

Coney Island Creek Resiliency Study

March 9, 2016



#ONENYC

NYC
Mayor's Office of
Recovery & Resiliency

 **NYCEDC**

OneNYC: Our Four Visions

On April 22nd, Mayor Bill de Blasio released a new long-term strategic plan to address our most pressing challenges and builds on prior efforts.



**Our
Growing,
Thriving
City**



**Our Just
and
Equitable
City**



**Our
Sustainable
City**



**Our
Resilient
City**

OneNYC: Our Resilient City

This plan builds on existing efforts and strengthens and expands the City's commitment to a multilayered approach to resiliency.



Neighborhoods

Every city neighborhood will be safer by strengthening community, social, and economic resiliency



Buildings

The city's buildings will be upgraded against changing climate impacts



Infrastructure

Infrastructure systems across the region will adapt to enable continue services



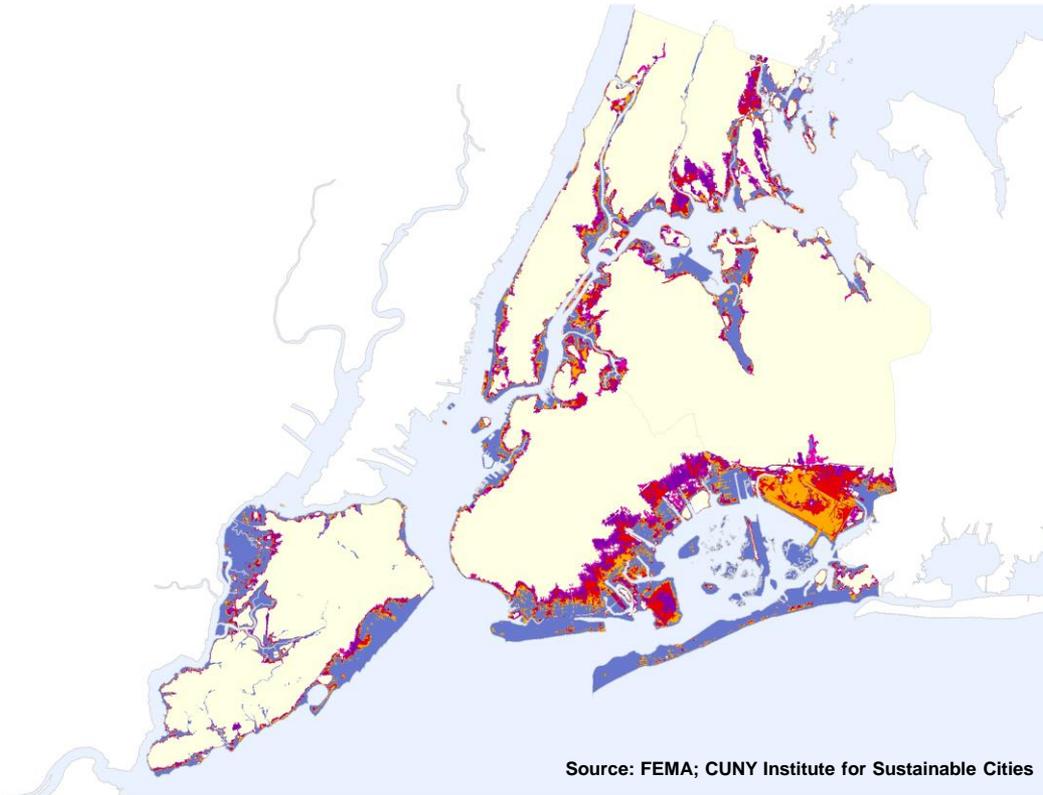
Coastal Defense

New York City's coastal defenses will be strengthened against flooding and sea level rise

Sea Level Rise and Storm Surge

The City's 520 miles of coastline is vulnerable to flooding from coastal storms...

