

Resilient Hampton



Proposal

Phase I report presented in December 2017

Action requested of City Council:

- Endorse the Phase I report
 - Values
 - Guiding principles
 - Goals
- Authorize staff to move forward with the recommended next steps

Values and Guiding Principles

Values

- Safe
- Equitable
- Natural
- Heritage
- Integrated
- Sufficient
- Nimble
- Innovative

Guiding Principles

- Create Value-Driven Solutions
- Reinforce Assets
- Layer Public Benefits
- Strengthen Partnerships
- Use Best Data
- Share Knowledge and Resources

Goals

Forming the basis for policy updates and Comprehensive Plan Amendment:

Goals

1. Address the challenge holistically
2. Embrace initiative to enhance quality of life, environment, economy
3. Be nimble, adaptive, accountable
4. Adopt resilience standards
5. Provide solutions at multiple scales
6. Educate the community
7. Follow established guiding principles
8. Lead the way
9. Utilize an evaluation tool

Next Steps

- Move forward with Phase II – Apply these principles to a specific geographic location within the City:
 - Staff and Waggoner & Ball recommendation:
Newmarket Creek/Langleys
- Amend the Community Plan to reflect goals laid out in Phase I
- Undertake a comprehensive review and amendment of City codes and ordinances to support goals of Resilient Hampton
- Refine the evaluation tool and institutionalize its use as decision making tool
- Pursue changes to the State legal framework as necessary

Next Steps (cont.)

- Set “resiliency targets” for the community and establish a process to track and measure our progress
- Continue to work with partners to learn, share, and innovate
- Develop a community education program
- Continue to work with Langley Air Force Base to develop a resiliency component to complement the existing JLUS
- Establish and support a “Hampton Resilience Partnership”



13 DECEMBER 2017
HAMPTON DUTCH DIALOGUES

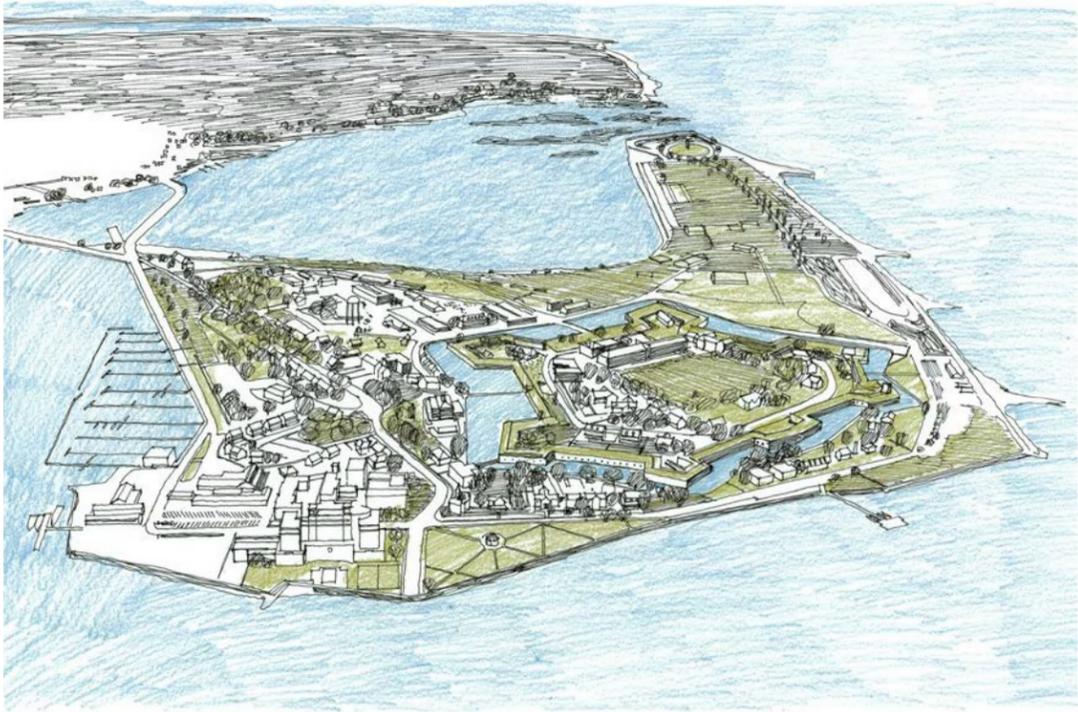
Living with Water Hampton: A Holistic Approach to Addressing Sea Level Rise and Resiliency

WAGGONNER
& BALL



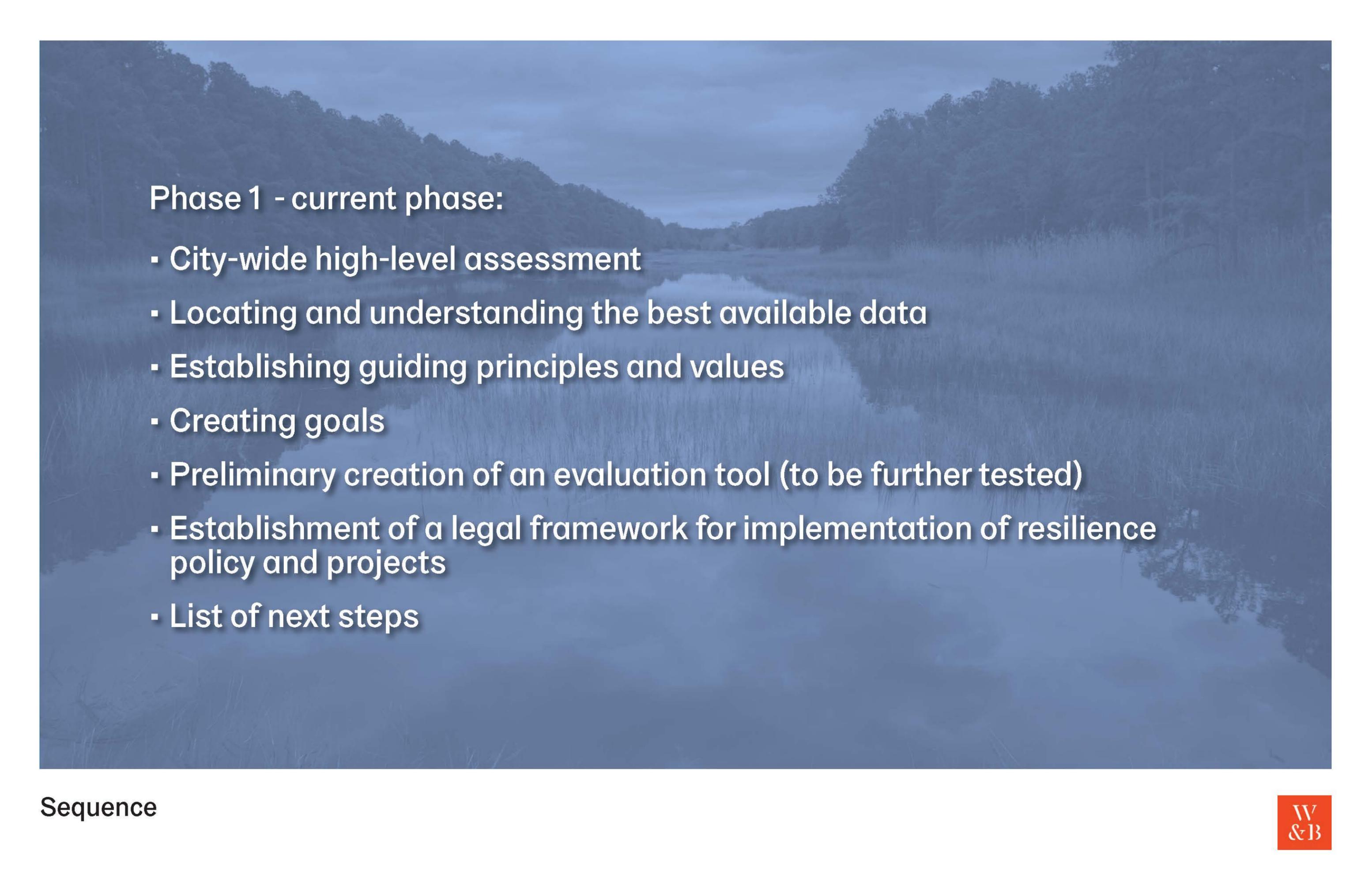
Hampton

Dutch Dialogues Virginia: Life at Sea Level



Dutch Dialogues Virginia: Life at Sea Level





Phase 1 - current phase:

