

### **Program Summary:**

A broad, comprehensive, and long-term resilience strategy, rooted in layered planning, to anticipate future shocks while addressing ongoing stresses, guided by community values and goals.

### **Program Statement:**

This project is a multi-phase effort that builds on integrated regional planning to direct redevelopment and address flooding, led by a holistic approach to pursue resilient solutions that layer environmental, social, and financial factors. Over time, phases addressed regional and citywide planning, resilience partnerships with a local military base, and the design of pilot projects that create multiple benefits. The first step to creating a strategy for a resilient city is to identify both threats and community values. Analyzing the main forces of water help understand the current condition and plan for the future. Through a watershed-based approach, community engagement and workshops developed a framework of principles, goals, and values. Places that share common water conditions guide future projects, and an evaluation tool prioritizes implementation.

Opportunities along an urban waterway that routinely floods include pilot projects for implementation. This area has potential for redevelopment and investment, while improving safety and quality of life. Projects include transforming a drainage ditch into a linear park that stores more water to reduce flooding, elevating a roadway in conjunction with a shared use trail and bioswales, and retrofitting a detention pond to store more water and create a nature park. These projects are funded through an innovative environmental impact bond (EIB) and are currently advancing toward construction.

## **MP-360.01**

Building Area: (sf)  
N/A

Cost per Square Foot:  
N/A

Construction Cost  
Estimated \$12,000,000 for  
EIB-funded pilot projects

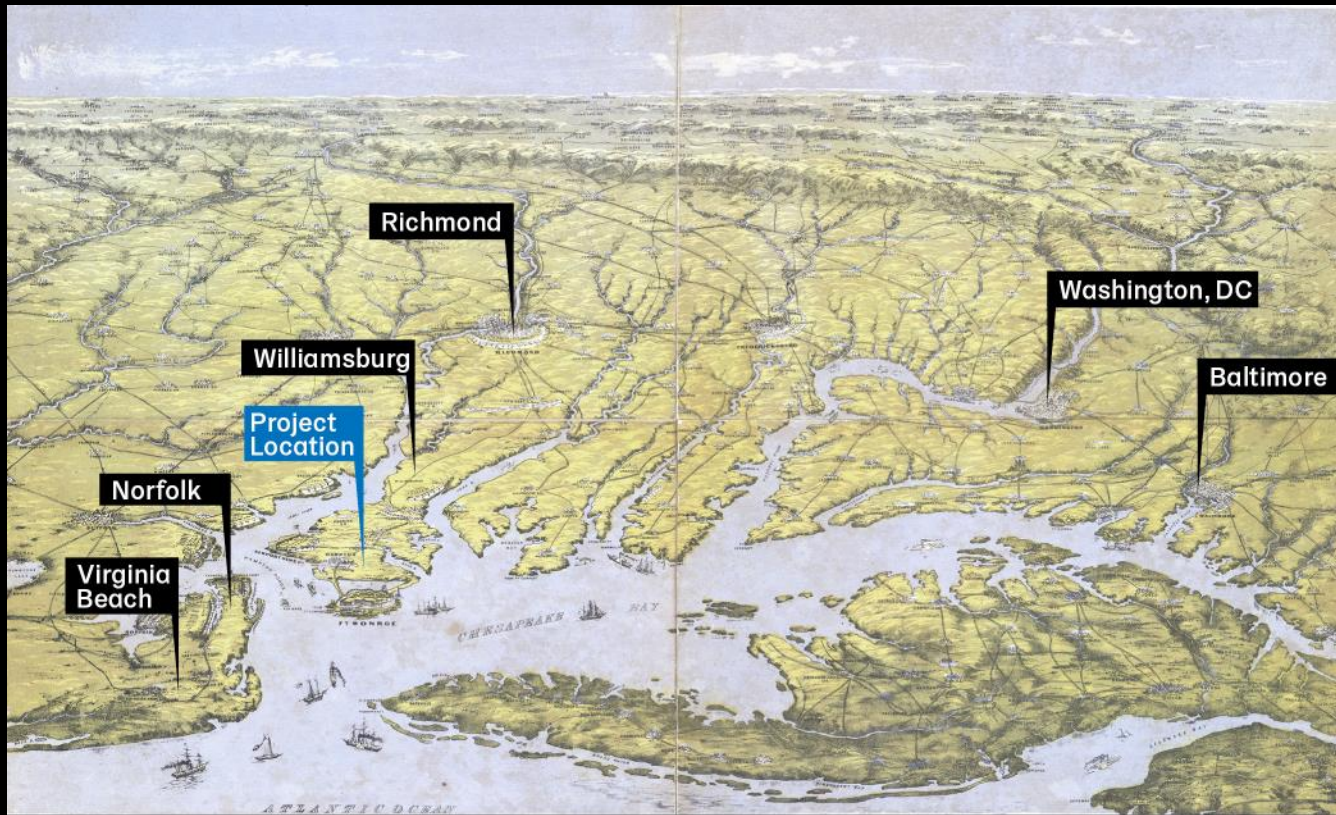
Date of Completion:  
Dutch Dialogues Virginia:  
2015  
Phase I: 2018  
JLUS Addendum: 2018  
Phase II: 2020  
Phase III: ongoing  
Downtown Resilience  
Plan: ongoing