Projected floodplain for the 2020s, 2050s, 2080s, and 2100



- FEMA 2013 Preliminary FIRMs 100-year Floodplain
- Projected 2050s 100-year Floodplain
- Projected 2020s 100-year Floodplain
- Projected 2080s 100-year Floodplain
- Projected 2100 100-year Floodplain

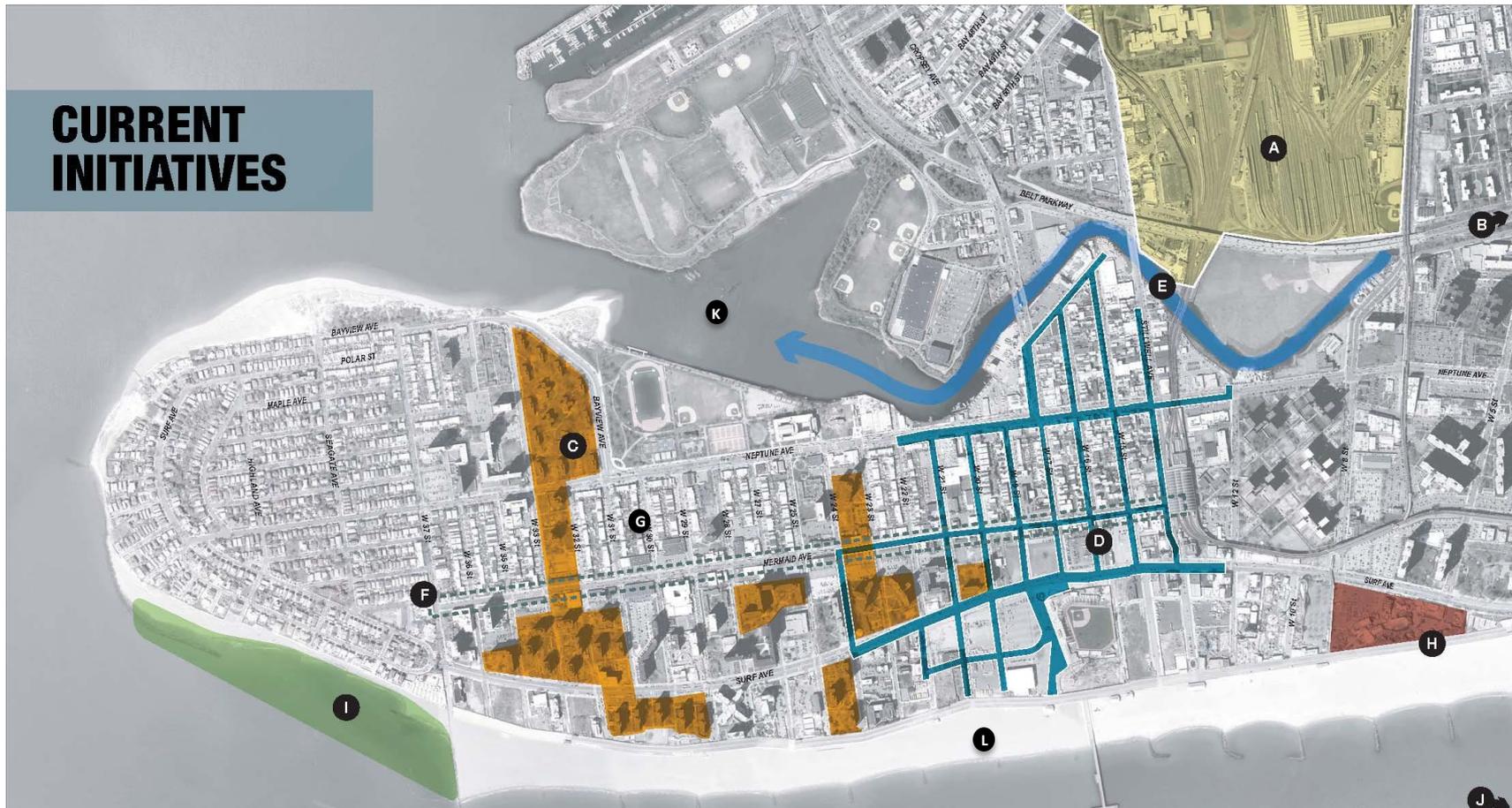
	100-year Floodplain*		
	2013 PFIRMs	2050s Projected	Change (%)
Residents	400,000	808,900	102%
Jobs	290,800	555,700	91%
Buildings	71,500	118,000	65%
1-4 Family	57,400	89,000	55%
Floor Area (Sq Ft.)	534M	855M	42%

* Numbers are rounded for clarity

Over 171,000 buildings and 1.2 million New Yorkers projected to live in the floodplain by 2100.

