# 1 RESILIENT NEW JERSEY

## RARITAN RIVER & BAY COMMUNITIES

## PROJECT OVERVIEW

## What Is Resilient NJ?

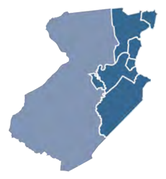
The **Resilient New Jersey Raritan River and Bay Communities program** aims to develop a roadmap to address flooding in the municipalities of Carteret, Old Bridge, Perth Amboy, South Amboy, Sayreville, South River, and Woodbridge. This joint effort between the municipalities, the New Jersey Department of Environmental Protection (NJDEP), YMCA, and Middlesex County provides an opportunity for the area to address flood-related hazards at a regional scale, to become more resilient, and to improve the quality of life for its more than 300,000 residents. In addition to the Raritan River and Bay Communities program, communities are partnering with NJDEP to lead similar projects in three other areas: Northeastern NJ, Long Beach Island, and Atlantic County Coastal Region.

## PROCESS & OUTCOMES

This effort will develop a regional resilience action plan to address flood-related hazards. This plan will be completed in Spring 2022. The diagram below summarizes how the regional resilience action plan will be developed.


## GOALS

The project is focused on developing a **regional resilience action plan** to address flood-related hazards. Input from the people who live, work, and play in the region will be critical to the success of the program. The project goals have been developed based on what we have heard from people so far. **We welcome your continued input to refine these goals !**



**Build on ongoing resilience planning by addressing gaps and opportunities within the region.**

**Ensure representation and participation from socially vulnerable populations to address their needs and risks.**

**Develop innovative and implementable solutions that increase resilience in both the short- and long-term.**

**Enhance the value and integrity of ecological, recreational, and economic resources in the region.**

**Ensure collaboration among a wide variety of stakeholders.**

## SHARED RISK, SHARED RESILIENCE

The Resilient NJ Raritan River and Bay Communities lie at the confluence of the Raritan River and the Arthur Kill. The diverse residents of the region have experienced flooding in the past caused by heavy precipitation or coastal storms. The region lies at the intersection of three major watersheds and watershed management areas: the **Arthur Kill**; the **Monmouth**; and the **Lower Raritan, South River, and Lawrence**.