- City-wide high-level assessment
- Locating and understanding the best available data
- Establishing guiding principles and values
- Creating goals
- Preliminary creation of an evaluation tool (to be further tested)
- Establishment of a legal framework for implementation of resilience policy and projects
- List of next steps

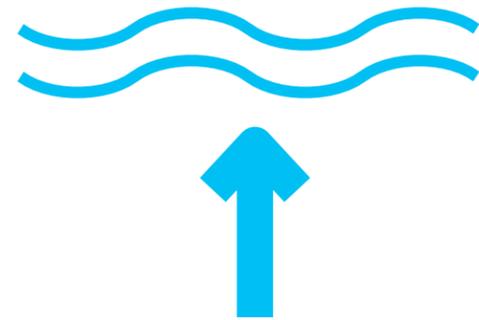


Phase 2 – beginning early 2018:

- Implementation strategy for pilot area
- Test evaluation tool
- Education & outreach plan

Phase 3 and beyond – near future:

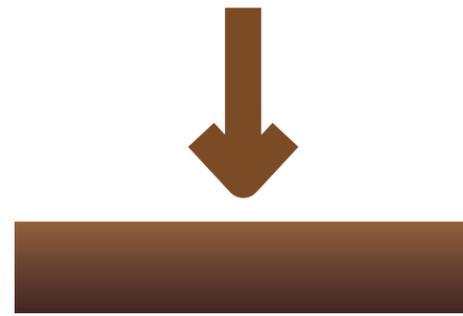
- Other identified priorities and initiatives



**Rising
Tides**

(Sea Level Rise)

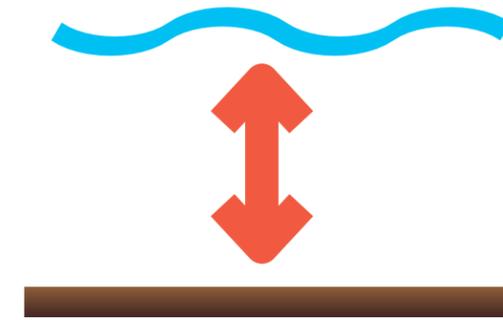
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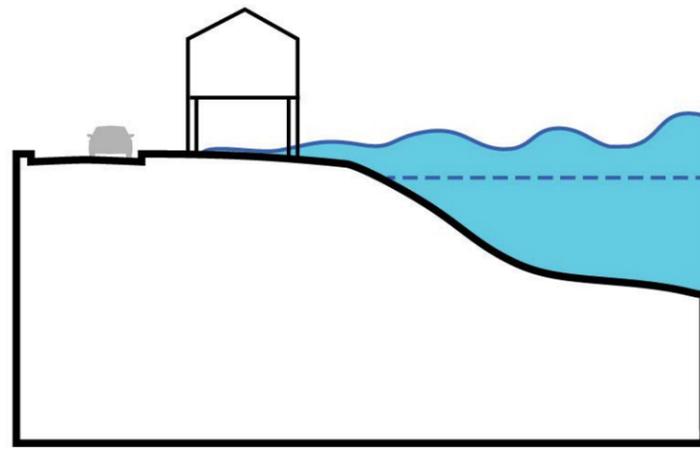
**Sinking
Land**

(Subsidence)

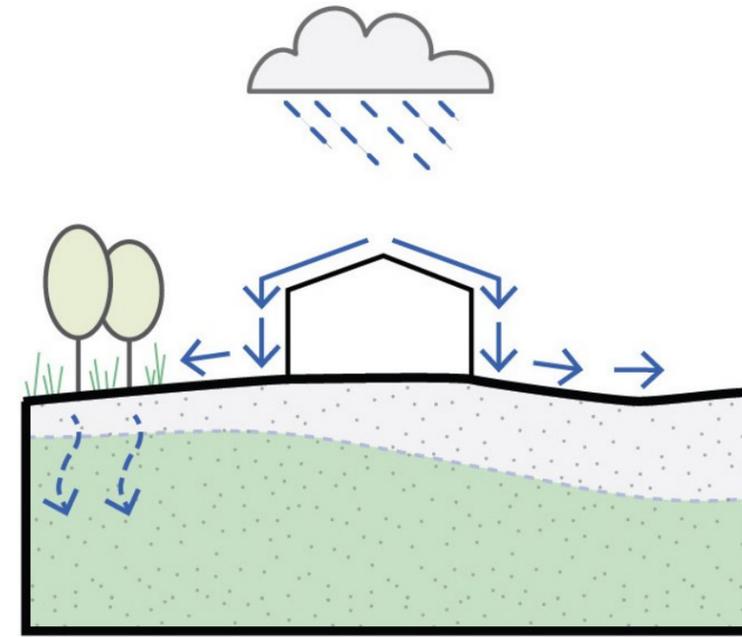
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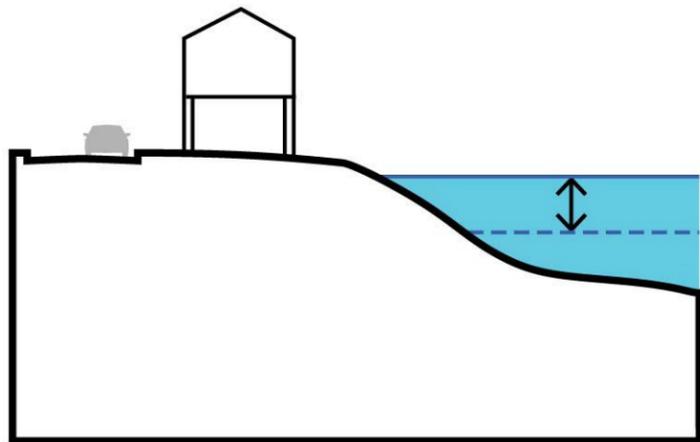
**Relative
Sea Level**