# MP-360.02

## Proactive Planning

The Hampton Roads region of Virginia is one of the most vulnerable areas in the country for impacts from climate change, sea level rise, and recurring flooding. The City has undertaken an effort to adapt by addressing ongoing stresses and preparing for future shocks from weather events through an approach to planning that values place and existing assets.

Rather than responding to a disaster after it has occurred, such as Hurricane Katrina or Superstorm Sandy, the City initiated a resilience planning process to be prepared. Uniquely poised to address these issues, this planning effort builds on a long local history of innovation and education. Improving resilience is critical to future success, and the City is committed to valuing water as an asset and amenity.



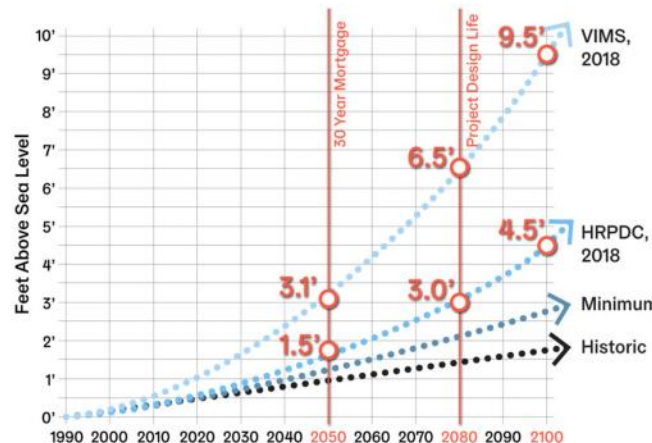
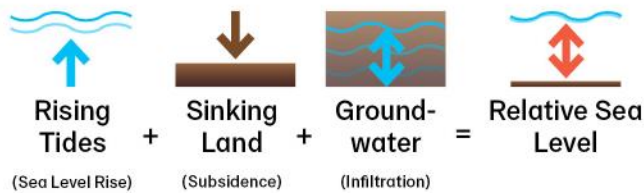
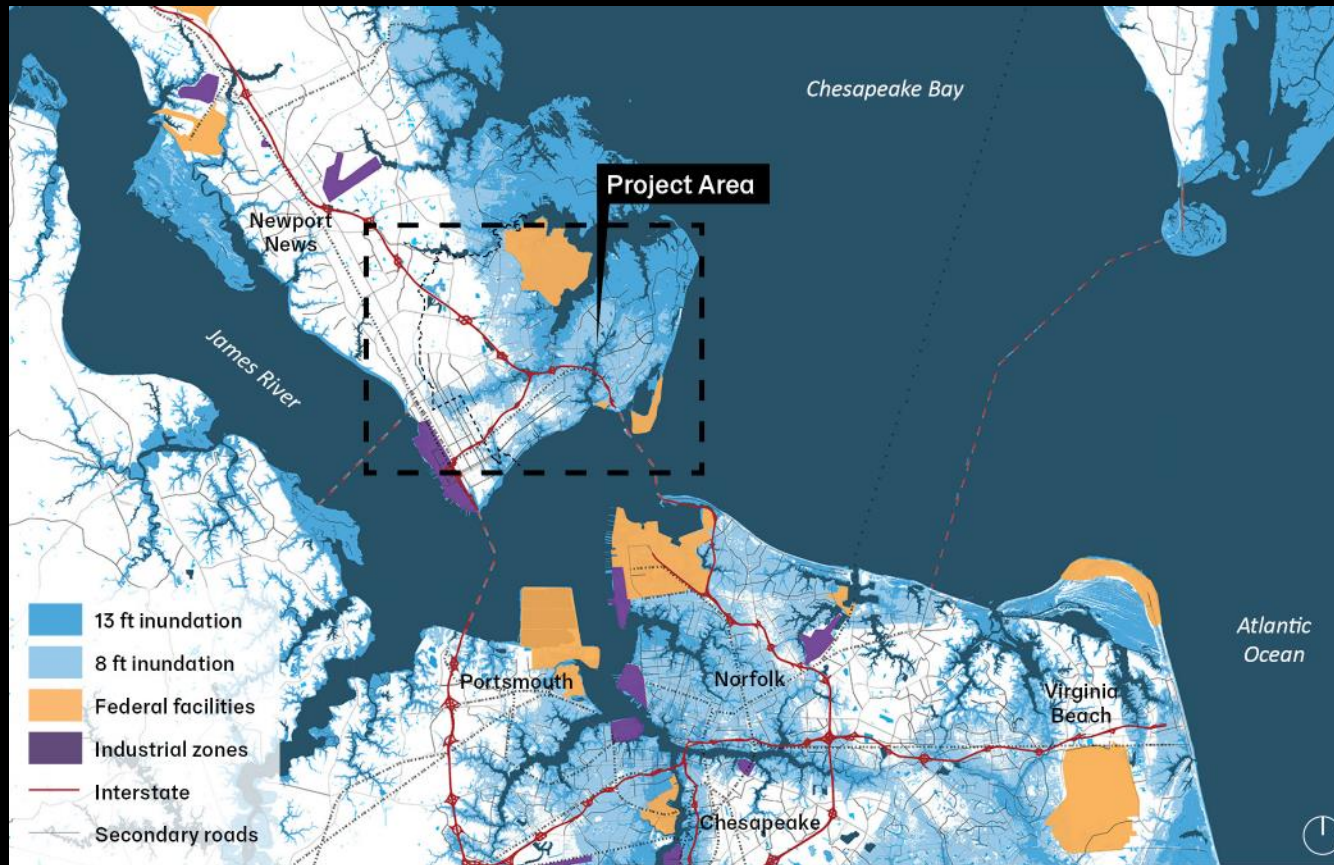


