Georgia's Carl Vinson Institute of Government are partnering to develop a local flood resiliency and adaptation plan, addressing current flood vulnerabilities and the long-term risks associated with sea level rise.

The plan will pair local knowledge with academic expertise to help make St. Marys safer and more prepared for flood events. Based on the information gathered, researchers will link recommendations with the Federal Emergency Management Agency's Community Rating System (CRS) to target adaptation options that could reduce flood insurance rates for local residents.

A "sister" planning project in Hyde County, North Carolina, is occurring at the same time, so that these two communities can learn from each other and share information. The findings and results from both locations will be shared with citizens and government officials in Georgia, North Carolina and nationwide, serving as a planning model for other coastal cities and counties.

This document provides an initial summary of input gathered from the public through interviews with local leaders and facilitated brainstorming sessions with key stakeholders to assess flood vulnerability in St. Marys. Further comments and suggestions to this document are encouraged, as this process is intended to foster a spirit of active dialogue with participants and the wider community.

Public Input

In the context of local planning, **resilience** means the ability of a community to absorb or bounce back from a natural or man-made event with minimal impact and damage. This planning effort will investigate how to make St. Marys more resilient to the climate-related hazards of flooding, storm surge and sea level rise.

To better understand the opportunities and challenges of resilience planning in St. Marys, the project team first gathered feedback and on-the-ground insights from constituents, elected officials and community leaders. To begin, a series of 20 in-depth interviews were conducted with government officials and other knowledgeable members of the St. Marys community from February–March 2014. These interviews aimed to capture common local concerns and observations associated with flooding and other climate hazards.

Following this interview process, the project team hosted a public Town Hall meeting on March 19, 2014, to collect additional input on local vulnerabilities.

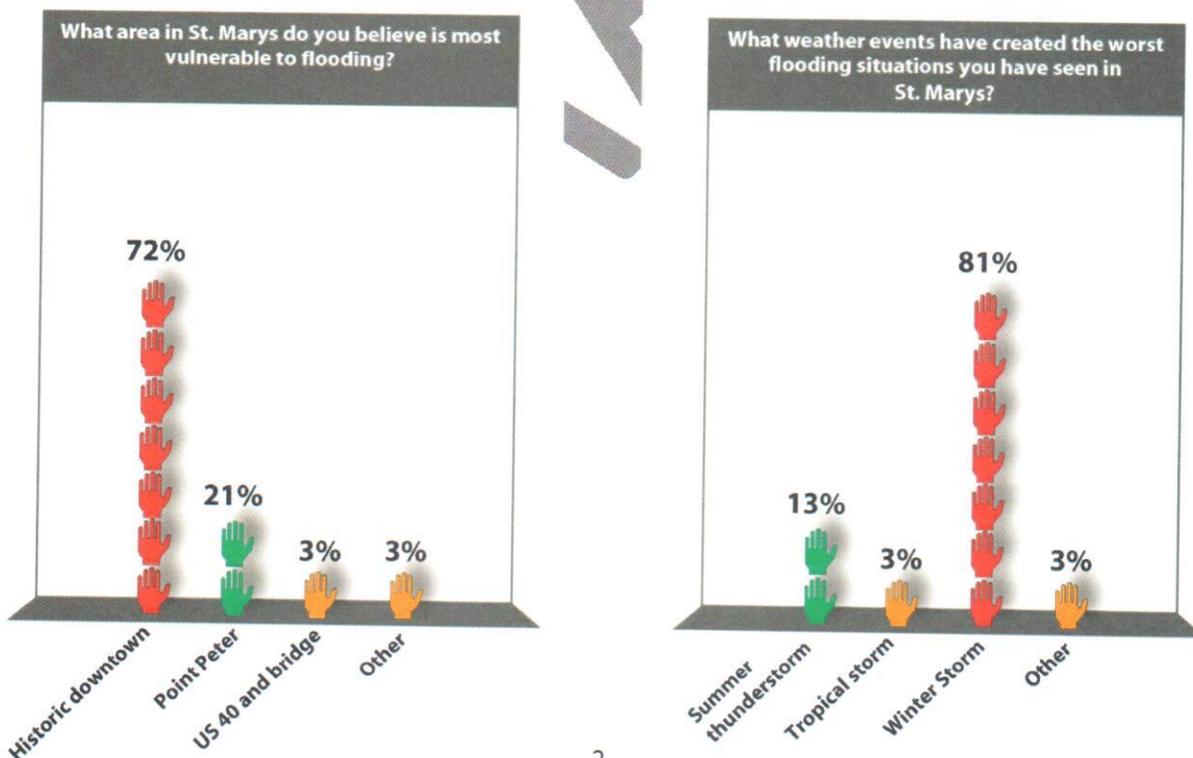
Finally, formal vulnerability brainstorming sessions were conducted over the course of two days with key members of the community. Held on March 20-21, 2014, these Vulnerability, Consequences and Adaptation Planning Scenarios (VCAPS) meetings examined how flooding translates into social, economic, health and other consequences in St. Marys. The group also identified potential strategies for preventing or responding to these impacts.