## HOW TO GET INVOLVED

**ATTEND PUBLIC MEETINGS**
Visit **resilientnewjersey.com** & sign up for our emails.

**DOWNLOAD THE IRYS APP**
available in Android & iOS
IRYS

**FOLLOW US**
on social media
**@resilientrrbc**

**SCAN ME**
**SHARE YOUR THOUGHTS THROUGH OUR SURVEY**

**LEAVE A VOICEMAIL**
on our project hotline at
**732-661-3808**

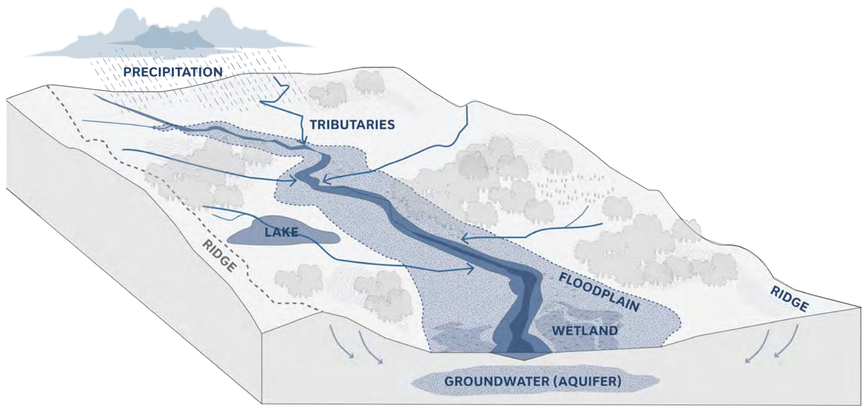
# 2 RESILIENT NEW JERSEY

## RARITAN RIVER & BAY COMMUNITIES

## FOCUS AREAS

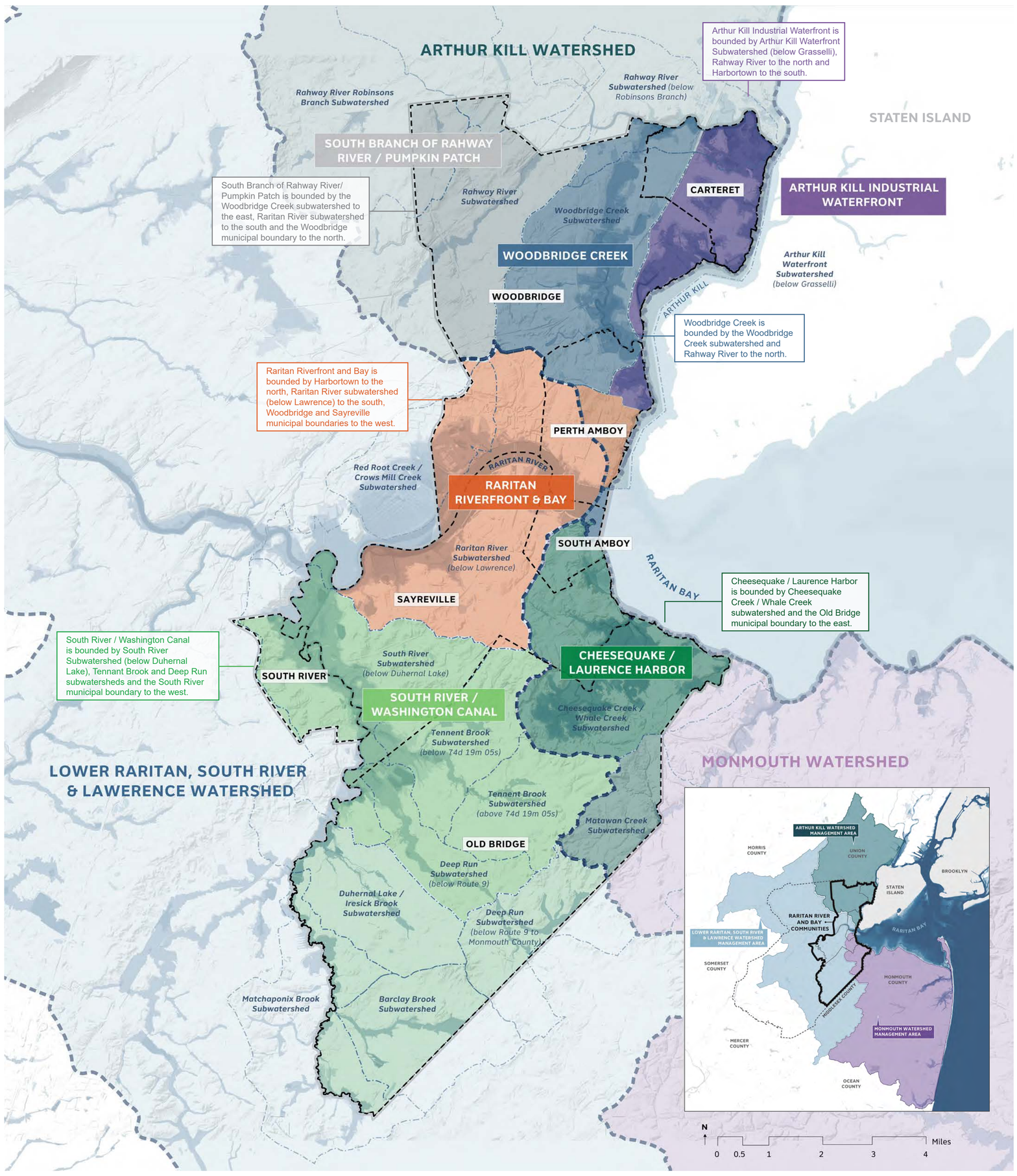
## What is a Watershed?

**A watershed can most easily be thought of as an area within which, wherever water falls, it will all eventually flow to the same place. Watersheds can cross municipal and state boundaries, which can present a challenge when planning for flooding and risk reduction. Water doesn't obey our municipal boundaries. The actions in one municipality can affect flood risk in another.**




# FOCUS AREAS

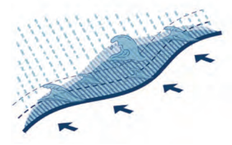
**FOCUS AREAS AND SUB-WATERSHEDS IN RARITAN RIVER AND BAY COMMUNITIES.** A watershed-based approach to planning will lead to more effective outcomes in reducing flood risk. The Raritan River and Bay Communities study area is divided into six focus areas based on local sub-watersheds and land uses. Though feedback for this project will primarily be collected at the municipal level, the project team will use the focus areas to develop resilience strategies that adress flood risks across municipal boundaries.




