

Nature-Based Solutions for Coastal Resilience

Adaptation Case Studies from Hampton Roads, Virginia

Adapting to Changing Environmental Conditions Workgroup
Healthy Landscape Goal Team
Chesapeake Bay Program
June 24, 2026

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Chief Resilience Officer
Hampton Roads Planning District Commission





Hampton Roads Planning District Commission

The Region

17 member jurisdictions
1.8 million residents

The Commission

A forum for local and elected officials to discuss issues of regional importance

The Staff

Provide technical assistance, support policy development, and lead regional committees on multiple topics

Charting the Course for

**HAMPTON
ROADS**



Image Source: David Powell



Image Source: City of Norfolk



Image Source: Ben McFarlane



Image Source: City of Norfolk



Image Source: WTKR



Image Source: City of Virginia Beach

Present Risk

Dominant Flood Risk

- Coastal ■
- Pluvial ■
- Fluvial ■

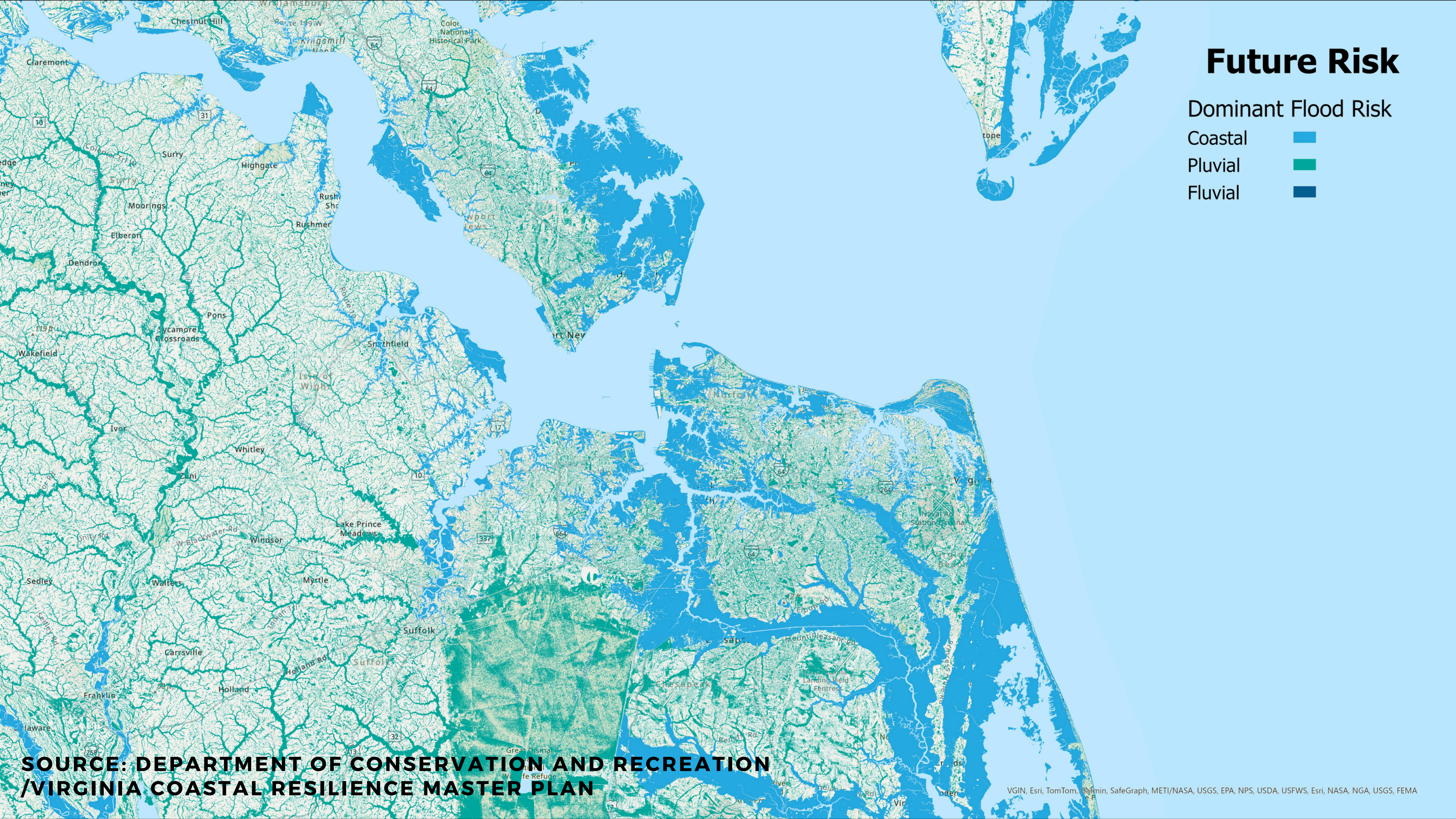


**SOURCE: DEPARTMENT OF CONSERVATION AND RECREATION
/VIRGINIA COASTAL RESILIENCE MASTER PLAN**

Future Risk

Dominant Flood Risk

- Coastal ■
- Pluvial ■
- Fluvial ■



**SOURCE: DEPARTMENT OF CONSERVATION AND RECREATION
/VIRGINIA COASTAL RESILIENCE MASTER PLAN**

VGIN, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, USFWS, Esri, NASA, NGA, USGS, FEMA

Adapting to a changing climate is essential to protecting public health, safety, and welfare in the Chesapeake Bay watershed.

Nature-based approaches can be cost-effective for resilience while providing multiple benefits.



MULTIPLE BENEFITS



Water Quality

NBS improve water local surface water quality by helping to slow runoff, allowing for infiltration and removal of sediments and nutrients.



Habitat

NBS provide critical habitat for many different species of plants and animals.



Recreation

NBS provide communities with natural spaces to enjoy and improve opportunities for fishing, birding, and other activities.



Resilience

NBS help protect shorelines from erosion caused by tides and storm surges.