Sea Grant Town Hall Meeting

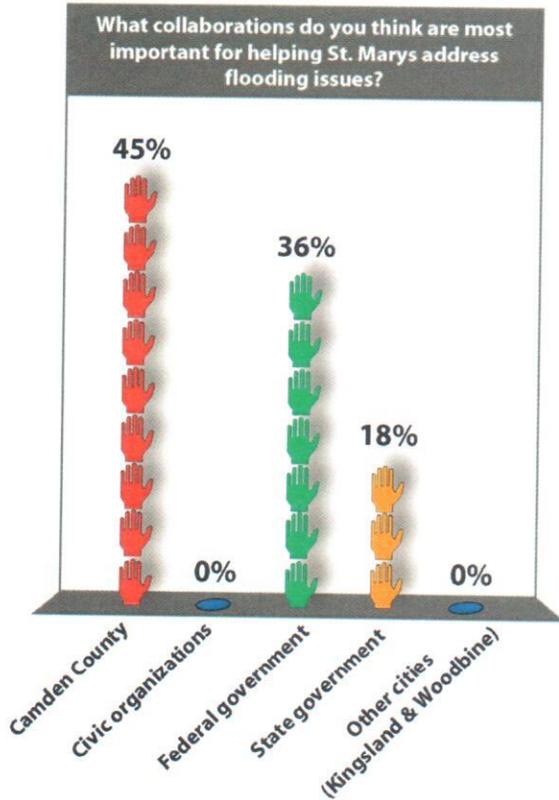
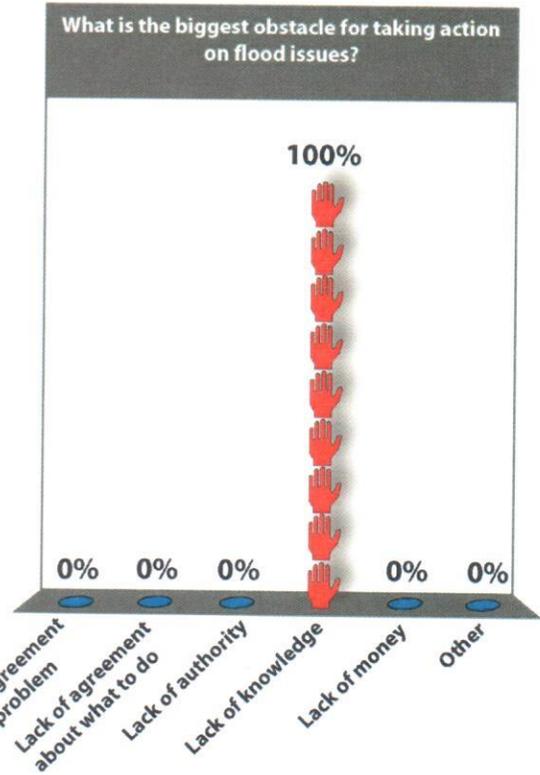
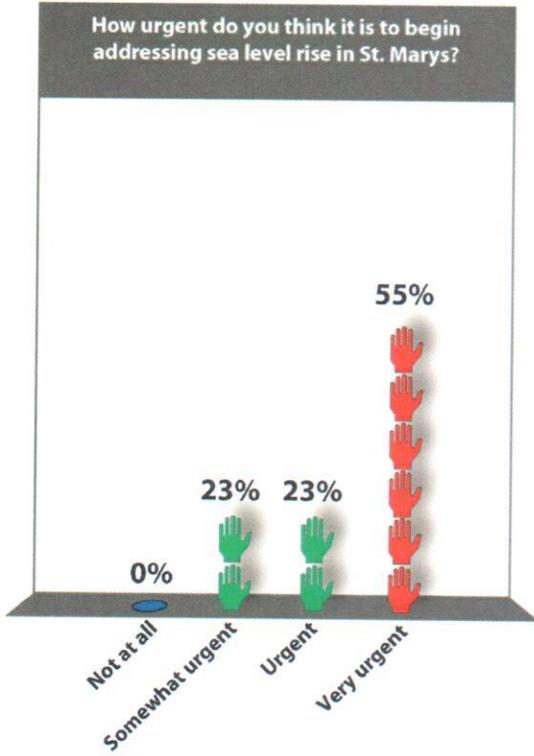
In March 2014, St. Marys residents and municipal leaders attended a Sea Grant Town Hall Meeting to learn about the development of a flood resiliency plan for St. Marys and share feedback on issues related to flooding, sea level rise and storm surge.