Current Resiliency Investments

There are over \$2 Billion in resiliency initiatives underway in Coney Island



Critical Infrastructure

- A. MTA Rail Yards Floodwall (\$20M+)
- B. Coney Island Hospital (\$923M)
- C. NYCHA (\$720M)

Stormwater Management

- D. Amended Drainage Plan Implementation, (\$240M)
- E. Water Quality Improvements (\$210M)

Neighborhood Investments

- F. Small business recovery and resiliency
- G. Housing Recovery
- H. New York Aquarium (\$62 Million+)

Regional Resiliency

- I. T-groins and Beach Renourishment (\$25M)
- J. Jamaica Bay Reformulation Study
- K. Coney Island Creek Resiliency Study
- L. Beachside Resiliency Study

Coney Island Creek Resiliency Study

What is this study?

- A first step in a long-term strategy to protect the life, property, and livelihoods of Coney Island & Gravesend communities from the effects of storm surge and sea level rise.
- A shared City-community agenda for resiliency grounded in sound science and developed to USACE standards with a goal of FEMA certification.
- An opportunity to improve the ecology and water quality of the Creek while strengthening the potential for community resilience by enhancing public spaces.
- A critical component of a comprehensive regional solution for coastal flooding that extends from Jamaica Bay to the low-lying areas of Gravesend Bay to Manhattan Beach.



Coney Island Creek Resiliency Study

Specific Goals of the Study:

1. Test the **feasibility of the flood mitigation concept** presented in *A Stronger More Resilient New York* as Southern Brooklyn Initiative #5.
2. Consider **community benefits** in a comprehensive and coordinated approach.
3. Identify **immediate action items** to enhance resiliency in the near-term.
4. Define implementation strategy for **long-term vision** to inform City and United States Army Corps of Engineers (USACE).
5. Conduct robust **community engagement**, empowering and mobilizing community stakeholders around the topic of resiliency.



View of Creek looking southeast



View of Creek looking south

Community Preferences & Guiding Principles

Resiliency for Coney Creek means: A comprehensive ecologically resilient and reliable flood mitigation measures for the Coney Island Community.

- Improved water, sediment and soil quality
- Alternatives should equally protect the community
- A regional solution, and an understanding of tradeoffs
- Enhanced recreational spaces and educational opportunities
- An in-depth analysis of hazardous materials disposal
- Investigating the opportunity for dunes and other beachside resiliency measures
- A low-maintenance and reliable system
- A solution that builds off of existing parks programming and planned improvements
- A solution that does not preclude potential ferry service
- Workforce development opportunities and local job access



What are we solving for?

The Creek's low-lying shoreline makes it vulnerable to flooding.

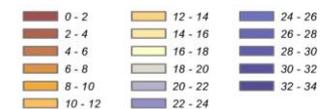
- Majority of the shoreline has a ground elevation between 6 and 9 feet
- Ground elevations below 6 feet are easy entryways for flood waters during low- and high-frequency storm events



Historic wetlands (Coney Creek 1891)