# MP-360.03

## Coastal Challenges

This region exists because of its proximity to water. Its early economy occurred in relationship to the coast: from seafood and shipping, to national defense at a fort and later an air force base, to recreation at marinas and beaches. The city has a close historical and cultural connection to water, and a desire to work with water, rather than shut it out.

Over time, the strategic coastal location has become more vulnerable. Exacerbated by climate change and sea level rise, the area has experienced many intense storms in the last twenty years. Relative sea level rise, the combination of rising water levels and subsidence, also impacts the city. The region has seen one of the greatest documented changes in relative sea rise in the world: 1.45 feet in the last 100 years.





# MP-360.04

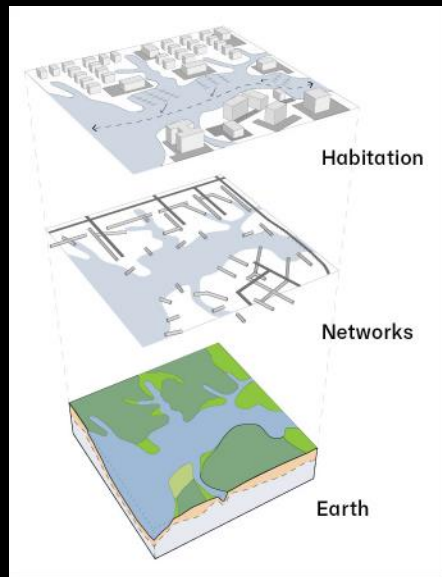
## Dutch Dialogues Virginia: Framing a Regional Challenge

In the Hampton Roads region, tidal flooding and storm surge are prime water management challenges. These urban areas also face poor drainage and environmental degradation, have vulnerable populations, and lack recreational water access.

A catalyst for the current project, The Dutch Dialogues Virginia workshop takes a regional approach to challenges, combining Dutch knowledge of integrated water management with American expertise in urban water problems to address flooding, poor water quality, sea level rise, and subsidence. Examining bay, harbor, river, and inland stream conditions, the workshop found opportunities to increase value and safety at multiple scales: region, city, and neighborhood, and laid the conceptual groundwork for the current project.