The public meeting included summaries of the plan by researchers from Georgia Sea Grant, UGA's Carl Vinson Institute of Government, UGA Marine Extension and North Carolina Sea Grant.

Attendees had the opportunity to ask questions and offer comments. They also provided input into the plan's development by providing feedback through clicker voting keypads. Below are the results of key questions included in the audience polling.



(Cont.) Results from Sea Grant Town Hall Meeting audience polls



Facilitated Discussions on Flood Vulnerability

The following summary depicts the methodology and content of these final facilitated discussions, which were attended by St. Marys decision makers and identified key stakeholders.

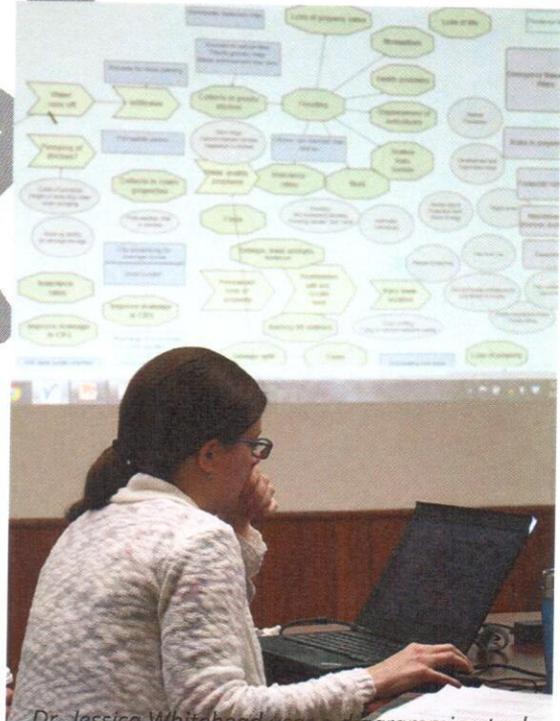
The brainstorming sessions began with a series of short presentations, educating participants on the coastal processes that cause flooding and ways that local planning can economically benefit residents. Dr. Charles Hopkinson, Director of Georgia Sea Grant, gave a brief presentation on sea level rise and coastal resiliency. Kelly Spratt, Georgia Sea Grant's Local Government Outreach Coordinator, gave a general overview of recent reforms to the National Flood Insurance Program and the benefits of participating in the Community Rating System (CRS).