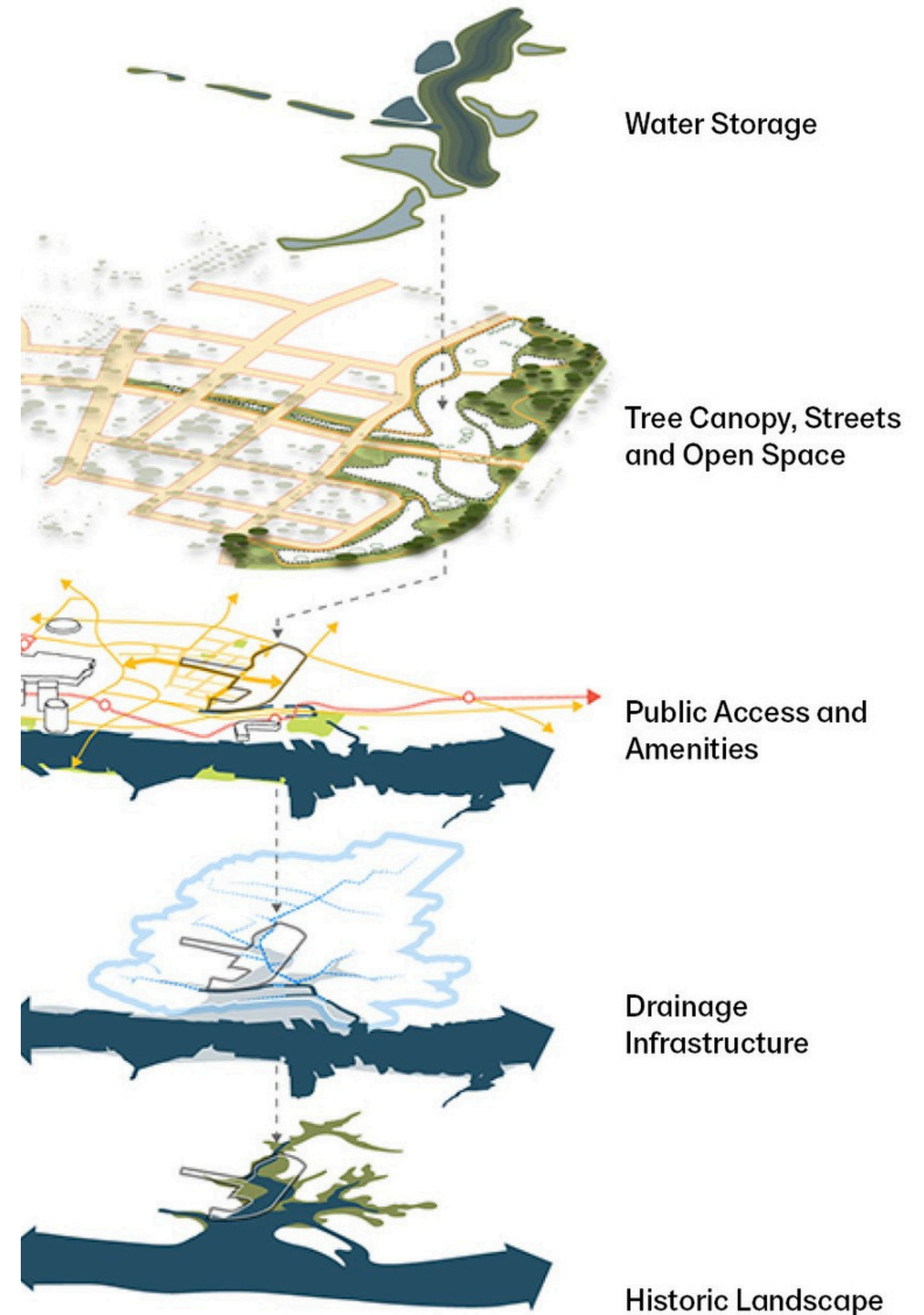


Image Credit: Waggoner and Ball Architects

NATURE-BASED SOLUTIONS FOR RESILIENCE & WATER QUALITY

Funding opportunities for multiple benefits projects include the National Coastal Resilience Fund, the National Fish and Wildlife Foundation, the Stormwater Local Assistance Fund, and the Community Flood Preparedness Fund.

The Lake Hampton retrofit is a \$4M retrofit project that uses wetlands and other nature-based strategies to increase water storage capacity and improve water quality.