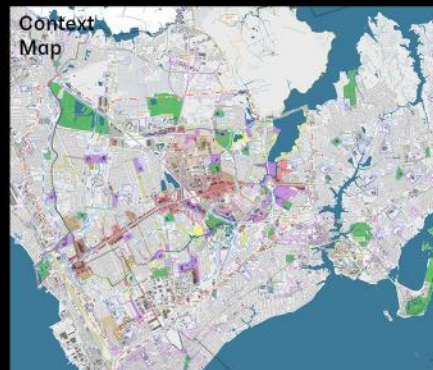
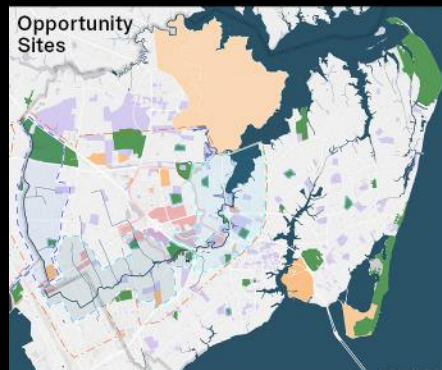
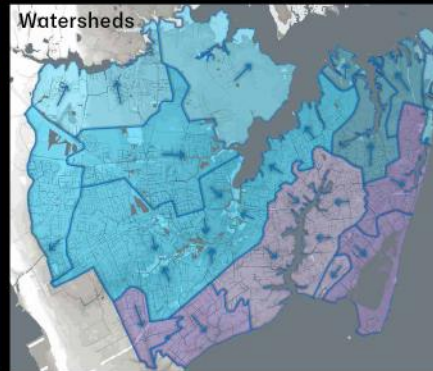
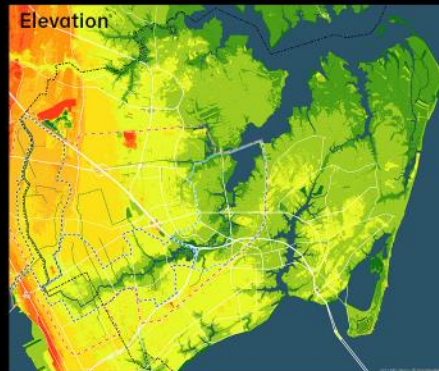
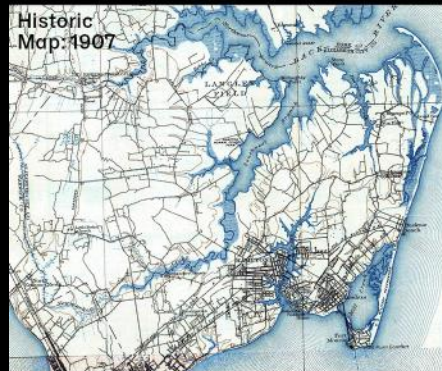
# MP-360.05

## Approach

The approach to improve resilience comprehensively addresses how multiple forces of water affect the city. Often, these forces interact with each other, creating a more complicated and intense water event. The primary challenge is determining the cause of flooding and generating appropriate solutions.

The resilience plan develops a comprehensive planning framework to be implemented through pilot projects. A layered planning approach studies existing conditions and systems at multiple scales in each watershed.

A guiding set of principles and goals supplements community values: safe, equitable, natural, heritage, integrated, sufficient, nimble, and innovative. A unique evaluation tool analyzes the resilience of potential projects.







# MP-360.06

## Vision

The vision of the resilience plan is for the city to build on its history of innovation, value water as an asset, and implement projects that improve safety and quality of life, encourage smart redevelopment, and reflect community values and the unique sense of place and culture.

This effort is the start of a long term shift in thinking, designing, and building to take advantage of opportunities to solve flooding issues through pilot projects that yield multiple additional benefits. Together, the projects contribute to a larger, holistic story: the value of leveraging existing assets by connecting waterways and public spaces to create inspiring, valuable places.