## FLOOD RISK TYPES

*New Jersey Coast - Aerial views of damage caused by Hurricane Sandy to the New Jersey coast - US Air Force photo archive*

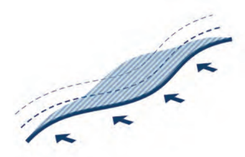
### COASTAL STORM FLOODING



Coastal storms create flooding due to surge—a rise in water levels due to storm pressure and waves—which can also lead to coastal erosion.

*Ocean City, NJ - Sunny day flooding in Ocean City during evening high tide on June 12, 2018. Photo courtesy of Suzanne Leary Hornick.*

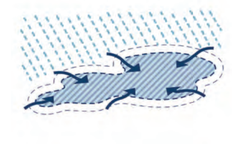
### TIDAL FLOODING



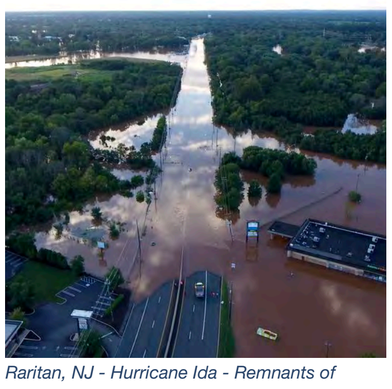
Low-lying coastal areas flood when water levels rise above ground elevation due to high tides.

*An aerial view of flooded streets are seen in Helmetta of New Jersey, United States on August 22, 2021 as Tropical Storm Henri hit east coast. (Photo by Tayfun Coskun/Anadolu Agency)*

### RAINFALL FLOODING

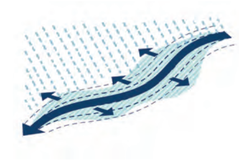


Lower lying areas, both along waterways and inland, can flood due to heavy rain events overwhelming drainage infrastructure.

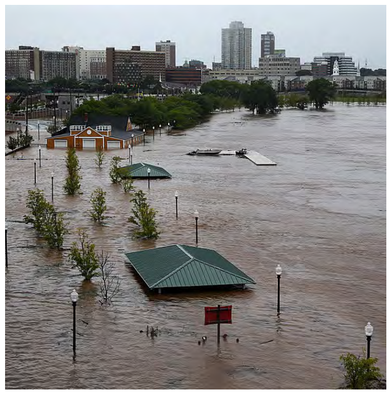


*Raritan, NJ - Hurricane Ida - Remnants of Hurricane Ida created widespread flooding along areas of Route 206 and surrounding roads in Somerville and Raritan. Source: Iola Register.*

### RIVERINE FLOODING



Occurs when rivers, streams, lakes, reservoirs, or canals overflow due to extreme rainfall or rapid snowmelt.



*New Brunswick, NJ - Hurricane Irene led to joint flooding along Raritan River. Source: AP*

### JOINT FLOODING

Combination of riverine and coastal flooding along tidally influenced rivers.

## WHAT WE WANT TO HEAR FROM YOU

**What are the critical places and spaces in your community?**

**How have you been impacted by flooding?**

**What factors are most important when making decisions to reduce flood risk?**

**What do you want to see in your community?**

# 3 RESILIENT NEW JERSEY

## CRITICAL ASSETS & FLOOD RISK

## SAYREVILLE

## CRITICAL ASSETS & FLOOD RISK

Risk is the potential for a hazard to have negative impacts. For flooding, this means the potential for water to damage and disrupt our communities. Flood risk is the interaction between flood hazards, where people live, and the systems and structures that support our way of life. Risk increases when the hazard itself increases, such as by climate change, or when more people and their belongings are located in harm's way. **The map includes FEMA flood extents and some assets that we've already heard about as being important community places, like public housing, hospitals, child care centers, parks, schools, and more.**

Some areas of major stormwater ponding, particularly in wetlands.

Heavy rainfall within the watershed can bring substantial flows to the river and its tributaries, potentially causing additional flooding

Coastal flooding primary pathway from Raritan Bay up the Raritan River, and up South River.

Flooding generally tidal from Raritan Bay

The shoreline is exposed to coastal flooding from Raritan Bay.

SAYREVILLE

SOUTH AMBOY

SOUTH RIVER

RARITAN BAY

Perth Amboy

South Amboy

Riverside Dr

Smith St

Convery Blvd

Brunswick Blvd

State St

High St

Main St Ext

Raritan St

Main St

Ken Buchanan Riverfront Park

Washington Canal

MacArthur Ave

Washington Rd

John F. Kennedy Park

N Ernston Rd

Washington Rd

Bordentown Ave

Raritan Bay Waterfront Park

ROUTE 9

Walter D Faith Memorial Field

Bordentown Ave

N Ernston Rd

Ernston Rd

South River

Jernee Mill Rd

Sayreville Sports Complex

Bordentown Ave

Cheesequake State Park

GARDEN STATE PKWY

Mannino Park

### LEGEND - CRITICAL ASSETS

New Jersey Department of Environmental Protection (NJDEP) defines a critical asset as "an asset whose failure would have significant consequences, either in the ability of the system to provide service to its customers, comply with regulatory requirements, or adversely affect the environment."