LAKE HAMPTON
HAMPTON

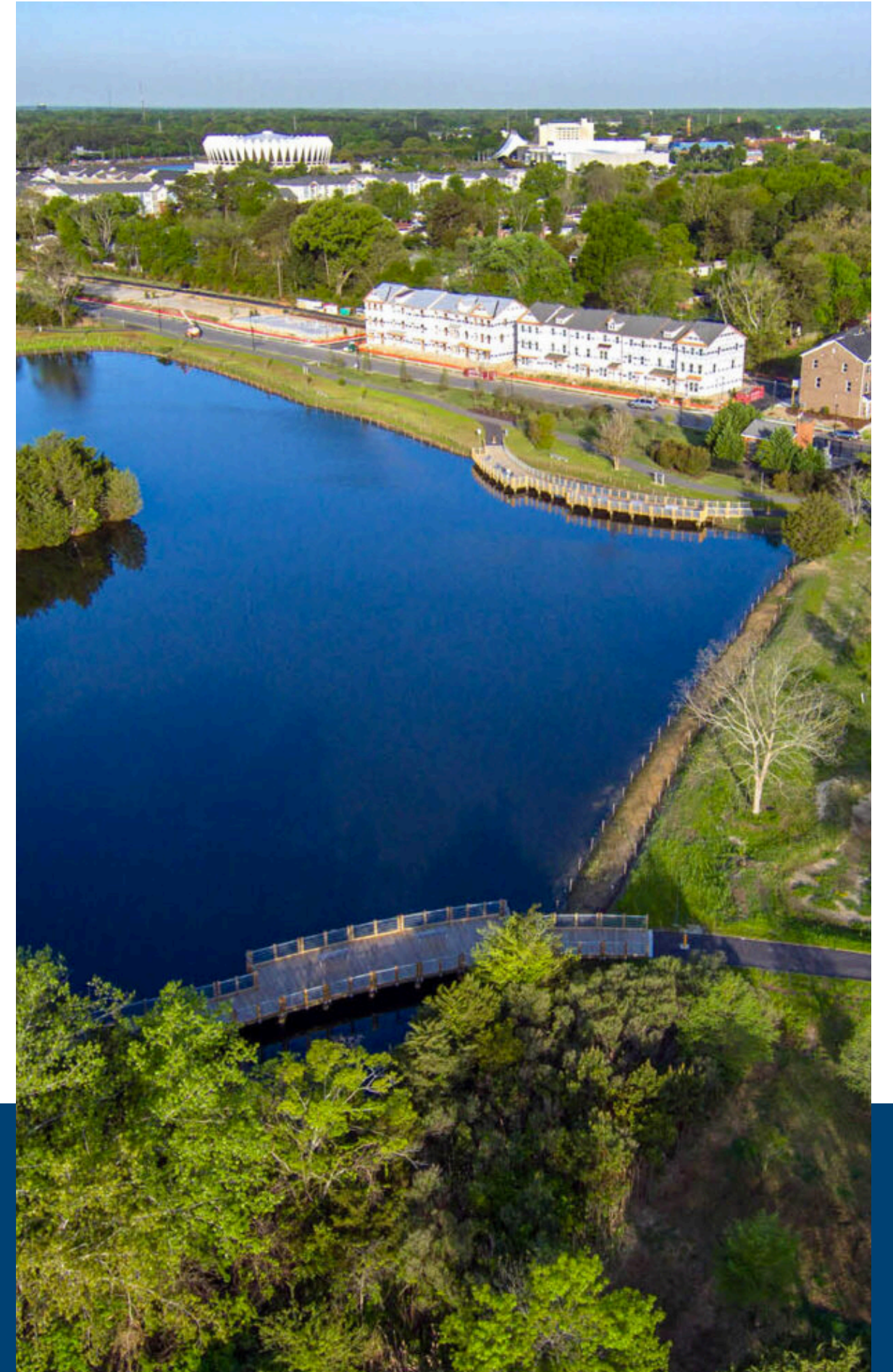


Image Credit: Waggoner and Ball Architects

LAKE HAMPTON

Resilient Hampton
Newmarket Creek Pilot Project Area
Water Plan

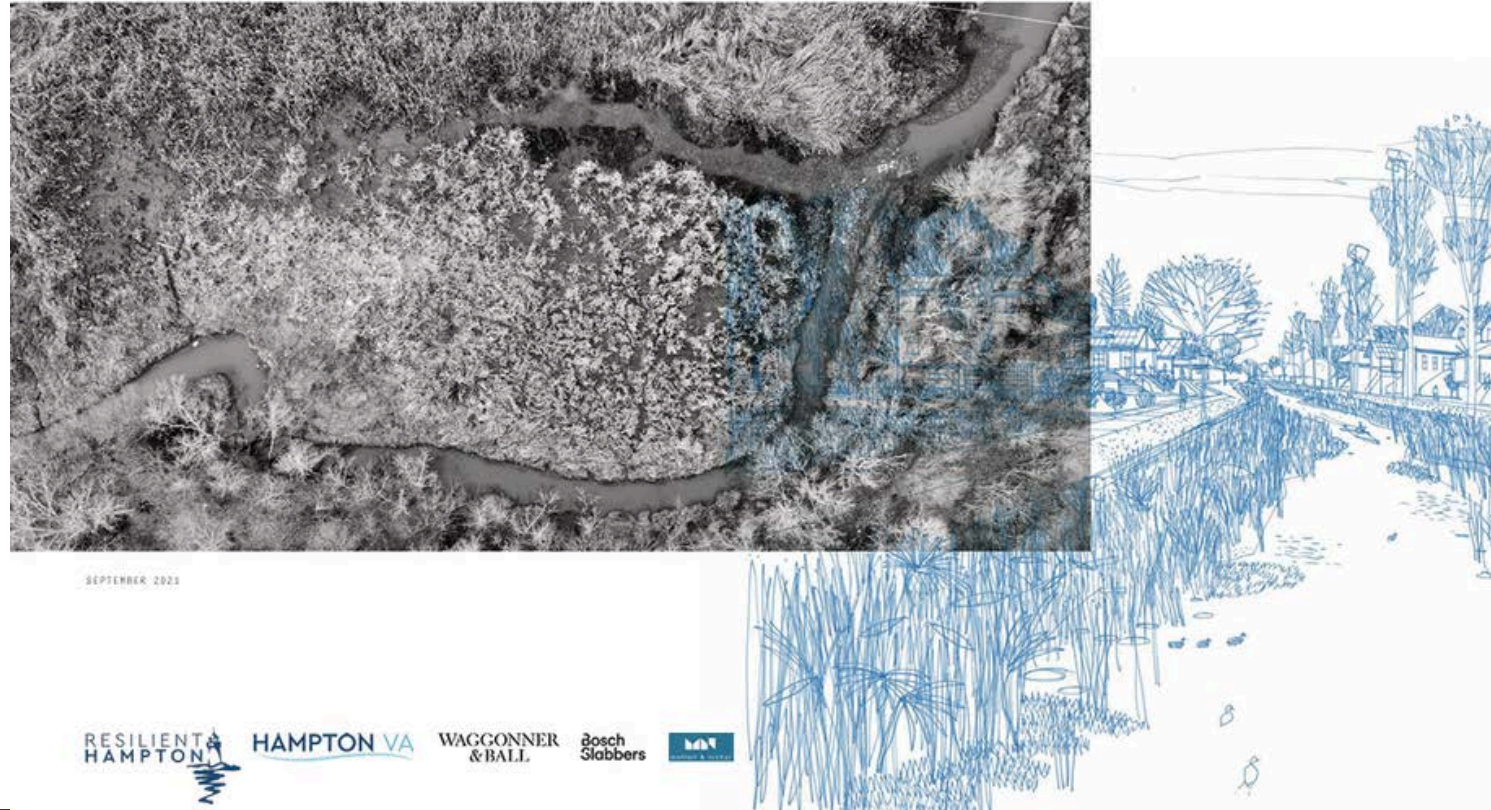
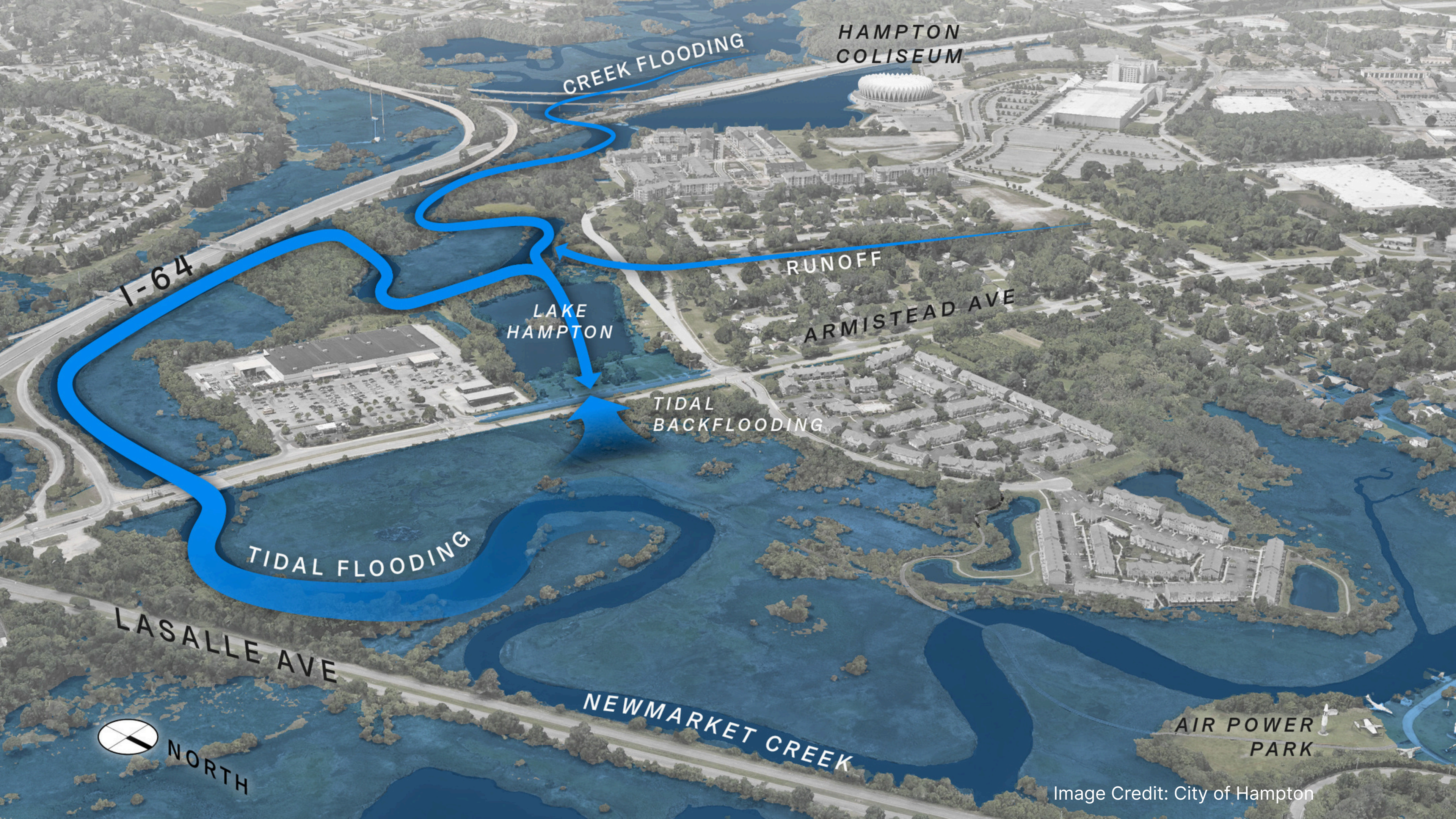