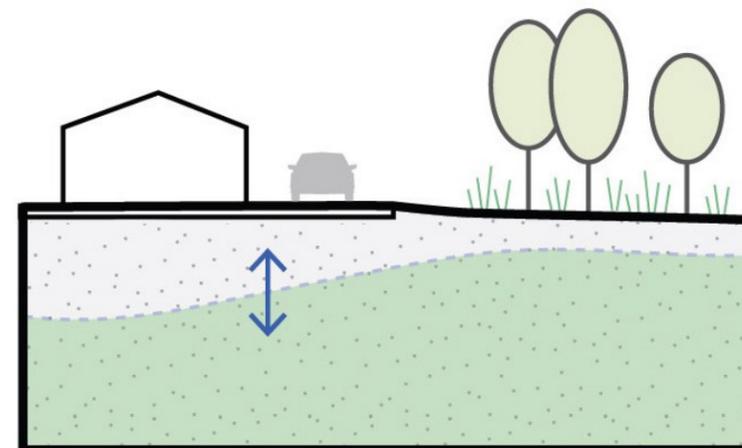
Storm Surge



Stormwater



Tidal Action



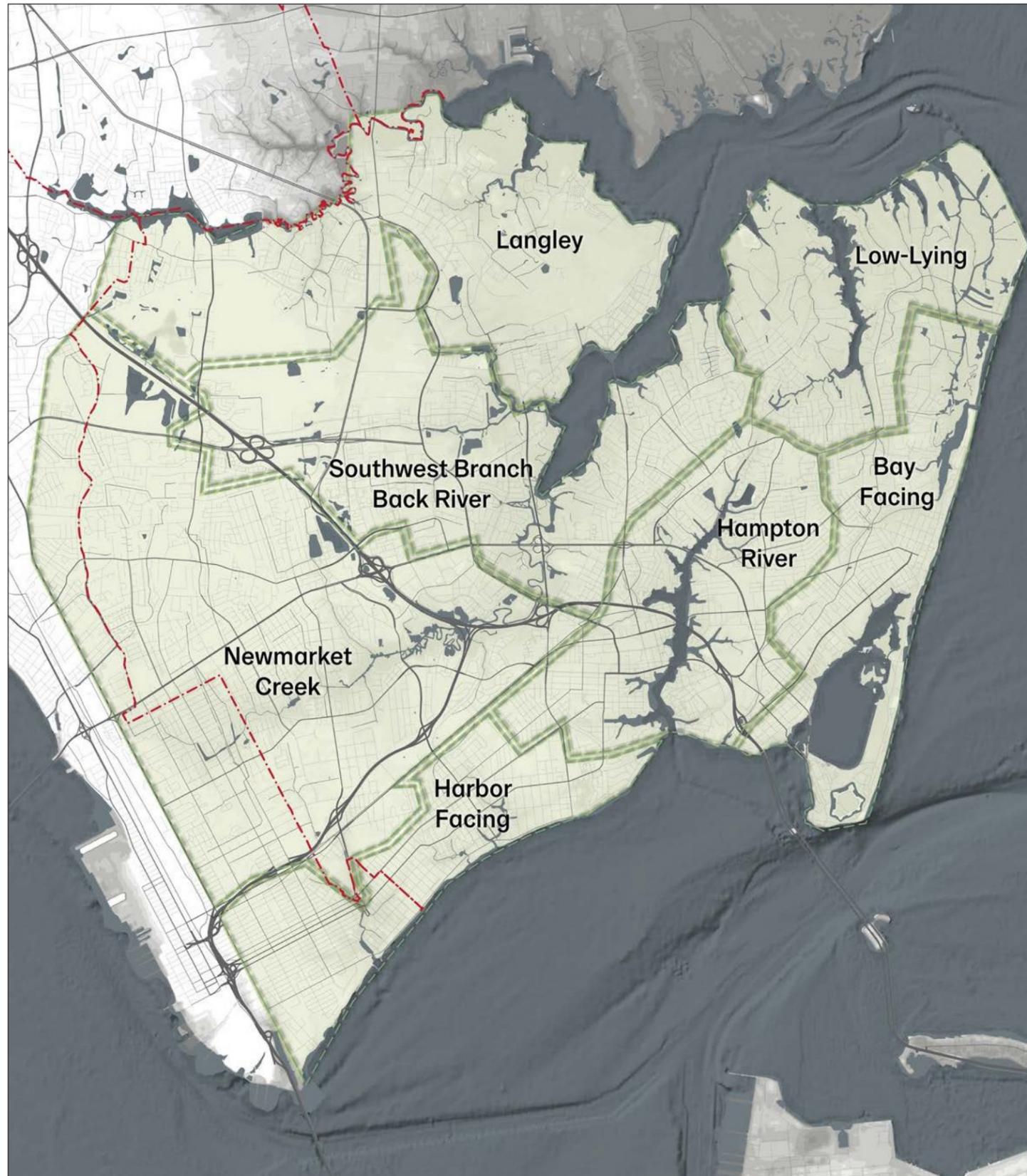
Groundwater

POLICY

EDUCATION & COMMUNICATION

PHYSICAL

OPERATIONS & MAINTENANCE



Hydrologically-Based Study Areas:

- Different challenges
- Different priorities and values
- Different outcomes

Location-Specific Conditions

Major Topics

- 1 Nuisance flooding
- 2 Access
- 3 Balancing government intervention with citizen privacy

Possible Strategies

- 1 Create **dry/safe egress** routes in flood-prone areas.
- 2 Improve the **power grid** to maintain consistent operation (eg. bury utility lines, raise substations, etc.).
- 3 Create a **central evacuation site**.
- 4 Improve **city communication** about impending storm events and develop/improve the system for communicating with emergency services during/after events.
- 5 Enhance or create **water-based assets** (eg. marinas) to enhance recreation and economy.



Low-Lying

Foxhill, Grandview, Harris Creek

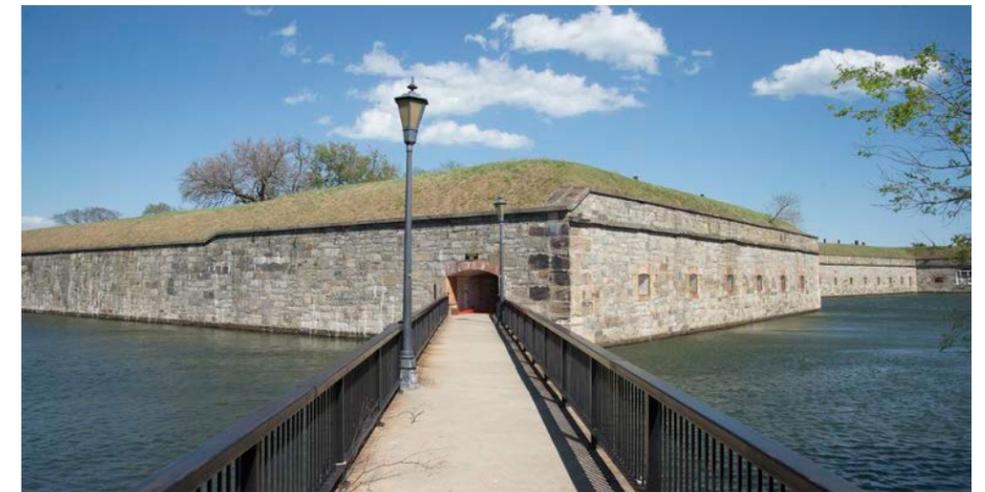
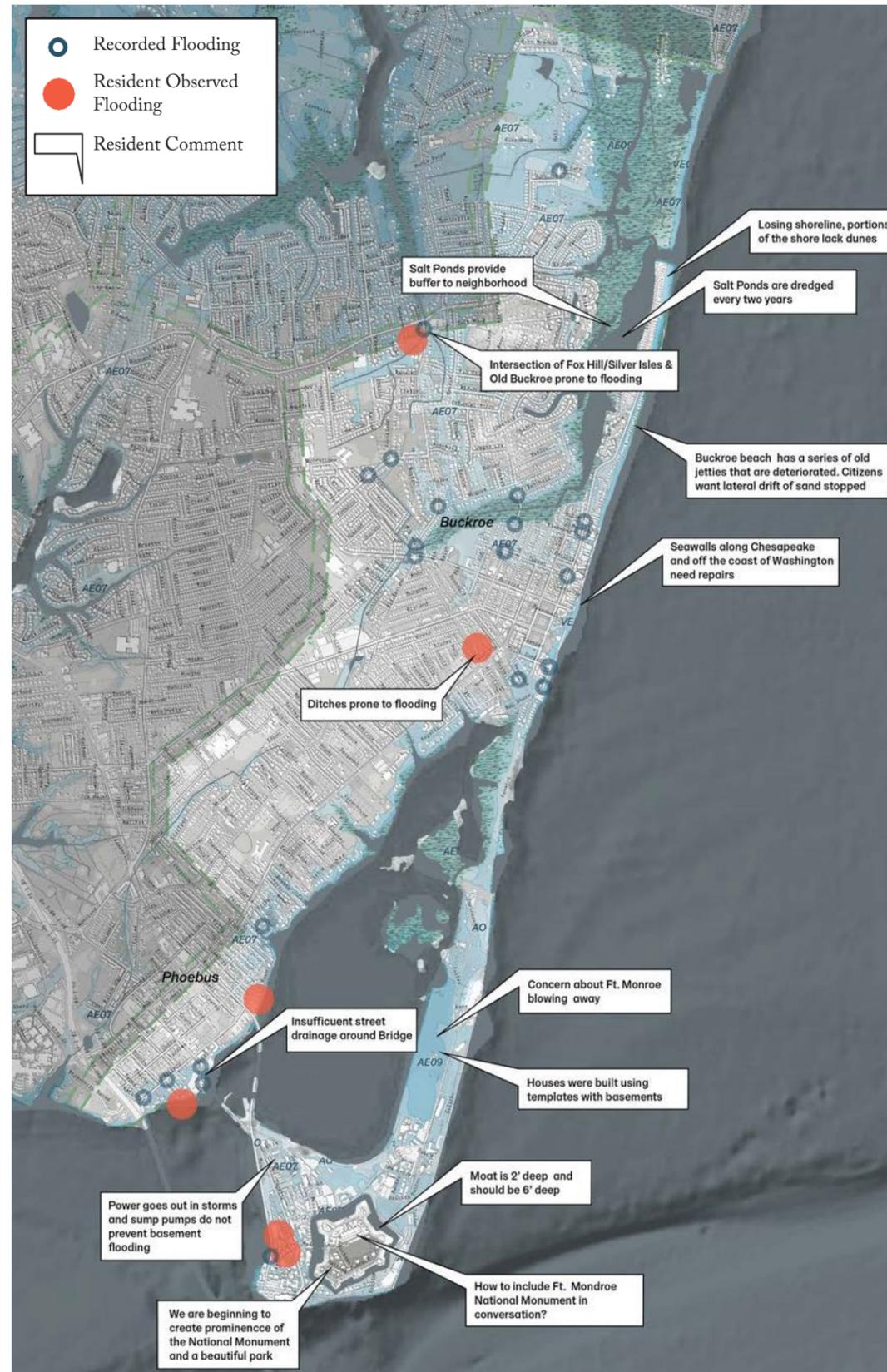


Major Topics

- 1 Major storm events
- 2 Tidal flooding / backflow through pipes
- 3 Future of Fort Monroe

Possible Strategies

- 1 Expand **shoreline stabilization** measures to prevent erosion/ degradation and Look for co-benefit opportunities to expand recreational opportunities and/or create habitat.
- 2 Improve the **power grid** to maintain consistent operation (eg. bury utility lines, raise substations, etc.).
- 3 Explore **architectural adaptations** and/or floodproofing measures that are sensitive to historic buildings.
- 4 Adapt subsurface **drainage outfalls** to prevent backflow.