Dr. Jessica Whitehead of North Carolina Sea Grant then led two group discussions investigating how these hazards may affect the community and potential strategies to reduce negative impacts. Dr. Jason Evans, from the UGA Carl Vinson Institute of Government, captured the discussion in a digital diagram to document concerns and possible solutions (Figures 1 and 2).

Participants decided to categorize flooding occurrences as either episodic (heavy rainstorms, upstream flooding, storm surges and category 1 hurricanes) or long-term events (rise in the water table and sea level rise), evaluating their effects on three important issues:

- 1) stormwater infrastructure;
- 2) wastewater treatment infrastructure;
- 3) managing risks to private properties.

Additionally, the group prioritized the issue of emergency management planning; however, because the City of St. Marys and Camden County are currently addressing this topic through ongoing Hazard Mitigation Plan updates, a decision was made to focus the discussion on flood planning in relation to stormwater, wastewater and private property concerns. These ideas, generated by St. Marys participants, are summarized in the following sections.



Dr. Jessica Whitehead uses a diagramming tool to capture discussion on flood vulnerability.

Stormwater and Wastewater Treatment Planning *(Figure 1)*

Vulnerability discussions indicated that episodic and long-term flooding can potentially impact both stormwater and wastewater management. Although stormwater and wastewater are distinct management concerns, it was decided that both issues must be considered simultaneously in St. Marys. Failures in the drainage and retention of stormwater during flood events could lead to excess water in wastewater systems, thus overloading treatment plants and potentially causing wastewater spills.

Participants identified two major outcomes of episodic flooding in St. Marys. The first outcome relates to **water quality**. Water flowing over impervious surfaces and developed areas can cause run-off. This run-off increases the volume and velocity of water flowing over land surfaces and roads, which leads to reduced water quality.

Water can also collect in stormwater retention ponds. When capacity is reached, overflow may occur. This overflow could result in flooding, which can cause property damage. The resulting flow into marshes carries sediments and contaminants that reduce water quality. Water may also sit in ponds for days, and this sitting water could create health problems.

Participants additionally expressed concerns about possible wastewater overflows from treatment plants during flood events that could impact water quality and become a health hazard.

The second major outcome from episodic flooding discussed was **power outages**, which could affect both stormwater treatment plants and lift stations. The occurrence of flooding at non-functional plants and stations could lead to sewage spills and water contamination, resulting in health hazards and heavy fines for the City.

The group noted several public and private sector actions that could reduce the negative consequences of flooding on stormwater and wastewater management in St. Marys. The City's drainage capacity could be increased by cleaning ditches more frequently, planting more vegetation and using permeable pavement. Other suggestions included educating the public on the effects of littering and stormwater retention laws, as well as improving litter law enforcement. Comments were made concerning the need to educate homeowners who commonly uncover sewer drains as a way of reducing flooding on their properties.

To reduce the negative effects of power outages, participants discussed flood-proofing lift stations and strategically placing generators for back up. They also discussed raising lift stations to reduce flood risks and partnering with the Naval Base to interconnect wastewater systems.

Managing Risks to Properties *(Figure 2)*

In the second session, the group discussed the impacts of episodic flooding and long-term flood conditions on properties. Participants identified that surface water runoff is currently the most common cause of flooding, and, consequentially, water damage to buildings. Additionally, the group mentioned that wind damage could leave buildings vulnerable to rainfall during storm events, which could lead to properties experiencing water damage.