Image Credit: City of Hampton



HAMPTON COLISEUM

CREEK FLOODING

RUNOFF

ARMISTEAD AVE

LAKE HAMPTON

TIDAL BACKFLOODING

TIDAL FLOODING

I-64

LASALLE AVE

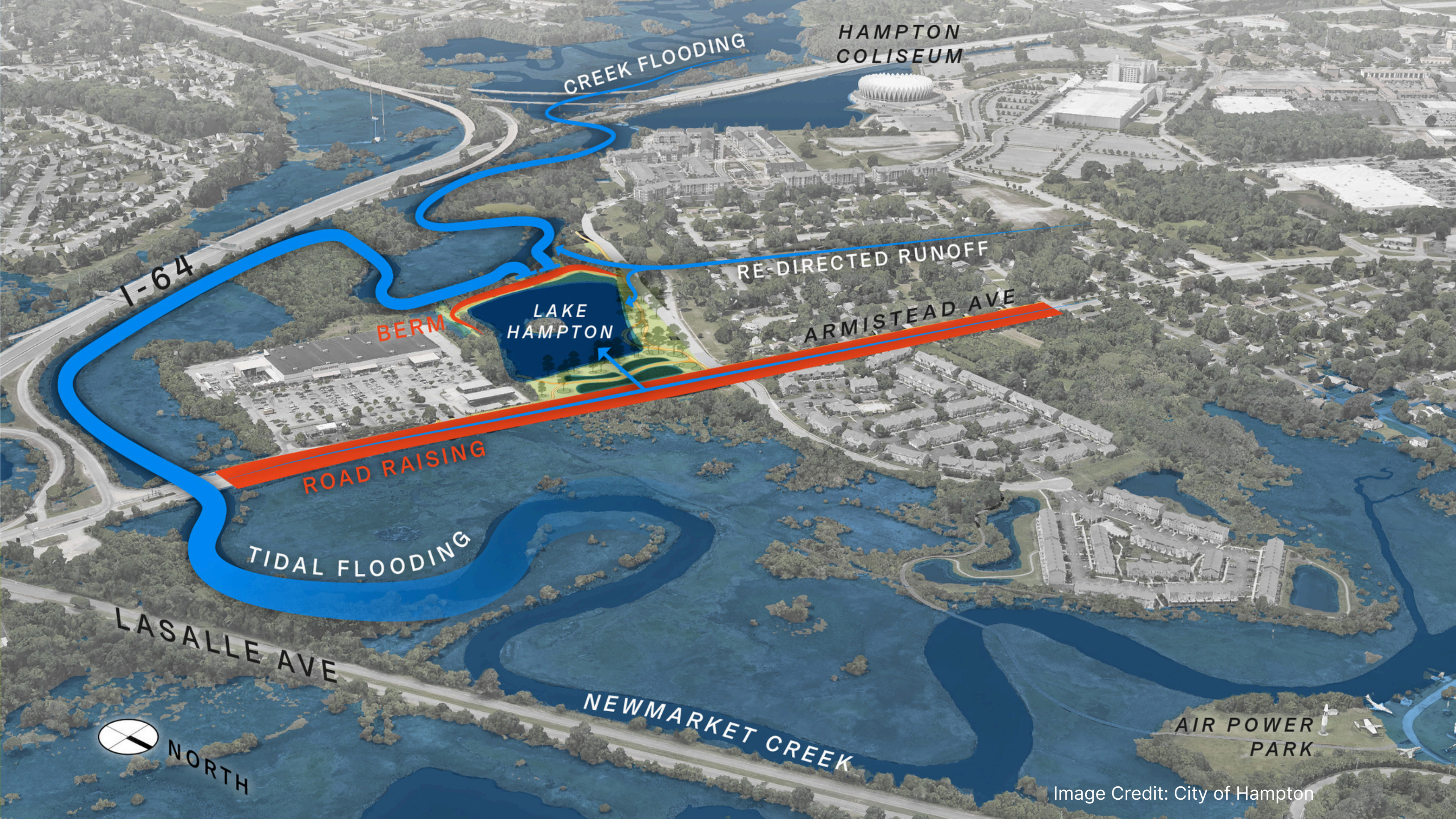
NEWMARKET CREEK

AIR POWER PARK



NORTH

Image Credit: City of Hampton



HAMPTON COLISEUM

CREEK FLOODING

RE-DIRECTED RUNOFF

ARMISTEAD AVE

I-64

BERM

LAKE HAMPTON

ROAD RAISING

TIDAL FLOODING

LASALLE AVE

NEWMARKET CREEK

AIR POWER PARK



NORTH

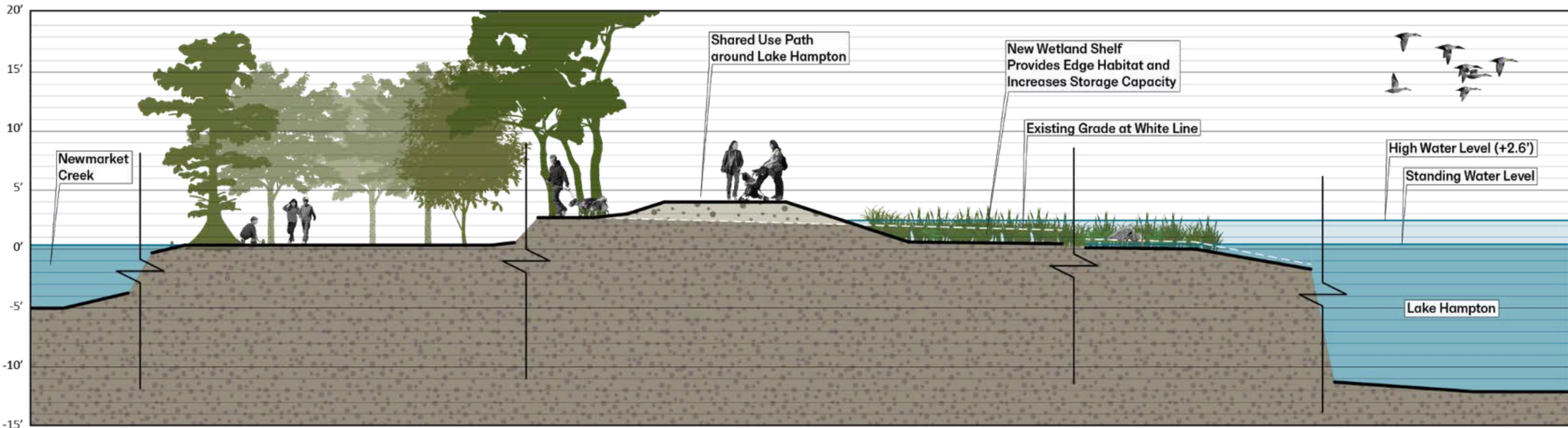
Image Credit: City of Hampton

LAKE HAMPTON

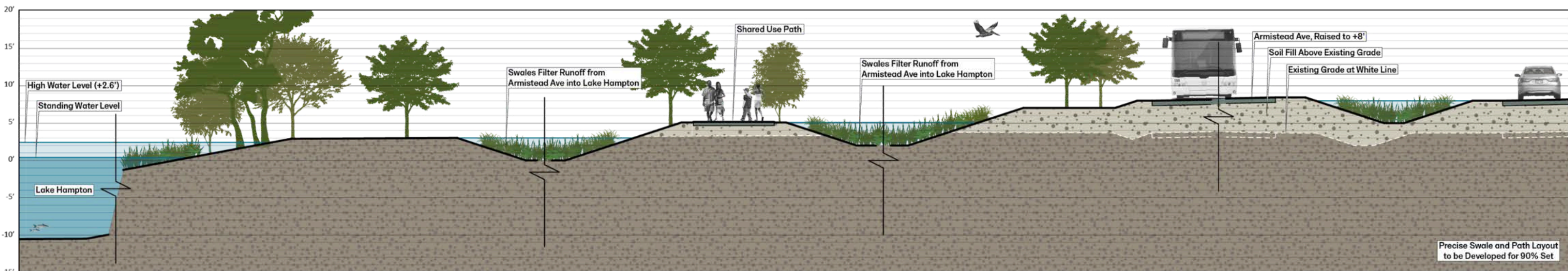


Image Credit: City of Hampton

LAKE HAMPTON



Section Profile A



Section Profile B