Bay Facing

Buckroe, Phoebus, Fort Monroe



Major Topics

- 1 Tidal flooding
- 2 Shoreline maintenance
- 3 Old utilities
- 4 Balancing government intervention with citizen privacy

Possible Strategies

- 1 Expand **shoreline stabilization** measures to prevent erosion/ degradation. Work with residents to design holistic solutions where the shoreline is located on or near private property.
- 2 Work with residents to develop consistent strategies for **maintaining infrastructure** on private property.
- 3 **Replace outdated utilities** and locate them in lower-risk areas.



Harbor Facing

Greater Wythe, Merrimac Shores, Armstrong Gardens

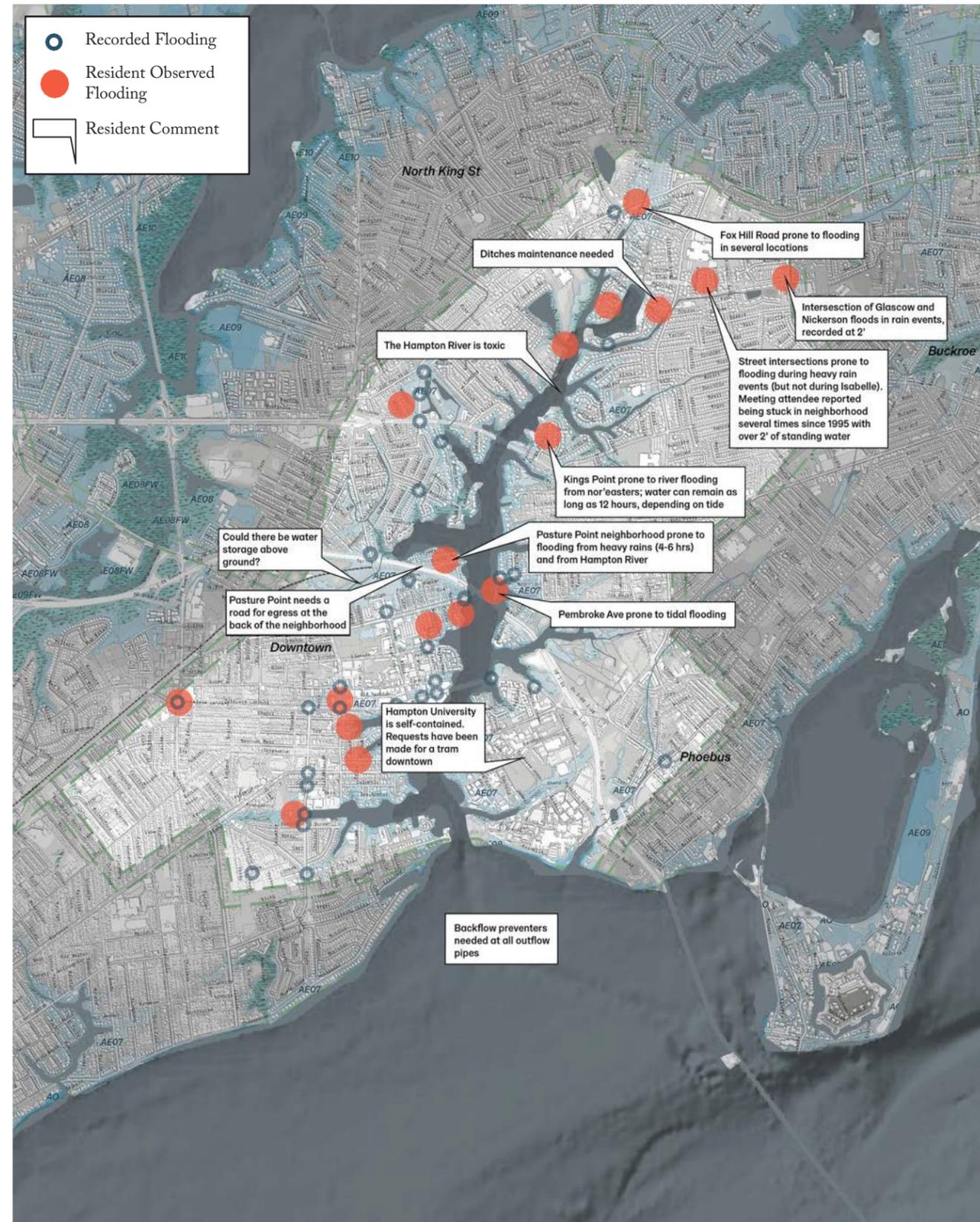


Major Topics

- 1 Prevalence of impervious surface
- 2 Water backflow through pipes
- 3 Access

Possible Strategies

- 1 Designate spaces to **detain and clean water**.
- 2 Create **dry/safe egress** routes in flood-prone areas and to critical assets.
- 3 Explore **architectural adaptations** and/or floodproofing measures for buildings at a range of scales (eg. residential, commercial, institutional).



Hampton River

Downtown, Hampton University, Hampton VA Medical Center, East Hampton, Elizabeth Lakes, Little England, Pasture Point

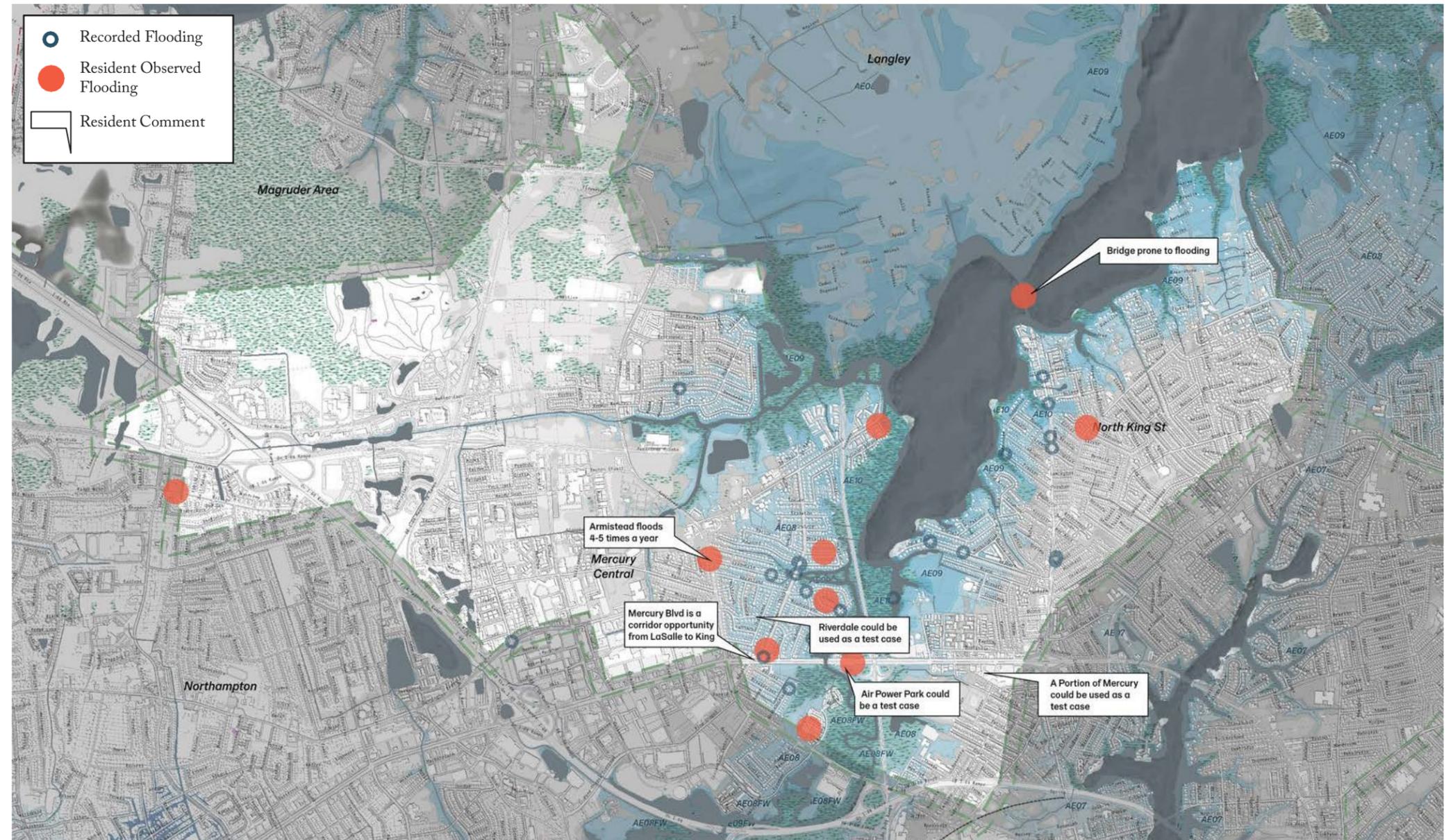


Major Topics

- 1 Tidal flooding
- 2 Shoreline erosion

Possible Strategies

- 1 Explore **architectural adaptations** and/or floodproofing measures for residential structures.
- 2 Create **upland water storage** in undeveloped areas.
- 3 Create **dry/safe egress** routes in flood-prone areas and to critical assets.