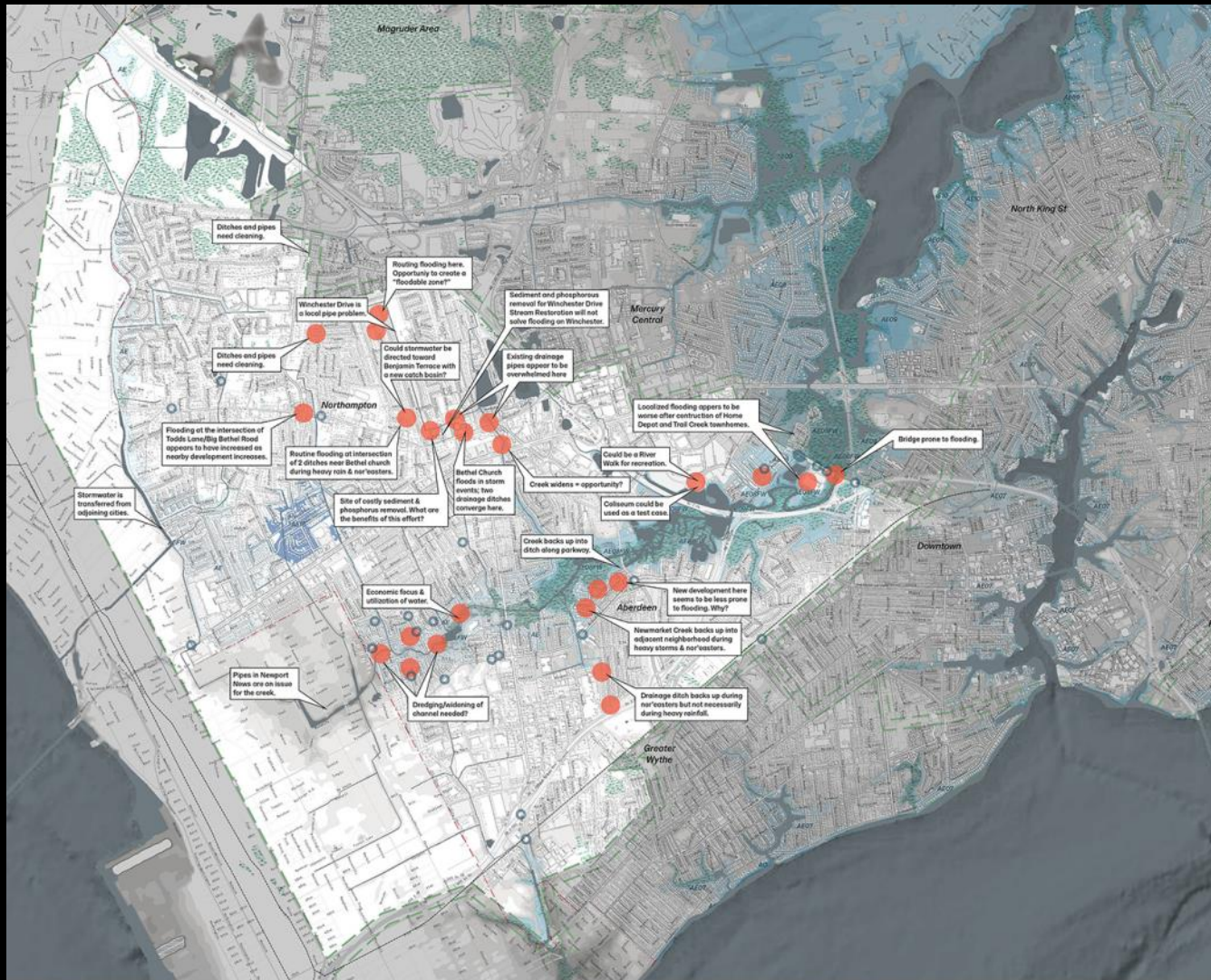
# MP-360.07

## Community Watershed Planning

A watershed planning approach grouped the city's neighborhoods into areas that share common characteristics and concerns related to water. These range from storm surge along the coast to stormwater runoff and backflow by inland waterways.

In order to develop plans and projects guided by community values, the team studied each watershed zone across the city and compiled feedback such as areas of reported flooding and comments from residents.

A confluence of issues was identified in a watershed of a large urban creek, which the Dutch Dialogues Virginia workshop also examined. The creek includes three distinct zones: Upland, Inland, and Coastal. The City selected this watershed as the area to develop pilot projects for implementation.



Upland



Inland



Coastal





# MP-360.08

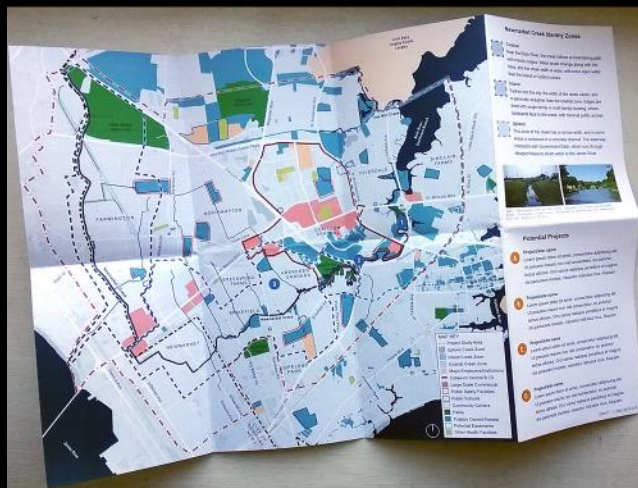
## Community Engagement

The team engaged residents across the city through several rounds of public events, seeking their expertise to understand existing conditions and challenges as well as opportunities for pilot projects.