LAKE HAMPTON - PRE-CONSTRUCTION



LAKE HAMPTON - CONCEPT



LAKE HAMPTON

TO WATER WALK
& COLISEUM →

LAKE HAMPTON - COMPLETED



LAKE HAMPTON - COMPLETED



LAKE HAMPTON

The completed Lake Hampton project provides additional flood protection and stormwater storage while meeting many of the city's Resilient Hampton values and principles. Incorporating nature-based approaches and features enables the project to enhance the local environment through the creation of nearly an acre of wetlands and add recreational facilities for residents.

**LAKE HAMPTON
HAMPTON**



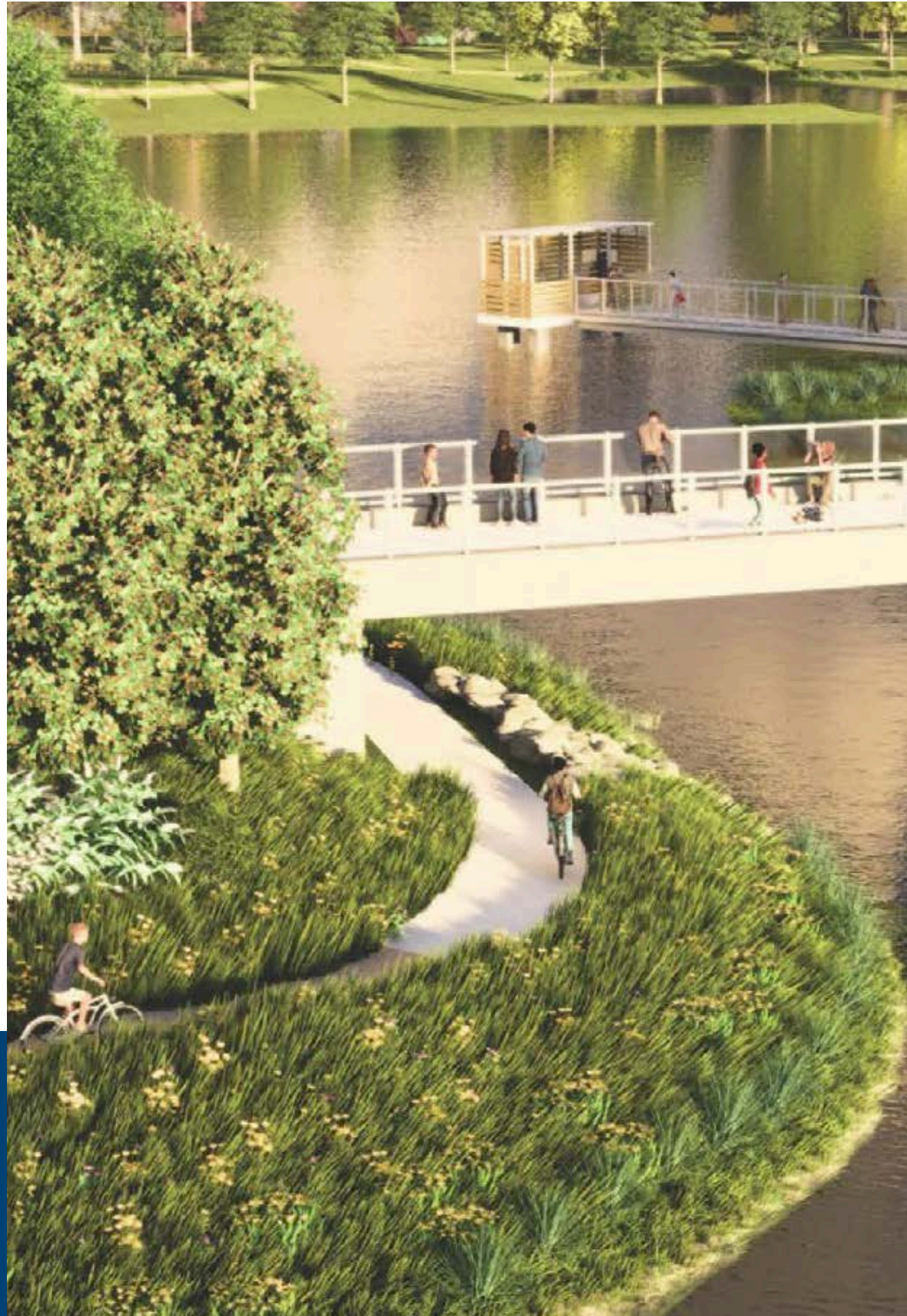
Image Credit: Waggoner and Ball Architects