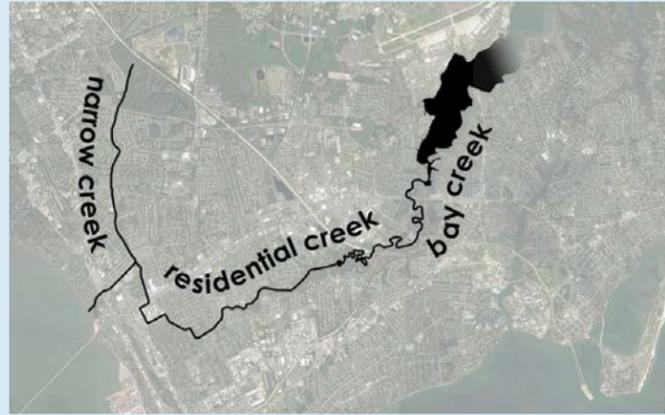


Southwest Branch Back River

Riverdale, Seldendale, Pastures, Tide Mill, Windsor Terrace, Coliseum Central



Newmarket Creek Conditions



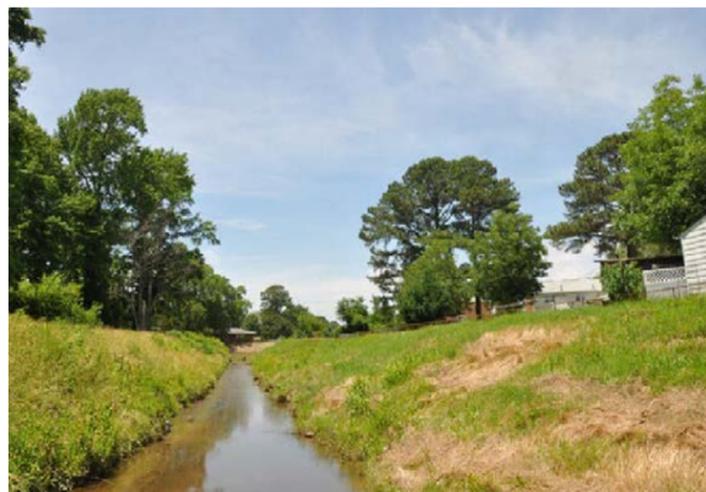
Bay Creek



Residential Creek



Narrow Creek



Newmarket Creek

Coliseum Central, Northampton, Aberdeen, Westhampton, Briarfield, Newport News



CREATE VALUE DRIVEN SOLUTIONS

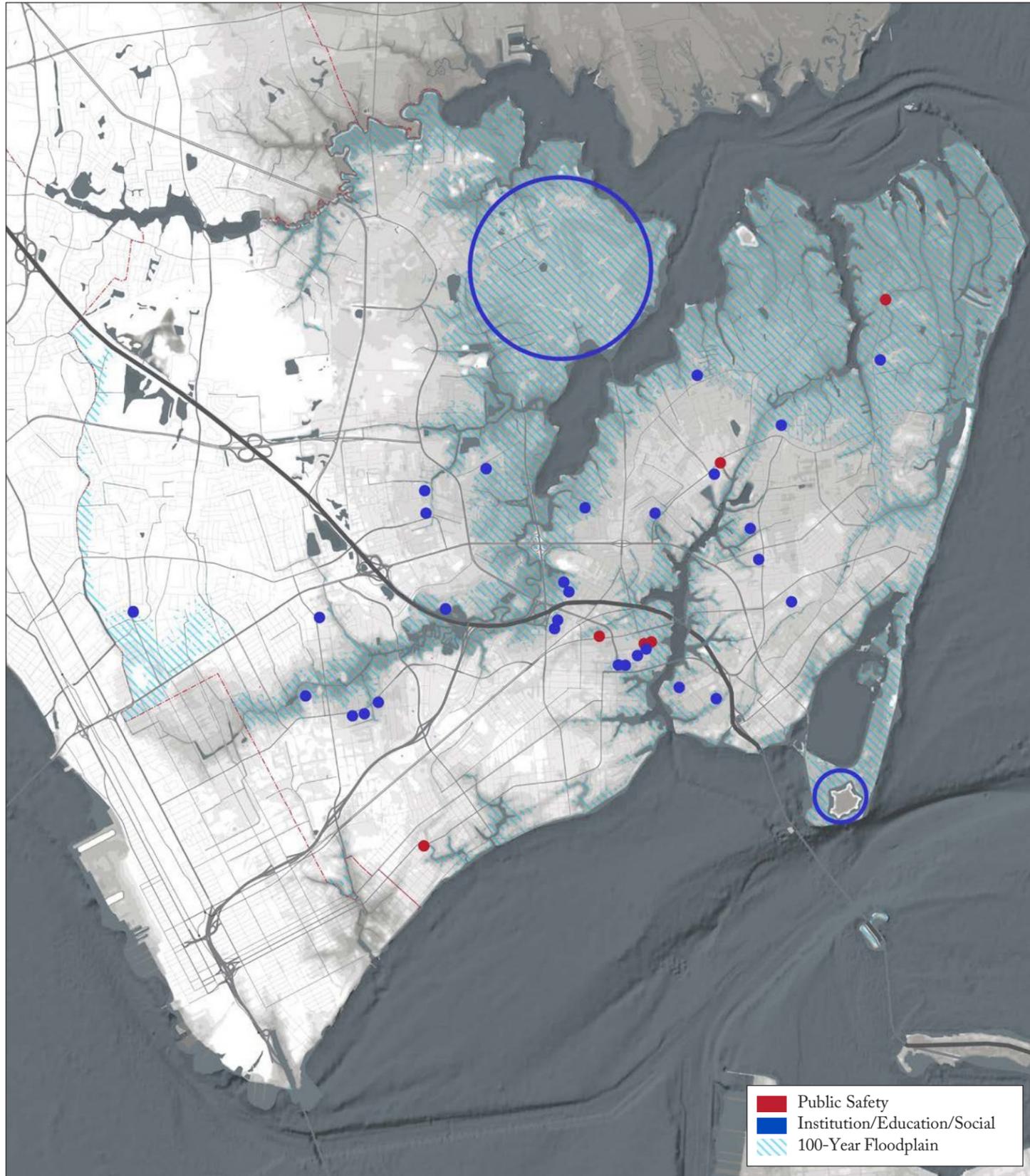
REINFORCE ASSETS

LAYER PUBLIC BENEFITS

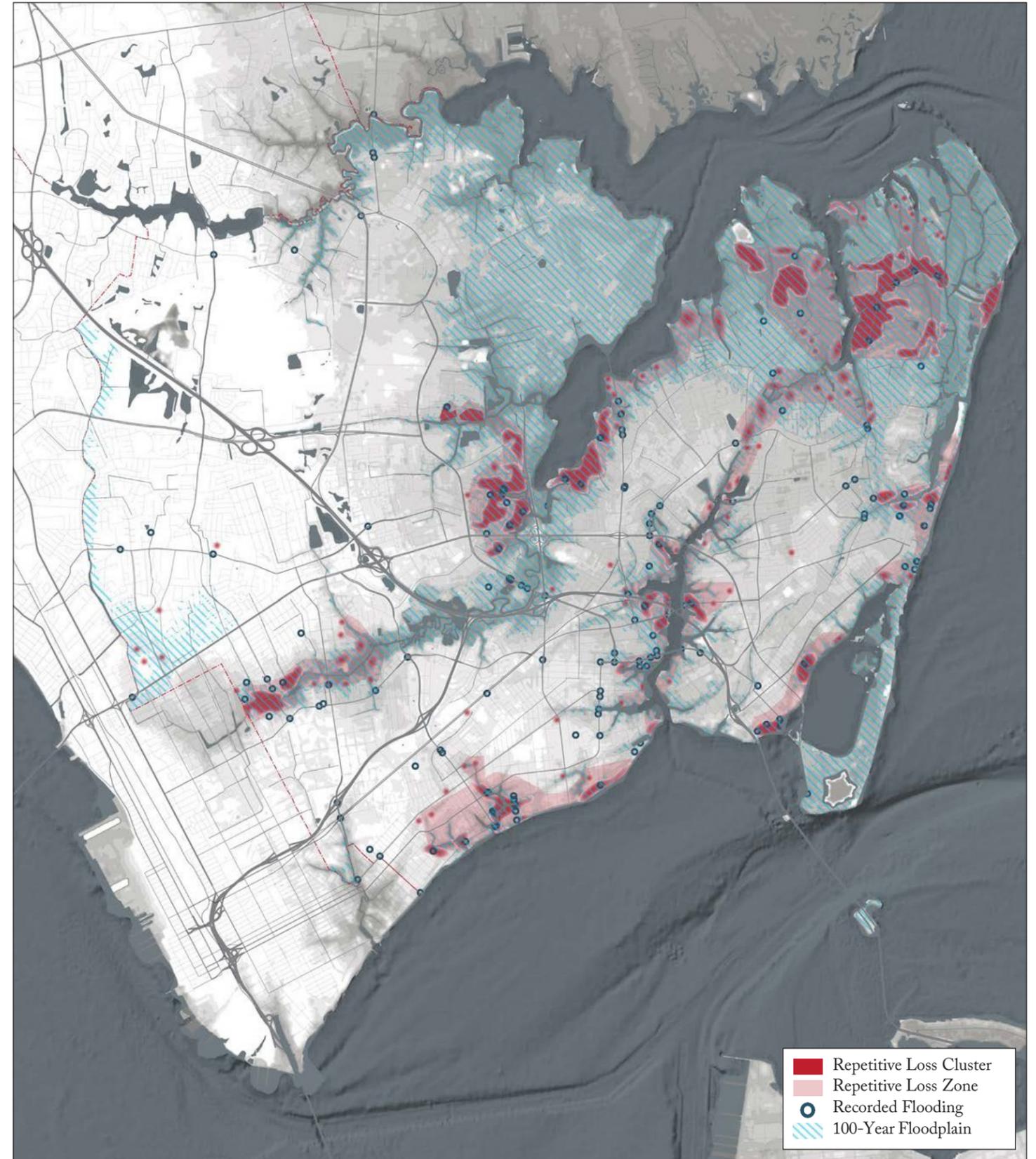
STRENGTHEN PARTNERSHIPS