Phase I engagement focused on the neighborhoods in each watershed, where issues and opportunities varied widely, to learn from residents.

Phase II focused on the creek watershed area. Many community members who participated in public meetings live near the creek, and supported the conceptual designs for proposed projects.

At the end of Phase II the team shared conceptual designs of pilot projects. With feedback from stakeholders, these projects are being further developed in Phase III.





# MP-360.09

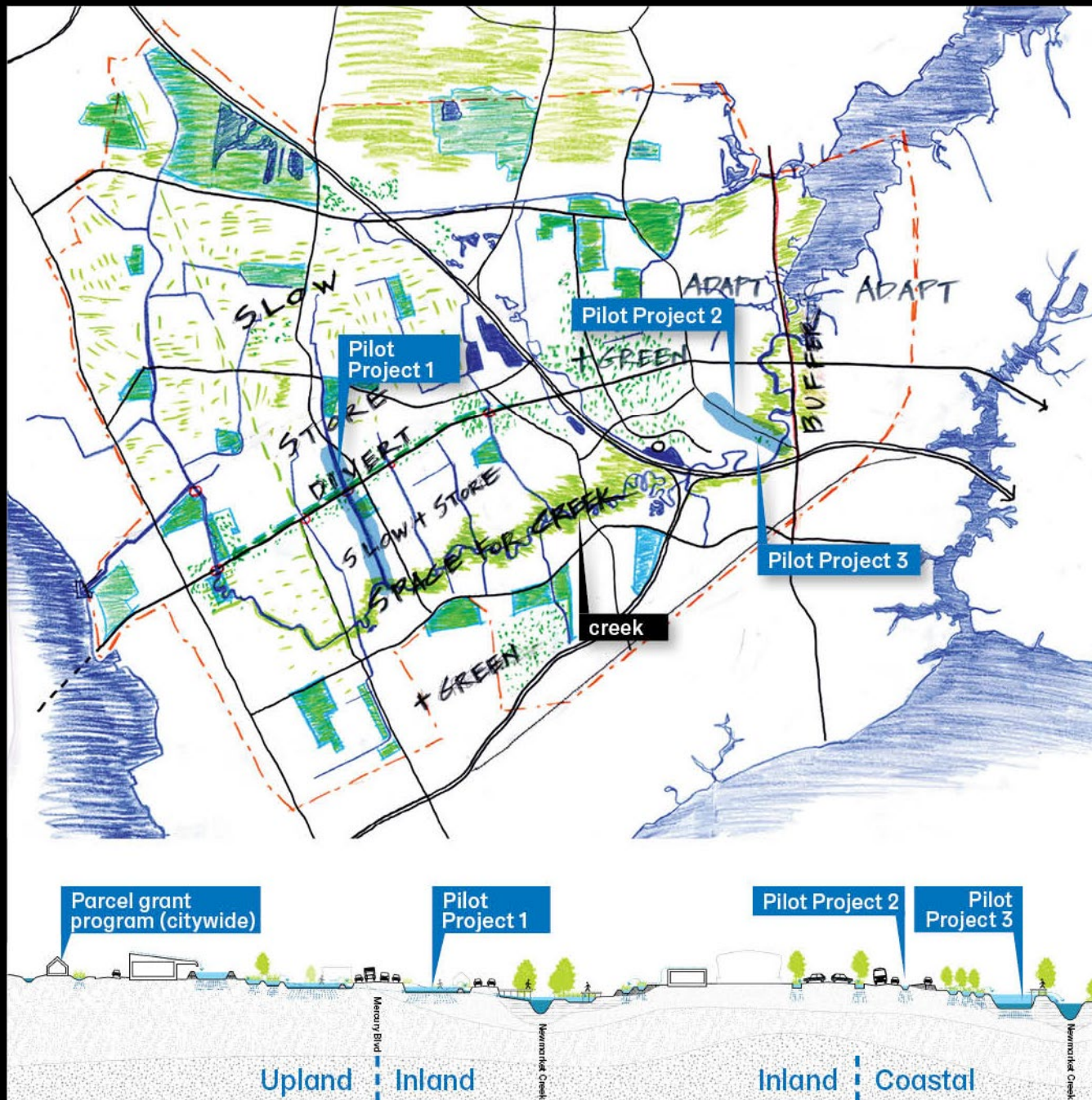
## Network of Pilot Projects

Based on feedback from residents and stakeholders, the Newmarket Creek vision includes nearly two dozen pilot projects framed around the concept of a loop trail that connects to the water and to other networks in the city, both existing and planned.