NATURE-BASED SOLUTIONS FOR RESILIENCE & WATER QUALITY

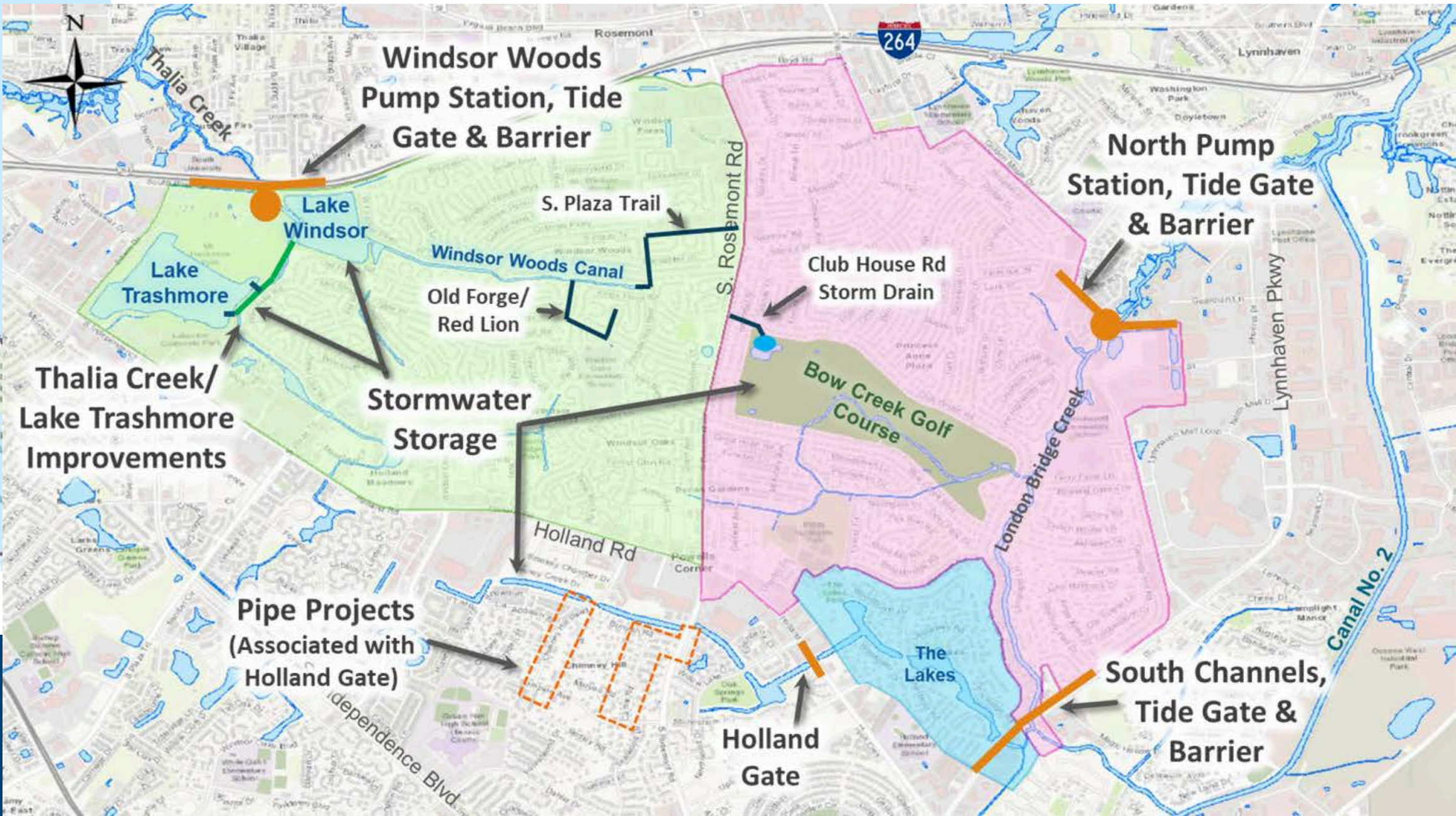
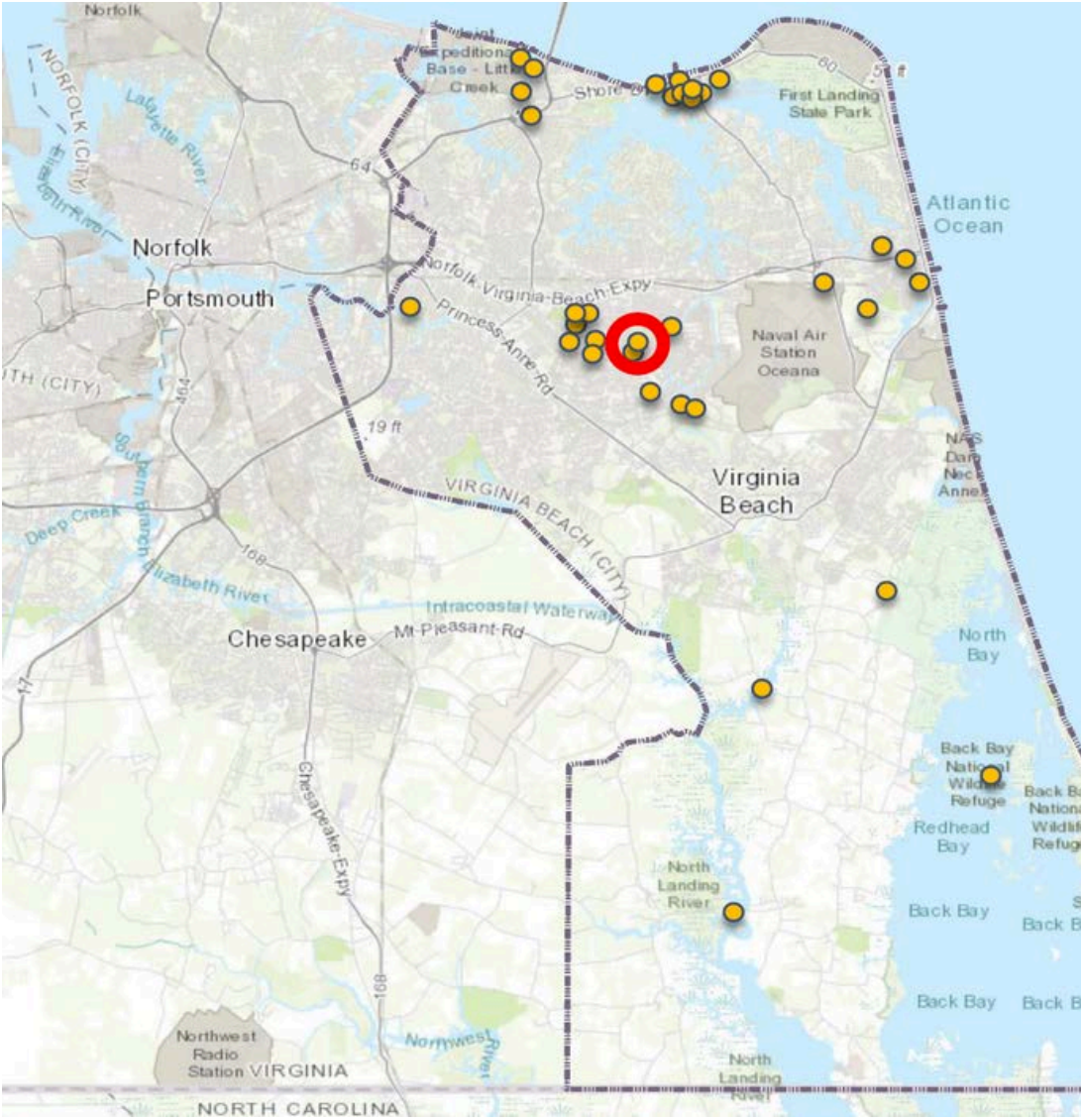
Local governments in Hampton Roads have incorporated wetlands enhancement, protection, and restoration into resilience projects to improve residents' quality of life, enhance water quality, and protect from flooding.