USE BEST DATA

SHARE KNOWLEDGE AND RESOURCES



Facilities at Risk



Repetitive Loss

SAFE

EQUITABLE

NATURAL

HERITAGE

INTEGRATED

SUFFICIENT

NIMBLE

INNOVATIVE

ADDRESS THE CHALLENGE

EMBRACE THE INITIATIVE

ADOPT RESILIENCE STANDARDS

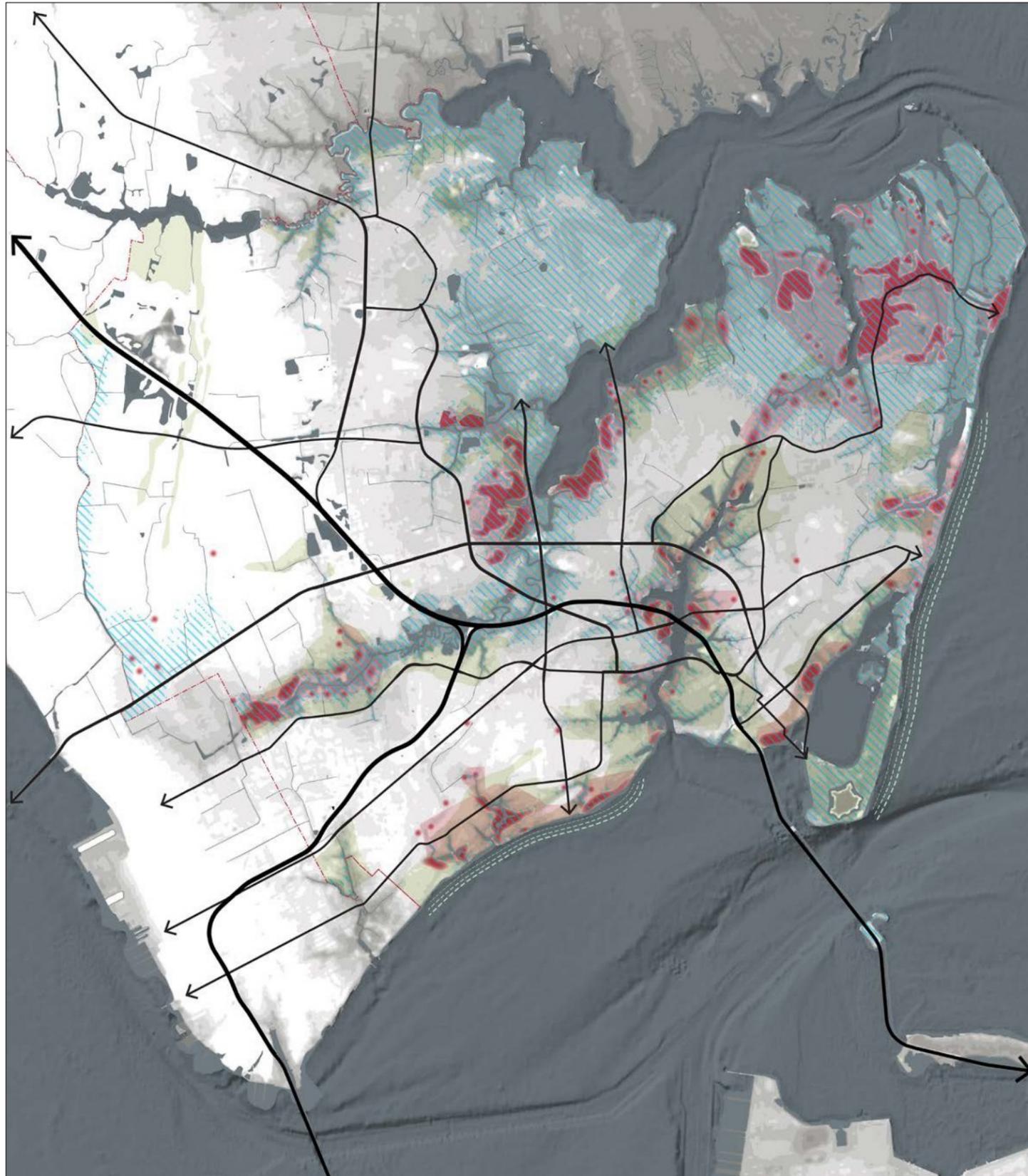
SOLUTIONS AT MULTIPLE SCALES

EDUCATE COMMUNITY

FOLLOW GUIDING PRINCIPLES

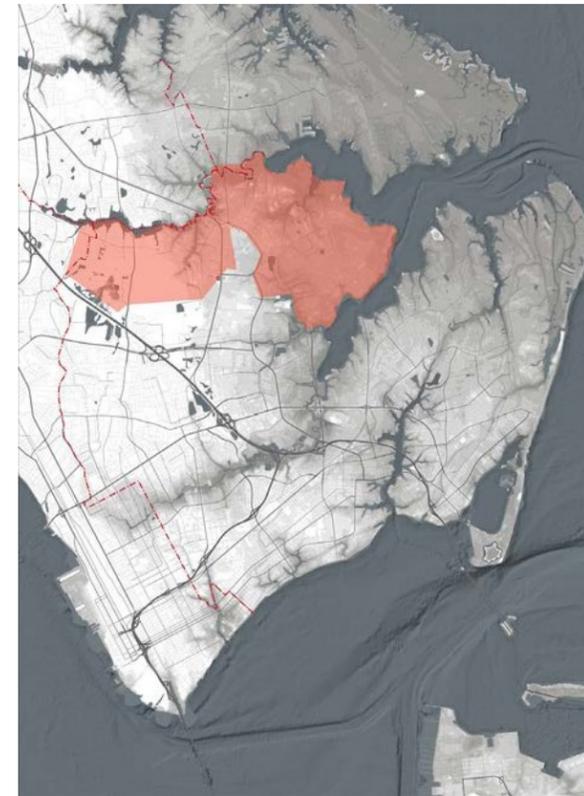
EVALUATE

LEAD THE WAY



- **Langley Air Force Base**
- **Newmarket Creek**
- **Downtown**
- **Fox Hill**
- **Buckroe – public beachfrontage**