Topography of primary study area



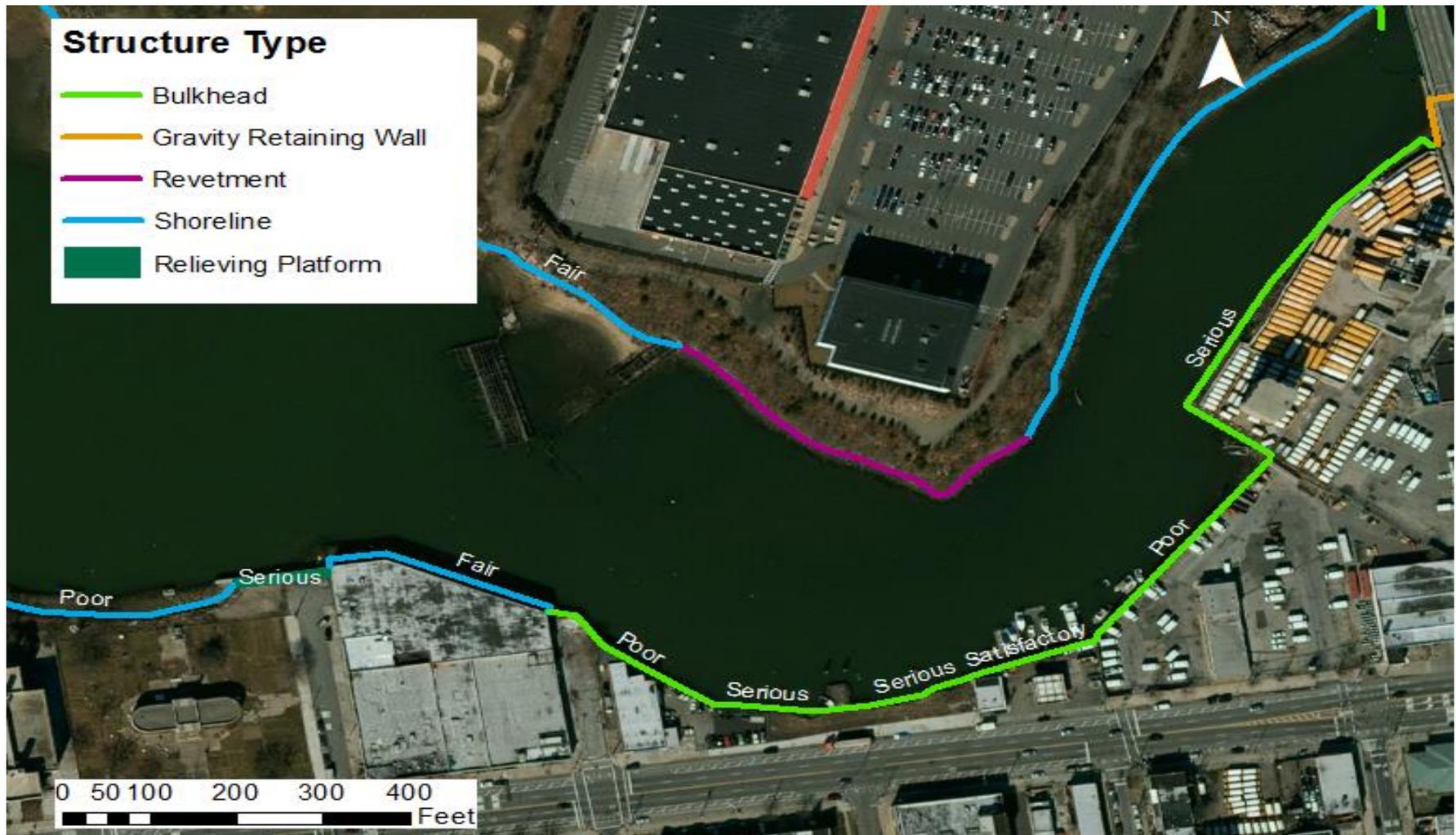
What are we solving for?

The Creek runs alongside important community facilities, critical infrastructure, and vulnerable populations