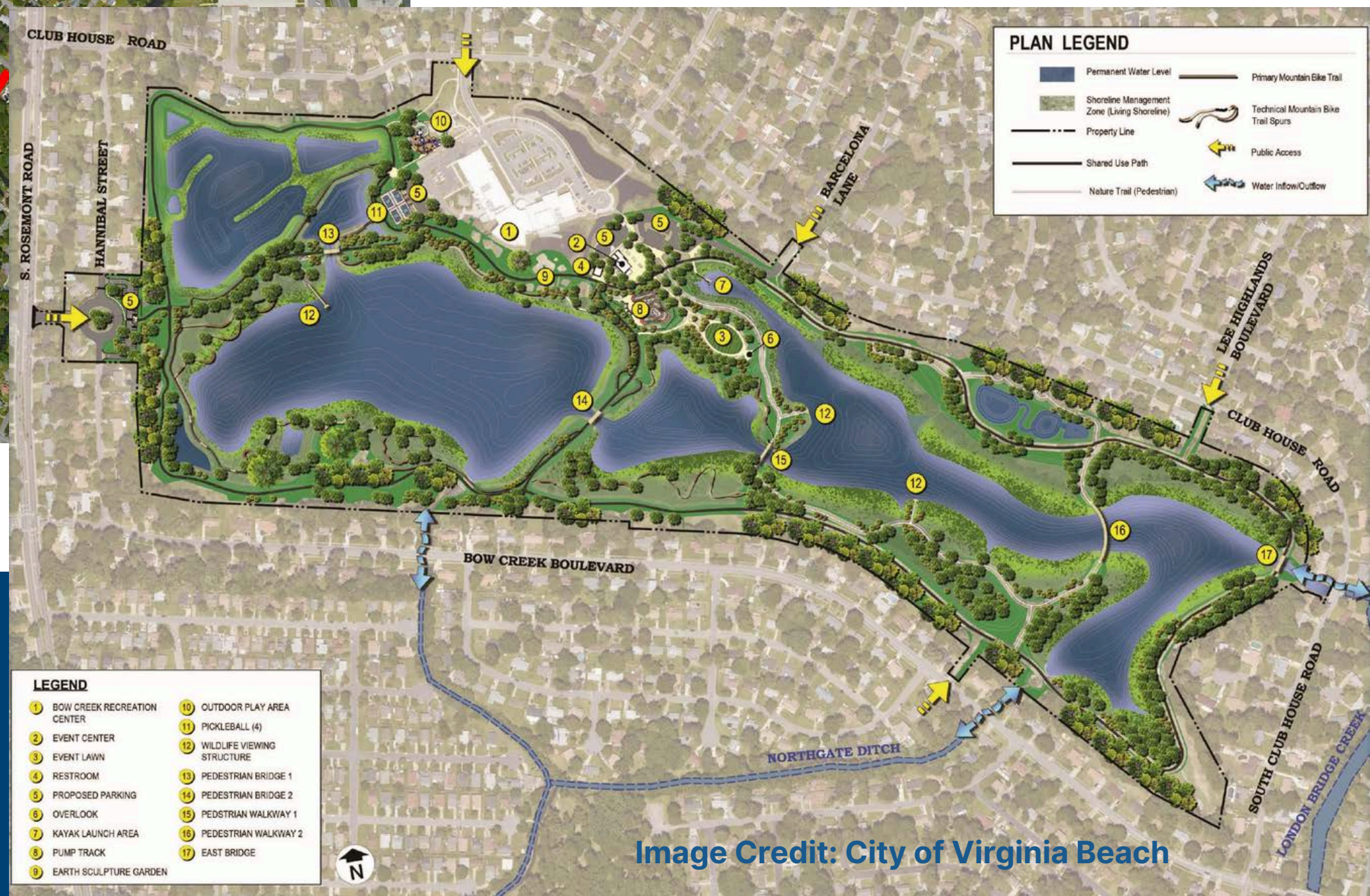
The Bow Creek Stormwater Park in Virginia Beach is part of the city's \$1.5B Flood Protection Program, which includes over twenty projects throughout the community to intended to address current and future flood risk.