Private property damage generates expenses to home and business owners. Extensive damage could cause property loss and lead to derelict structures. Participants expressed significant concern over the historic character of the City and the protection of historic properties. Damage to such structures could result in the abandonment of property due to the extensive financial burden of restoration, as well as the potential for property loss. As a historic City, the loss of historic properties could lead to loss of character, and, consequentially, loss of tourism. In return, abandonment and loss of property could reduce the quality of life and the morale of the community and also render the City unattractive to potential future investors.

When focusing on the long-term flood risks and the impacts to properties, participants discussed how erosion affects properties along waterways. Erosion currently occurs as a result of water movement caused mainly by waves during storms and by boats. However, as sea levels rise, there is concern that erosion will increase, leading to a reduction in property size and jeopardizing built structures. Additionally, rising water and inundation could impact the City's waterfront park, and saltwater intrusion could kill yards.

The group noted strategies that could be used to reduce the risks of property damage, such as stipulating height regulations and educating property owners on how to protect buildings and properties. Discussions also pointed to the possibility of raising buildings and educating the population on the benefits of such measures in the reduction of flood insurance premiums. However, there were concerns that property owners might become overwhelmed and that additional regulations and costs could potentially inhibit people from moving to St. Marys and/or investing in the City.

From a historic standpoint, the group discussed constraints currently in place for adapting historic buildings and suggested the revision of codes pertaining to such structures, which would allow property owners to flood-proof their historic properties. Alternatively, the group discussed taking pictures of existing historic landmarks, as a way of registering their existence and preserving the memory of properties that could be lost in future flood events. When discussing the waterfront park, participants suggested looking at solutions used by the National Parks Service for similar properties as a way of deciding upon future actions.

Next Steps

The next phase of the project will be the creation of cost-benefit models to further explore the suggestions participants proposed to help St Marys become more flood resilient.

In May 2014, a proposal was submitted to the St. Marys Planning and Building Department to ensure that the priorities and scope of these models would address the City's needs. The proposed models to be developed would explore the effects of flooding on three issues: stormwater planning, wastewater treatment planning and managing risks to properties:

1. **Stormwater treatment model** – examine the vulnerability of current infrastructure and evaluate the costs and benefits of possible interventions.
2. **Wastewater treatment model** – identify areas vulnerable to spillage and determine what types of plans need to be put in place to effectively avoid water contamination during a flood event.
3. **Property vulnerability model** – determine what areas are prone to frequent property damage and the costs associated with possible property losses. This model could possibly identify areas where future development could occur and thus aid in the creation of future land use plans that consider stormwater management as a guiding factor for investment.

The resulting data will inform the City about the various costs of adaptation options and the corresponding financial benefit attained by avoiding flood damage to properties or infrastructure. This information can be used by the City to make decisions and prepare for future flood events.

In addition to providing concrete information on possible adaptation actions, the project aims to promote St. Marys' participation in the Federal Emergency Management Agency's Community Rating System (CRS) program, leading to discounts in flood insurance premiums. In this next phase of the project, the research team will investigate best management practices and policy frameworks to bolster the City's application to join the CRS program.

Additionally, as part of this project's final report, a toolkit will be developed to describe possible approaches for flood-proofing historic properties. This section will aim to inform the City on existing design and retrofitting approaches that could be presented to the St. Marys Historic Preservation Commission as alternatives to protect historic properties from future flood events.

Prior to submitting the final report, the research team will hold a second Town Hall meeting to present its findings and discuss possible cost-effective approaches that the City could take to become more flood resilient. Engaging with City Council members, planning staff and the community will enable the team to explore whether the results obtained respond to the needs of St. Marys. The final report will discuss findings that best address the flooding issues considered important by the City of St. Marys.

Appendix

Definitions

Hazard: Natural or man-made event with potential to damage communities, ecosystems, buildings and infrastructure.