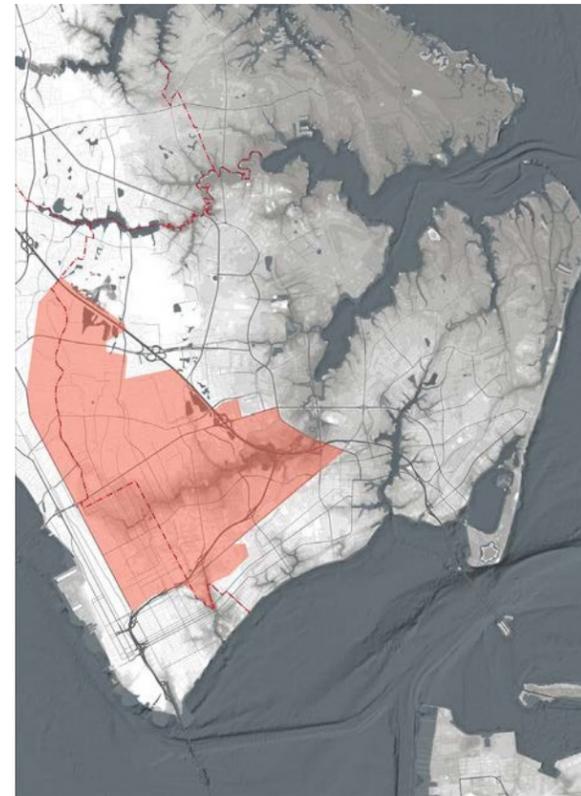
Phase 2 Potential Focus Areas



- Major asset of national importance; economic driver
- Important federal partnership
- Applicable to NASA Langley and the Hampton VA Medical Center

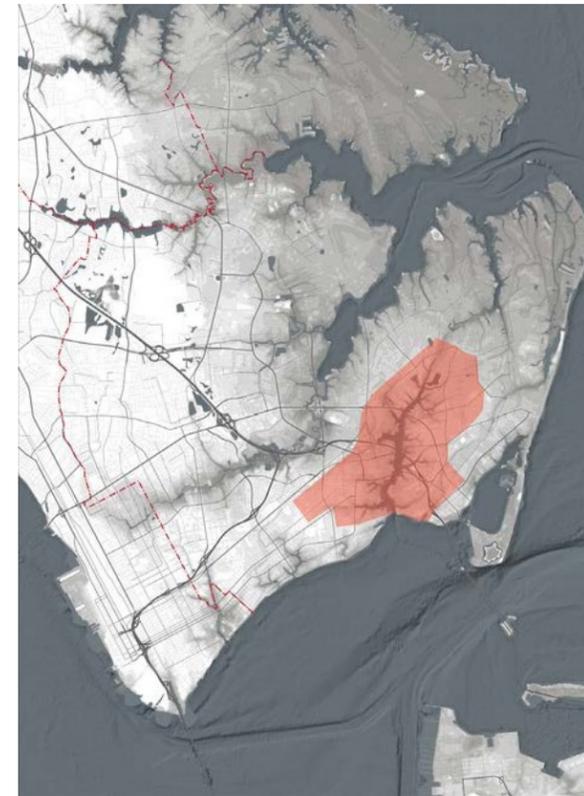
Langley Air Force Base





- Central to the city– touches many neighborhoods
- Wide range of challenges and potential solutions
- Potential partnership with Newport News
- Potential to assist vulnerable populations
- Potential economic catalyst, e.g. San Antonio Riverwalk

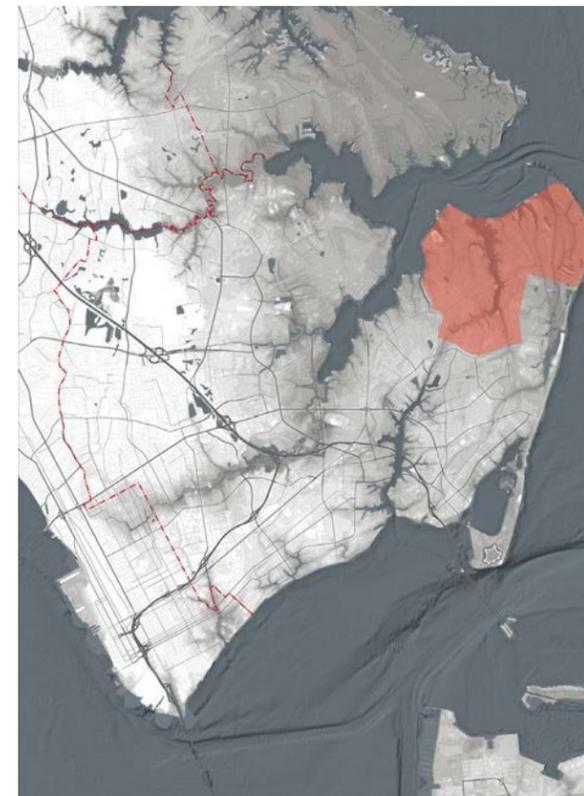
Newmarket Creek



- Cultural heart of the city – many historic and cultural assets
- Economies tied to the seafood industry, tourism, institutions (Hampton University, VAMedical Center, etc.)
- Publicly-owned lands to use for demonstration projects
- Pilot green infrastructure (storage) solutions and urban river edge typology – applicable to Phoebus and Coliseum Central

Downtown

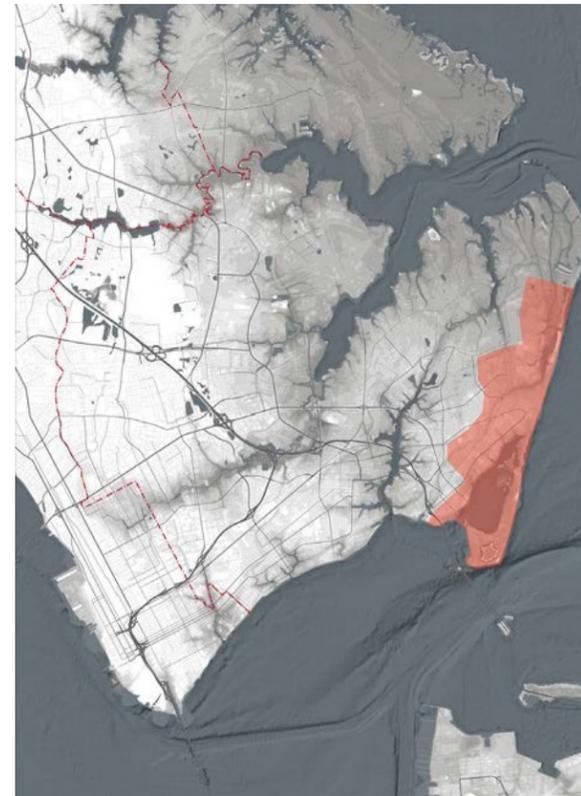
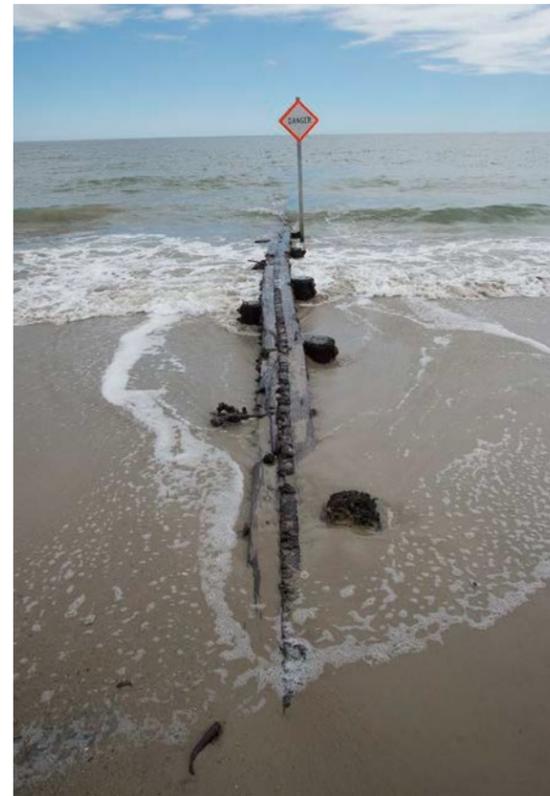