**INFRASTRUCTURE**

*Stormwater & Wastewater Infrastructure*
- Wastewater Treatment
- Stormwater Discharge
- Combined Sewer Outfall

*Energy Infrastructure*
- Substations
- Power Generation
- Natural Gas Pipelines
- Powerlines

*Communications*
- Cell Towers

*Other*
- Heavy Industry
- Warehousing

**TRANSPORTATION**
- Bike Lanes
- Light Rail/Commuter Rail
- Primary & Secondary Roads
- Ferry Terminal
- Rail Stations
- Bridges
- Gas Stations

**ECOSYSTEM & ENVIRONMENTAL HEALTH**
- Parks (Municipal and State Parks)
- Cemetery

**EMERGENCY RESPONSE**
- EMS
- Fire Stations
- Police Stations
- Hurricane Evacuation Route

**PUBLIC HEALTH, WELL-BEING & QUALITY OF LIFE**
- Hospitals/Medical Centers
- Municipal Building
- Public Housing
- Senior Housing
- Shelters
- Nursing Homes
- Child Care Centers
- Places of Worship
- Schools & Colleges
- Library

**FEMA FLOOD EXTENTS**
- 1% annual chance flood zones
- 0.2 % annual chance flood zones
- Subwatersheds
- Municipal Boundaries

0 0.25 0.5 1 1.5 2 Miles N

## WHAT WE WANT TO HEAR FROM YOU

**What other types of critical places and spaces are in your community?**

**Why are these places/ spaces important to you and your community?**

**Have any of these places flooded in the past?**

**Share Your Thoughts With Use Through Our Survey**

SCAN ME

# 4 RESILIENT NEW JERSEY

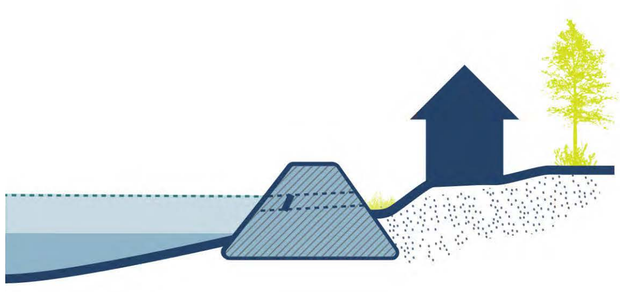
## RESILIENCE STRATEGIES

## SAYREVILLE

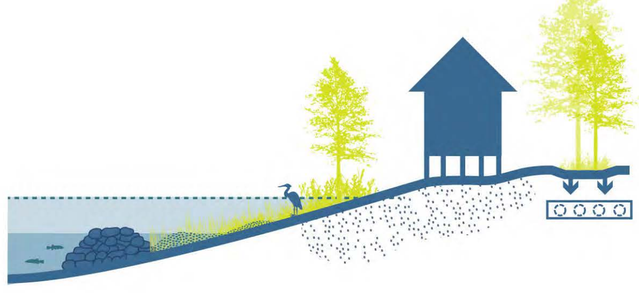
## RESILIENCE STRATEGIES

**Resilience is the ability of communities and systems to withstand and recover from extreme damaging conditions, including weather and other shocks or stresses. Building resilience will require a range of actions by individuals, communities, and governments. Three general approaches to creating more resilient communities are shown below. There are a variety of different strategies within each of these categories; physical interventions (e.g. flood defense systems or green infrastructure), changes to policy or regulations (e.g. building codes or zoning), or new operations or emergency response strategies (e.g. early warning systems or storm drain maintenance).* Ultimately, a mix of these approaches will be needed, in addition to governance tools, outreach, and capacity building.**

**PROTECT ASSETS FROM WATER** ← **LIVE WITH THE WATER** → **MOVE ASSETS AWAY FROM WATER**



**Reduce flood hazards through water management infrastructure or policy and building practices that work to either keep water out or reduce the force of flood waters.**



**Reduce the impacts of flooding by improving the ability of communities and the built environment to withstand flooding. This may include education and changes in community and personal behavior, policy, or through adapting buildings, infrastructure, or other assets.**