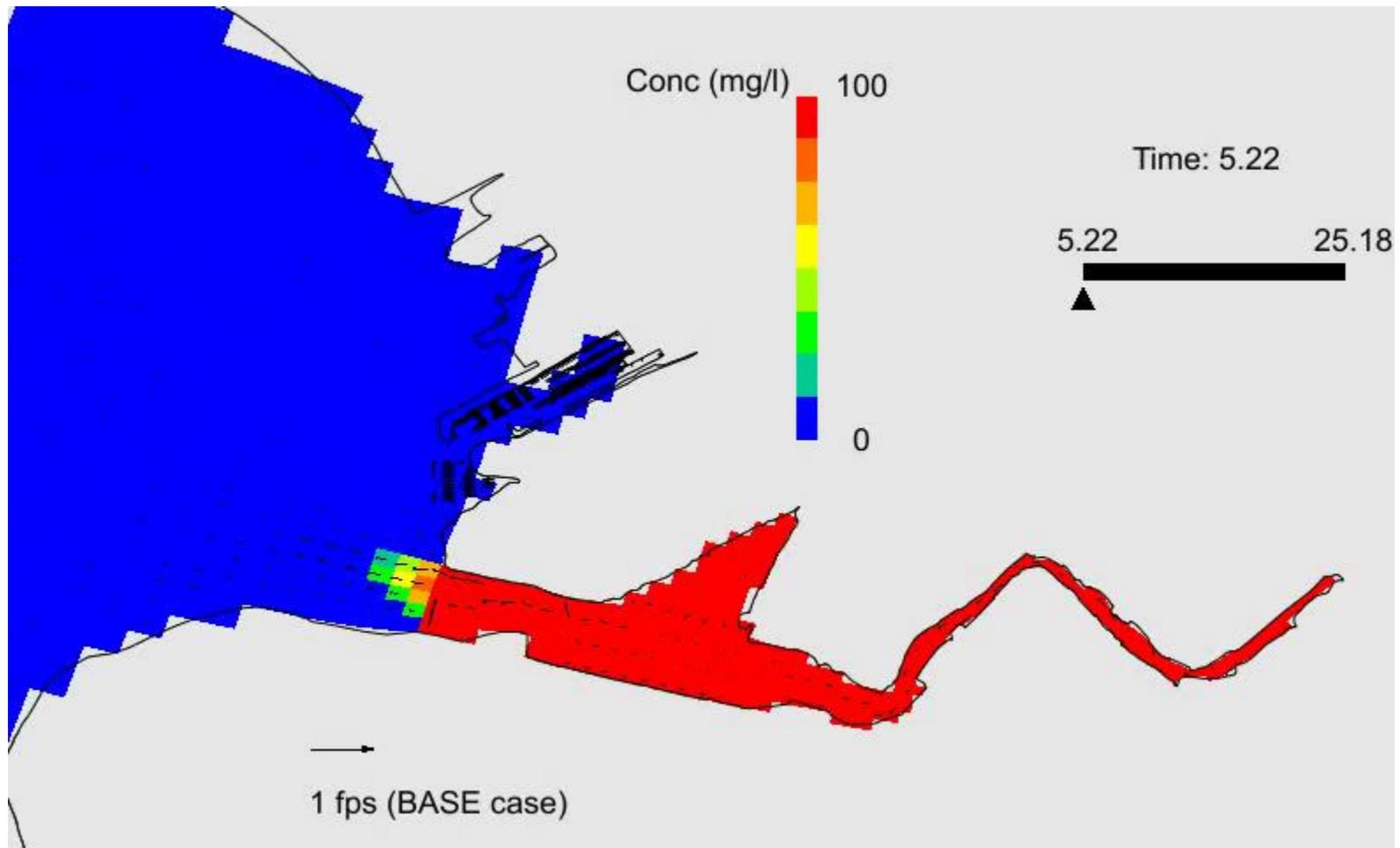
What we found.

Shoreline conditions vary by type and condition, with some areas of critical concern.



What we found.

Tidal flushing is constrained by narrow and angular passages, reducing water quality.



What we found.