- Potential solutions at the parcel scale
- Specific strategies for individual neighborhoods
- Increasing resiliency of critical infrastructure like roads and the power grid – process applicable to most neighborhoods (although specific solutions may be different)

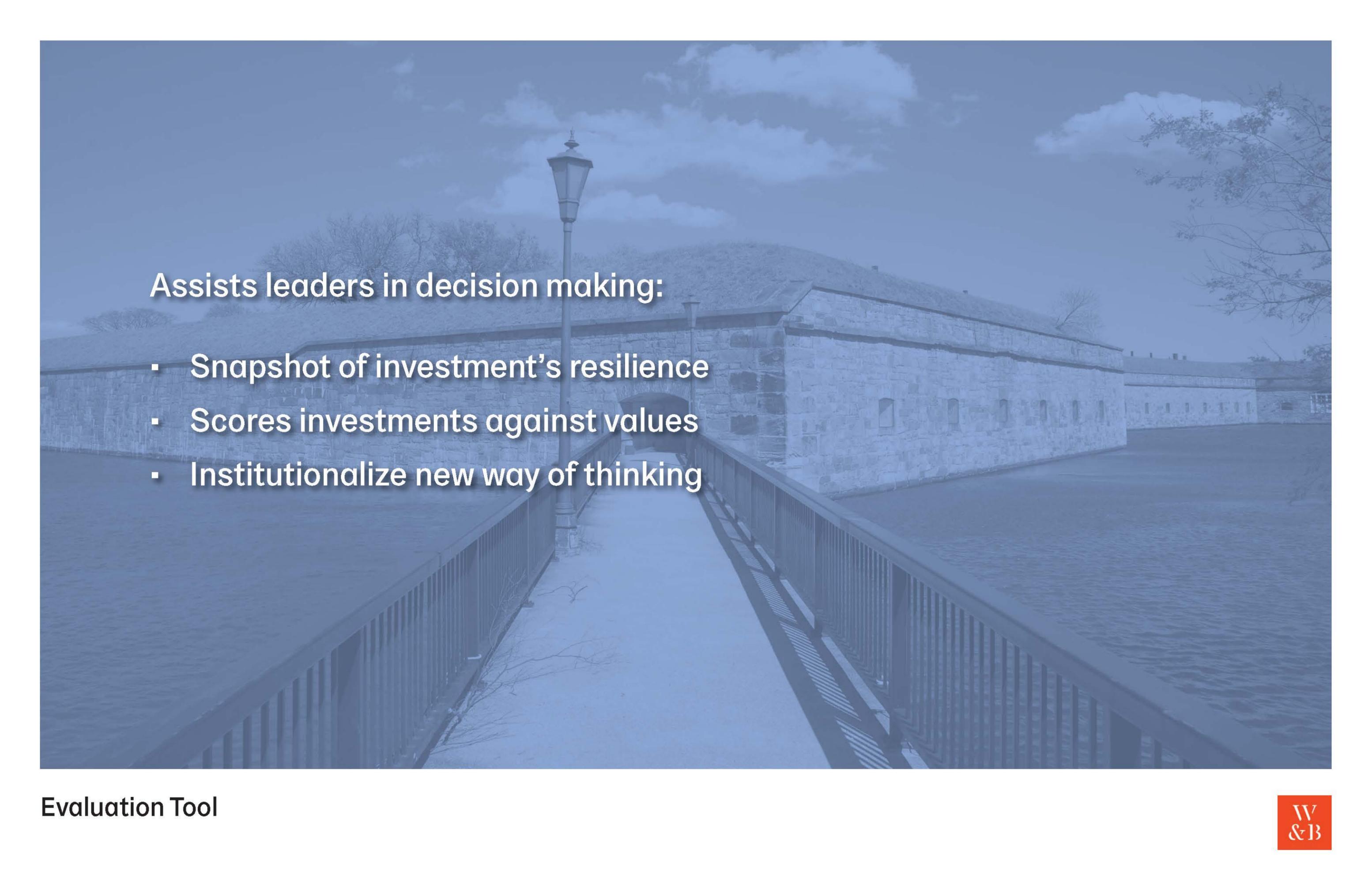
Fox Hill





- Recreational and tourism asset
- Hardened bay-facing edge typology – applicable to Fort Monroe
- Smaller scale – project based

Buckroe

A blue-tinted photograph of a stone fortification, likely a bastion or part of a larger fort. A walkway with a metal railing runs along the water's edge in the foreground. A tall, ornate lamppost stands on the walkway. The fortification is built of large stone blocks and has several small, rectangular windows. The sky is overcast with some clouds.

Assists leaders in decision making:

- Snapshot of investment's resilience
- Scores investments against values
- Institutionalize new way of thinking

1. Safe

The City of Hampton needs to show current and prospective residents, industries, and employers that it has a strategy for addressing climate challenges. A safe community with reduced risk is the primary value for Hampton's future. The process of becoming a safer, more resilient place with lowered risk depends on a range of factors. Major elements – or attributes – of safety and risk reduction include options for shelter and egress; reliable utility systems such as power, energy, and water supply; better protection of critical infrastructure; reducing the number of structures in the floodplain; and improving emergency response. However, reduced risk is only one facet of resilience. Safety and risk reduction must not come at the expense of quality of life for both humans and the environment.

Egress, Maintenance	
-	Repair (e.g. potholes) and extending existing street that has egress problems
N/A	Not a street, meets VDOT standards
+	Street construction to City Standard or higher
++	Creates complete street

Floodplain Development

- New vulnerable improvements in floodplain
- + Adaptation of existing structures in floodplain
- ++ Removes structures in floodplain, avoids floodplain, or builds appropriate things in floodplain (e.g. park)

+	Uses renewable energy or otherwise has source undisturbed by weather (micro grids, located in safe area, buried utilities, etc.)
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Critical Facilities	
-	Locates or expands in vulnerable area, or using "business as usual" vulnerable technique
N/A	Not a critical facility
+	Retrofits existing facility, builds to higher standard, or improved emergency response capability

Floodplain Development	
-	New vulnerable improvements in floodplain
+	Adaptation of existing structures in floodplain
++	Removes structures in floodplain, avoids floodplain, or builds appropriate things in floodplain (e.g. park)

Storm resistant structures	
-	Builds to legal nonconforming standards
N/A	No structure, or meets existing building code
+	Meets standard higher than minimum (e.g. city adopted freeboard)
++	Meets best practices for hurricane/other natural disaster standard (higher than code)

Egress, Maintenance

Intent
To effectively upgrade, or redesign and rebuild, roadways and their respective utilities in a resilient manner for use as egress routes, rather than a conventional roadway.

Examples
When a roadway becomes in need of repair, consider if it would make sense to function as an egress route. If so, redesign and rebuild the road and its utilities to be above the flood elevation until it connects to another egress route on higher ground.

Additional Information/Resources

Examples

The project includes a microgrid, a local utility system with the controlled capability to disconnect from the traditional power grid and operate autonomously, such as during a storm event. The project may also include only a backup power supply rather than a developed microgrid. The project could also be regenerative and produce its own energy on site with renewable sources such as photovoltaic solar panels, wind turbines, or geothermal power.

Additional Information/Resources
Links to information on microgrids, backup power systems, renewable energy

Examples
The project directly connects to an existing egress route, or improves access to an existing one. The project could also include improvements to an existing egress route, including construction work, signage, or other wayfinding to promote accessibility. The project might also include a new safe egress route out of a flood prone area.

Additional Information/Resources
Links to projects that include raised egress, existing egress improvements, or egress route wayfinding. Some cities (like Portland, OR) have a web page on their evacuation plan, with documents, links, and other information

Energy and Power

Intent
To provide critical infrastructure with a reliable source of power or energy in case of an emergency.

damage. The project could also be new infrastructure, including buildings, sites, or utilities, designed to have a low level of risk and potential damage.

Additional Information/Resources
Links to projects or programs that minimize the risks and potential damage to critical infrastructure that is similar to what exists in Hampton.

Reduce/Adapt Floodplain Development

Intent
To create more space for water as a protective buffer to the city during flooding by limiting the number of structures in the floodplain, and adapting existing development to be more flood resistant.

ge to critical use facilities, structure.

ilities, minimize risks and

- Identify focus area for Phase 2
- Amend the Community Plan
- Refine the “Evaluation Tool”
- Pursue changes to the legal framework as necessary
- Review and amend City codes and ordinances
- Set “resiliency targets”
- Develop a community education program
- Continue to work with our partners
- Develop JLUS Amendment with Langley AFB
- Establish and support a “Hampton Resilience Partnership”