**Reduce exposure to flood risk by managing growth or investment in areas exposed to flood hazards and moving highly at-risk communities or assets.**

**For a comprehensive list of potential resilience strategies, please see the "Resilience Toolkit" booklet.*

## APPLYING RESILIENCE STRATEGIES

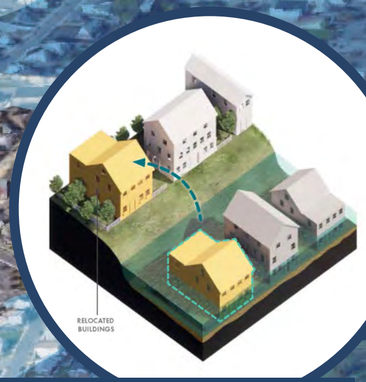
### Example: Possible Strategies for Residential and Mixed-Use Neighborhoods in Riverine Floodplains

Heavy rainfall within the watershed can bring substantial flows to rivers and its tributaries, potentially causing additional flooding in these neighborhoods when combined with tidal flooding through South River. A range of tools such as redundant systems and evacuation routes, relocation of assets in the floodplain, or nature-based strategies such as stream restoration or wetland restoration can help reduce flood risk and damage.

WASHINGTON ROAD

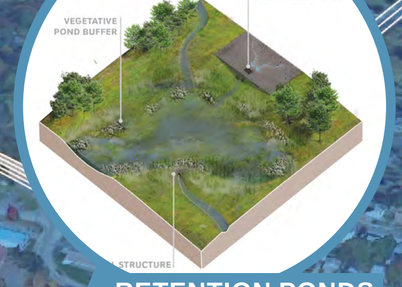
SOUTH RIVER

JERNEE MILL ROAD




**RELOCATE STRUCTURES**

Relocating structures, homes, or businesses may be the best solution for properties that have experienced increased and/or repeat flooding.




**RETENTION PONDS**

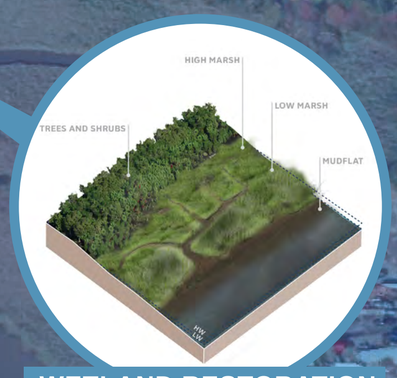
Retention ponds are artificial basins used to manage stormwater runoff and promote infiltration. Capturing runoff, they can reduce downstream or localized flooding and enable groundwater recharge.


**STREAM RESTORATION**

Natural streams and floodplains provide stability to manage floodwaters safely, minimizing impacts to infrastructure.

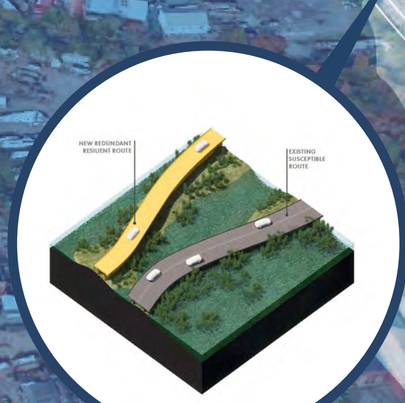
**REDUNDANT SYSTEMS**

Creating redundant systems, such as decentralized and redundant energy generators or micro-grids, can ensure the functioning and recovery of critical systems in case of failure in the wider network.




**WETLAND RESTORATION**

Wetland restoration involves returning the natural functions of former or degraded wetlands that have been filled, drained, or impounded to promote stable water exchanges into and out of the wetland.




**REDUNDANT EMERGENCY ROUTES**

By creating redundant routes, residents and emergency services can have mobility options when other, more susceptible routes are impassible.

**LEGEND**

- A/AE Zones
- 0.2 Percent Annual Chance

**CRITICAL ASSETS**

- Power Generation
- Substations
- Stormwater Discharge
- Ferry Terminal
- Rail Stations
- Bridges
- Gas Stations
- Municipal Building
- Senior Housing
- Child Care Centers
- Places of Worship
- Schools & Colleges

GA, CEBCO

## WHAT WE WANT TO HEAR FROM YOU

**What do you want to see in your community?**

**Are there specific resilience strategies you want to learn more about?**

**Are there any strategies that might work for your community?**

**Are there any strategies that would NOT work for your community?**

**Share Your Thoughts With Use Through Our Survey**

**SCAN ME**