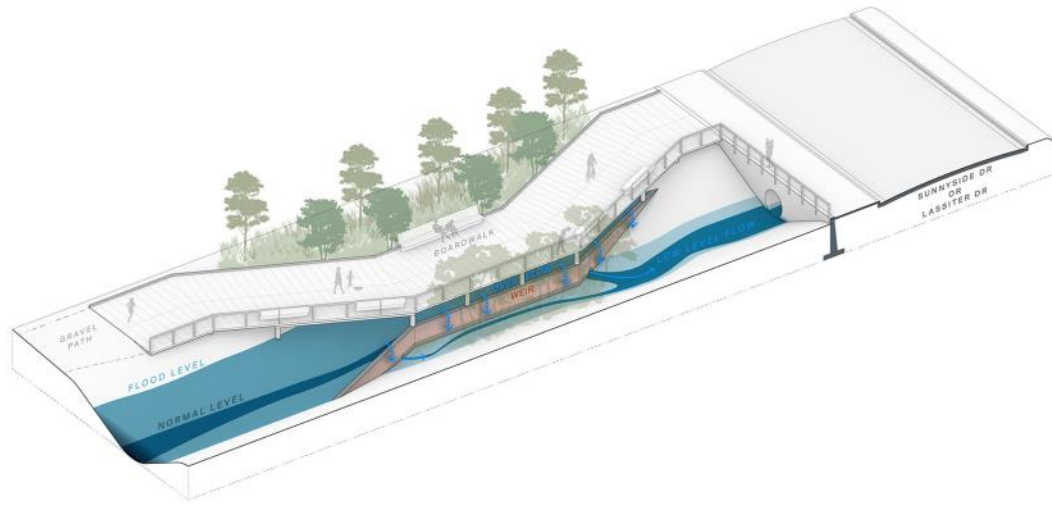
Across the Upland, Inland, and Coastal creek zones, pilot projects include combinations of slowing, storing, redirecting, and adapting to water.

Projects are also proposed at multiple scales: parcel, district, and city. Publicly owned land, including rights-of-way, drainage ditches, and roadways, was prioritized. A shortlist of projects proceeded with design.

To help fund pilot projects, the City has issued an Environmental Impact Bond (EIB), an innovative way of financing green infrastructure and resilience projects through a combination of public and private funding. The City is leading the way in this approach by being just the third municipality in the United States to issue an EIB.







# MP-360.10

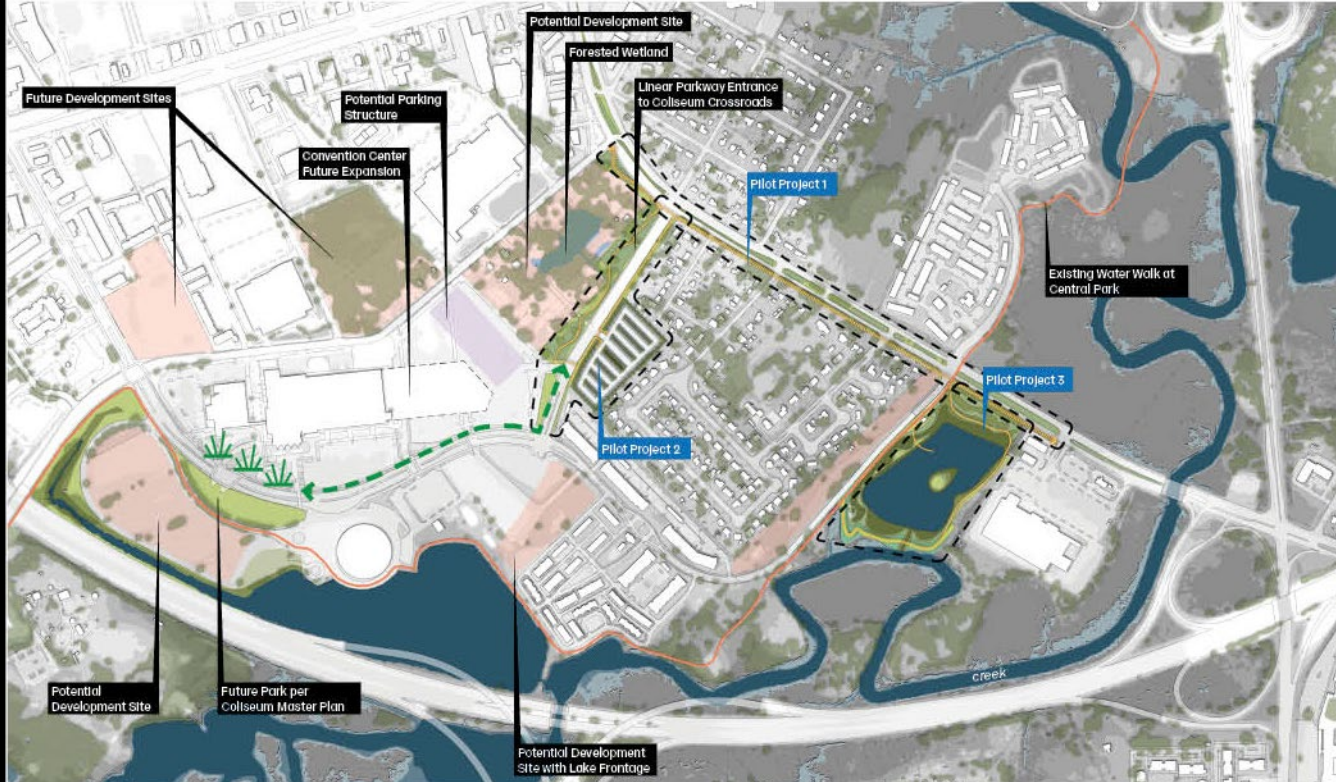
## Environmental Impact Bond Pilot Project 1