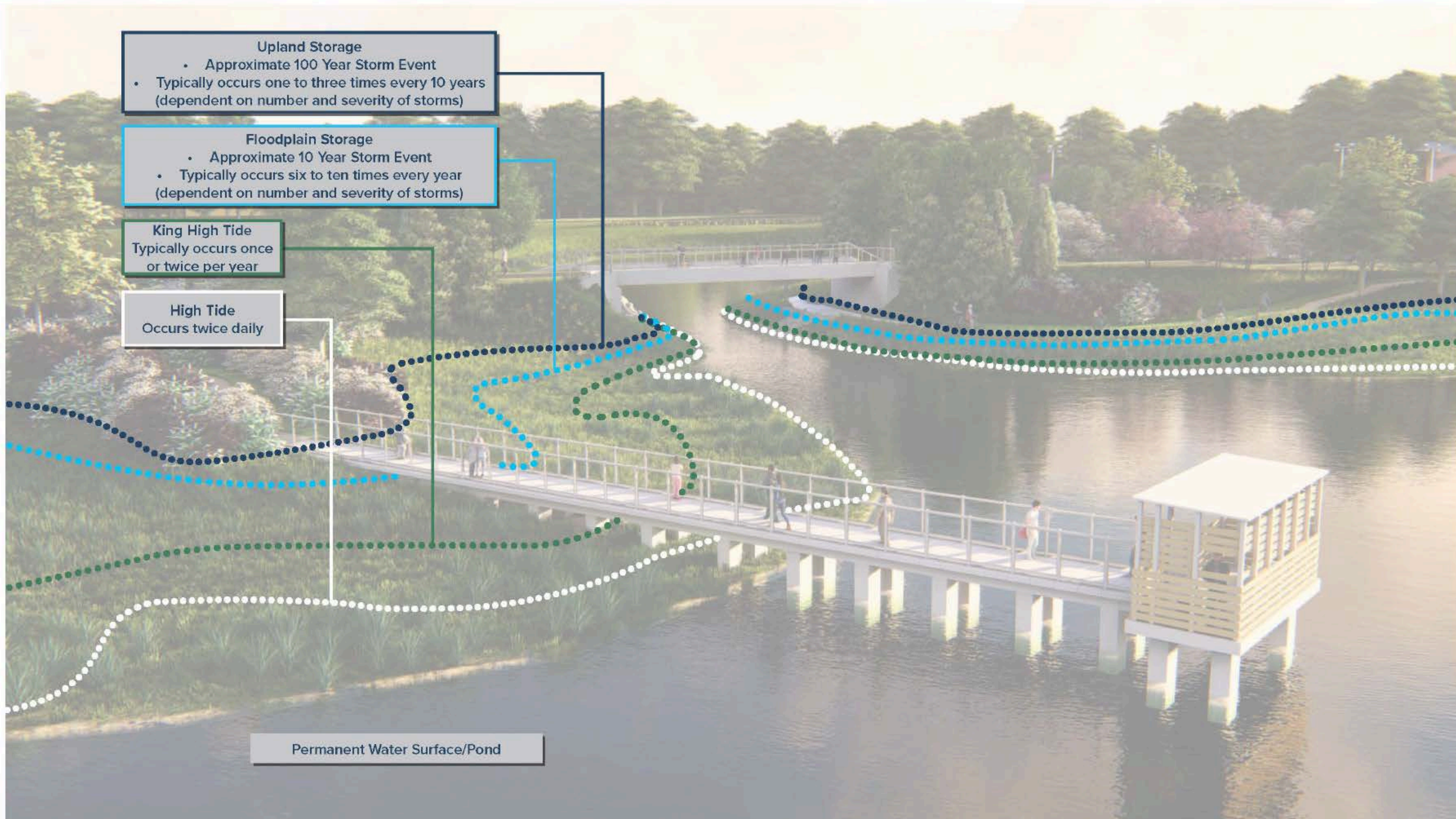
**BOW CREEK STORMWATER PARK
VIRGINIA BEACH**



BOW CREEK STORMWATER PARK









View 1 - Permanent Water Surface/Pond





View 3 - King High Tide
Occurs annually



View 4 - Floodplain Storage

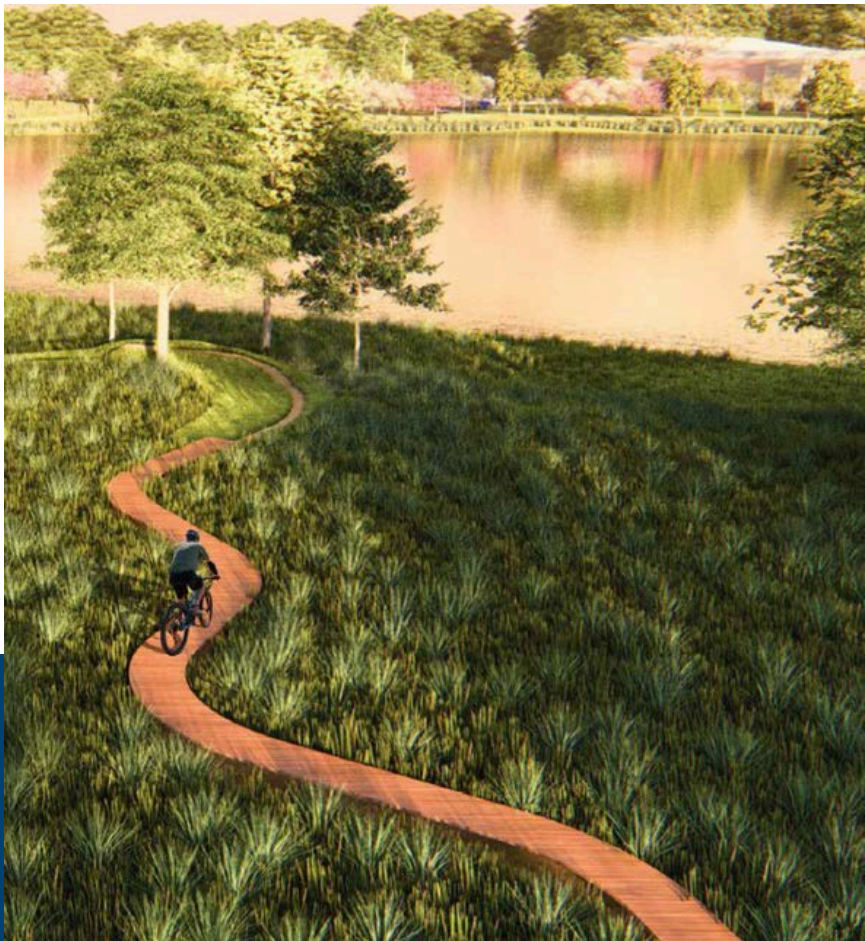
- Approximate 10 Year Storm Event
- Typically occurs six to ten times every Year (dependent on number and severity of storms)



View 5 - Upland Storage

- Approximate 100 Year Storm Event
- Typically occurs one to three times every 10 Years (dependent on number and severity of storms)

BOW CREEK STORMWATER PARK



BOW CREEK STORMWATER PARK



The Bow Creek Stormwater Park addresses a critical flood protection need in central Virginia Beach. It takes advantage of large, city-owned, underutilized facility to provide significant flood protection, restore and enhance environmental resources, and create new recreational amenities for the surrounding communities.

- Section I (under construction, anticipated completion Q1 2027)
 - \$43.9M
- Section II (under design, anticipated completion Q2 2030)
 - \$64.5M

**BOW CREEK STORMWATER PARK
VIRGINIA BEACH**

BUILDING A MORE *Resilient* HAMPTON ROADS

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