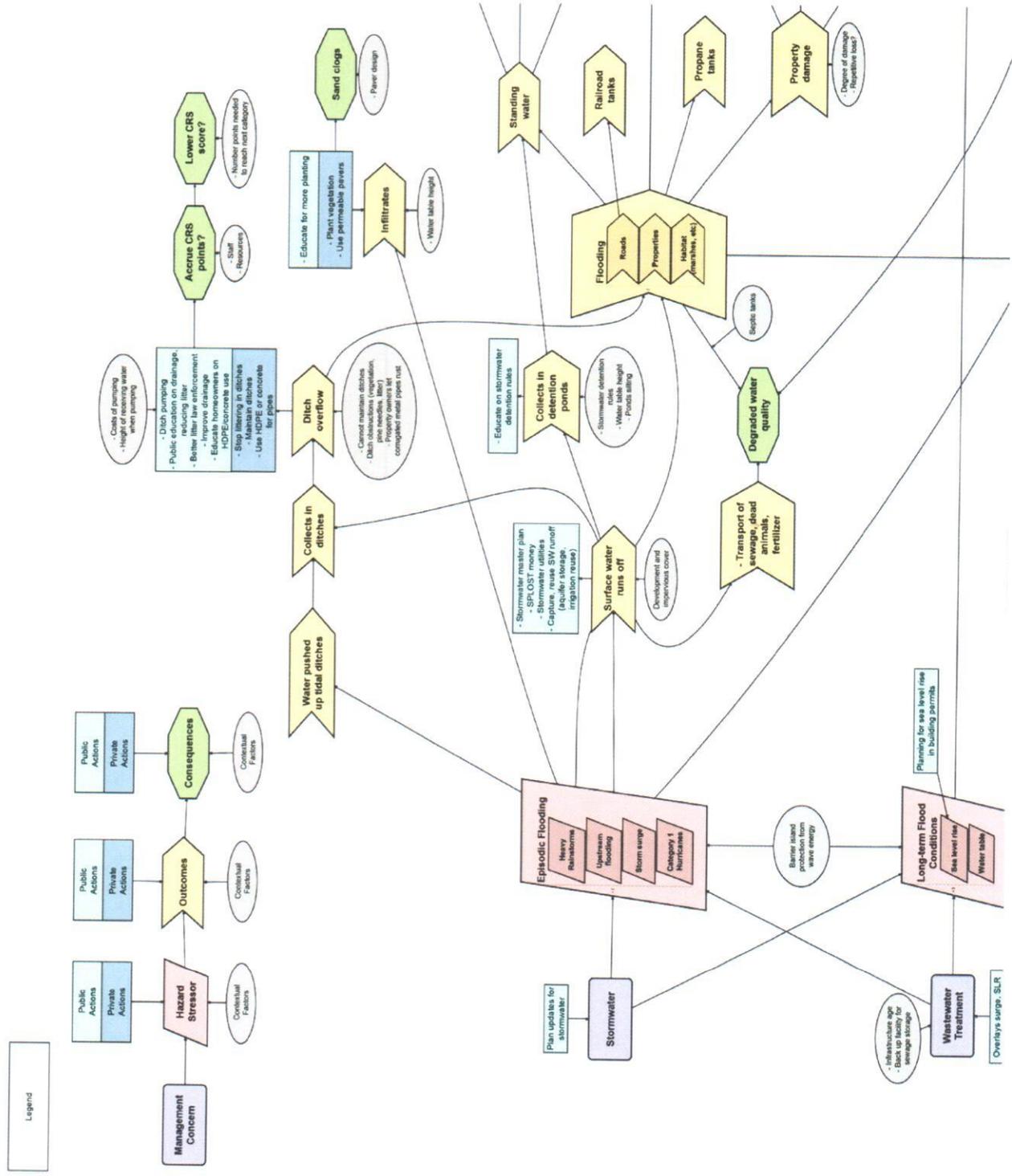
Vulnerability: Resources at risk from the damaging effects of a natural or man-made disaster.

Resilience: Ability to bounce back from or cope with a hazard event with minimum impact and damage.

Adaptation: Actions taken to help communities avoid, manage or reduce consequences of actual or expected hazards



Figure 1: Sto



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