This blueway is a ditch retrofit project that stores and slows water through the redesign of an existing channel in order to reduce flooding both upstream and downstream in a larger urban creek.

The primary element of the blueway is a shared use path alongside the expanded watercourse, which accommodates walking, jogging, and biking, and creates a linear park over one mile long, linking neighborhoods and connecting down to the creek.

Opportunities to expand the blueway include an adjacent former public school site as well as a commercial plaza, which could both store additional water from the ditch if redeveloped with flood resilient strategies.





# MP-360.11

## Environmental Impact Bond Pilot Project 2

This project includes two related but distinct scopes of work, and improves the resilience of an adjacent commercial district.

Elevating a low-lying portion of the avenue would alleviate flooding of a significant roadway. This corridor is a major connector of economic drivers like the air force base, downtown, and the commercial district, as well a link to key evacuation routes.

The extent of road raising will determine the available space to install green infrastructure, such as bioswales and trees. A planned shared use trail is leveraged with this work, as are tie-ins to the existing nearby boardwalk and the proposed Pilot Project 3.



# MP-360.12

## Environmental Impact Bond Pilot Project 3

Surrounded by publicly owned parcels and adjacent to the urban creek, this "lake" was originally built as a detention pond, but provides a tremendous opportunity to create recreational amenity while improving water management through simple retrofits. Visible from the adjacent avenue, the site is at the edge of the adjacent commercial district, next to a recently rebuilt street.

Stormwater from the neighborhood to the northwest will be conveyed to the lake in a re-routed drainage line. The current water level in the lake is slightly higher than the adjacent creek. With a proper management system, the lake can accept overflow water from the creek, and vice versa.

New trails, boardwalks, and piers provide access around the resilient waterfront park.





# MP-360.13

## Vision

As an ongoing, multi-phase effort, the resilience plan is a broad, comprehensive, and long term strategy that values existing assets while planning for future adaptation.

From conducting high level, citywide planning, to addressing resilience with a local military base, to designing pilot projects that provide multiple benefits, the planning framework aims to attract redevelopment and investment, as well as to improve safety and quality of life for community members.

Pilot projects embrace the dynamic natural systems of the creek, working with the waterway as an asset for urban living. By shifting to live with water, the city will create opportunities to flourish into the future and serve as a regional model for resilience.



existing



Project Name:  
Resilient Hampton: Newmarket Creek Water  
Plan & Pilot Projects

Project Location:  
Hampton, VA

Owner/Client:  
City of Hampton

Architect(s) of Record:  
(names and addresses)  
Waggonner & Ball Architecture/Environment  
2200 Prytania St  
New Orleans, LA 70130

Project Team:  
J. David Waggonner III  
F. Macnaughton Ball, Jr  
Ramiro Diaz  
Thom Smith  
Lex Agnew  
Janice Barnes  
Mackenzie Stagg

Landscape Architect:  
Bosch Slabbers

Consultants:  
Moffatt & Nichol

Photographer(s):  
(please list which specific slides get credited to each  
photographer(s) listed).  
All photographs by Waggonner & Ball

**MP-360.14**

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