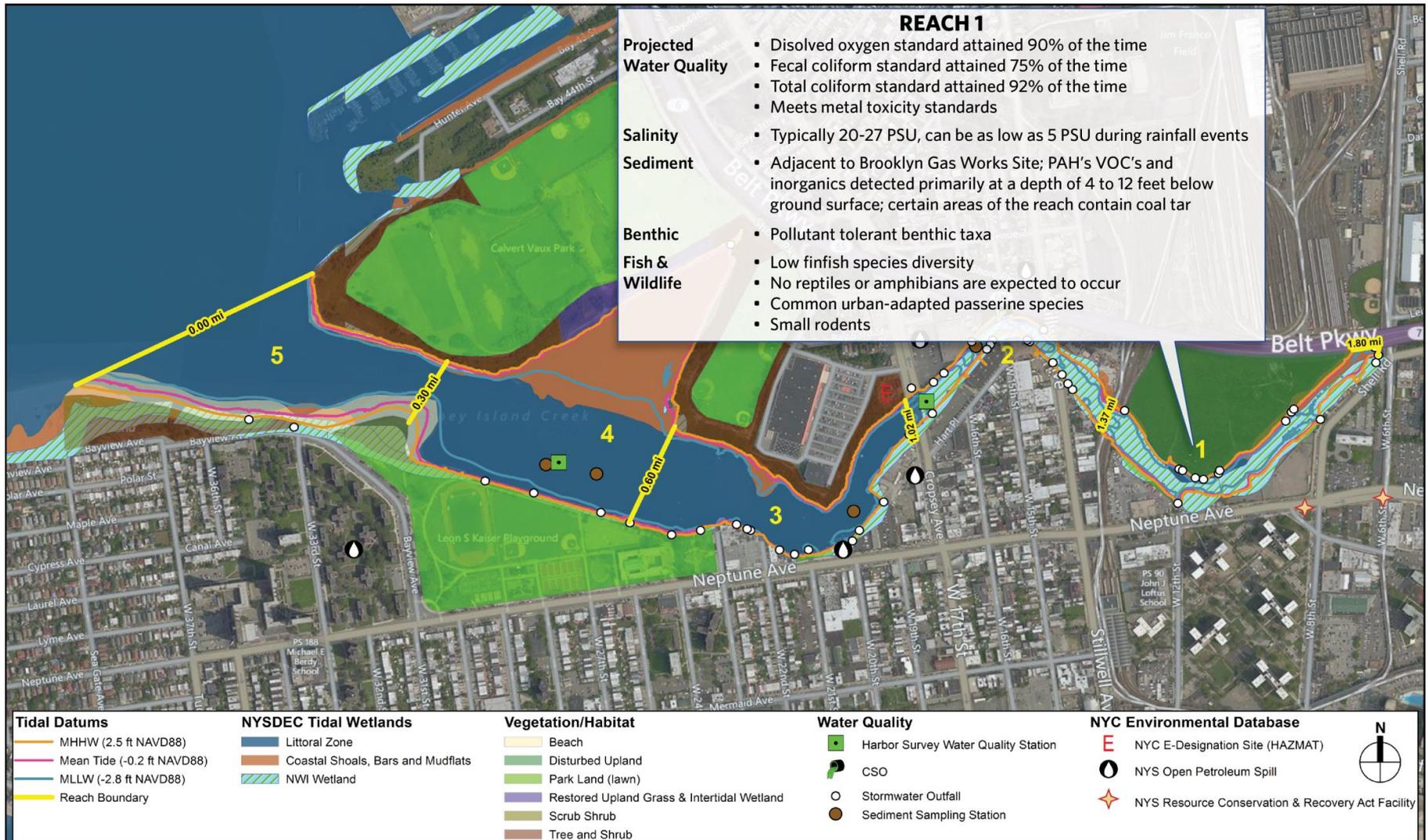
Remedial activities at sites along the Creek have improved soil quality, but additional testing would be required for a project to move forward.



NYSDEC Record of Decision for former Brooklyn Gas Works Site (2001-2002)

What we found.

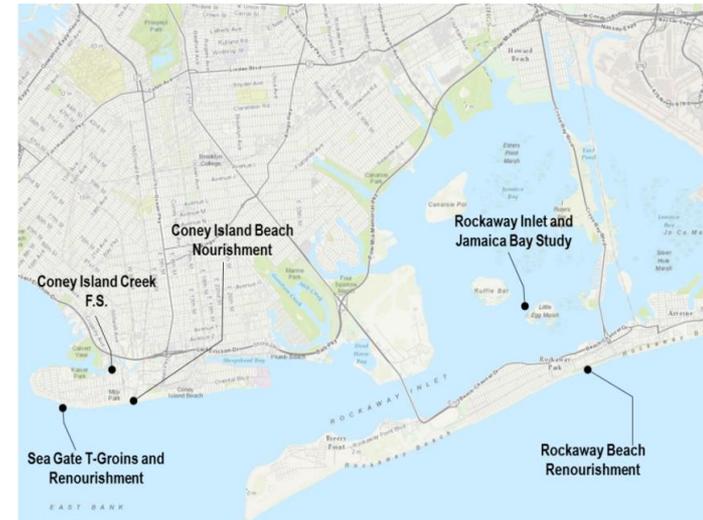
The Creek is an ecologically diverse habitat for a variety species.



Additional Key Study Findings

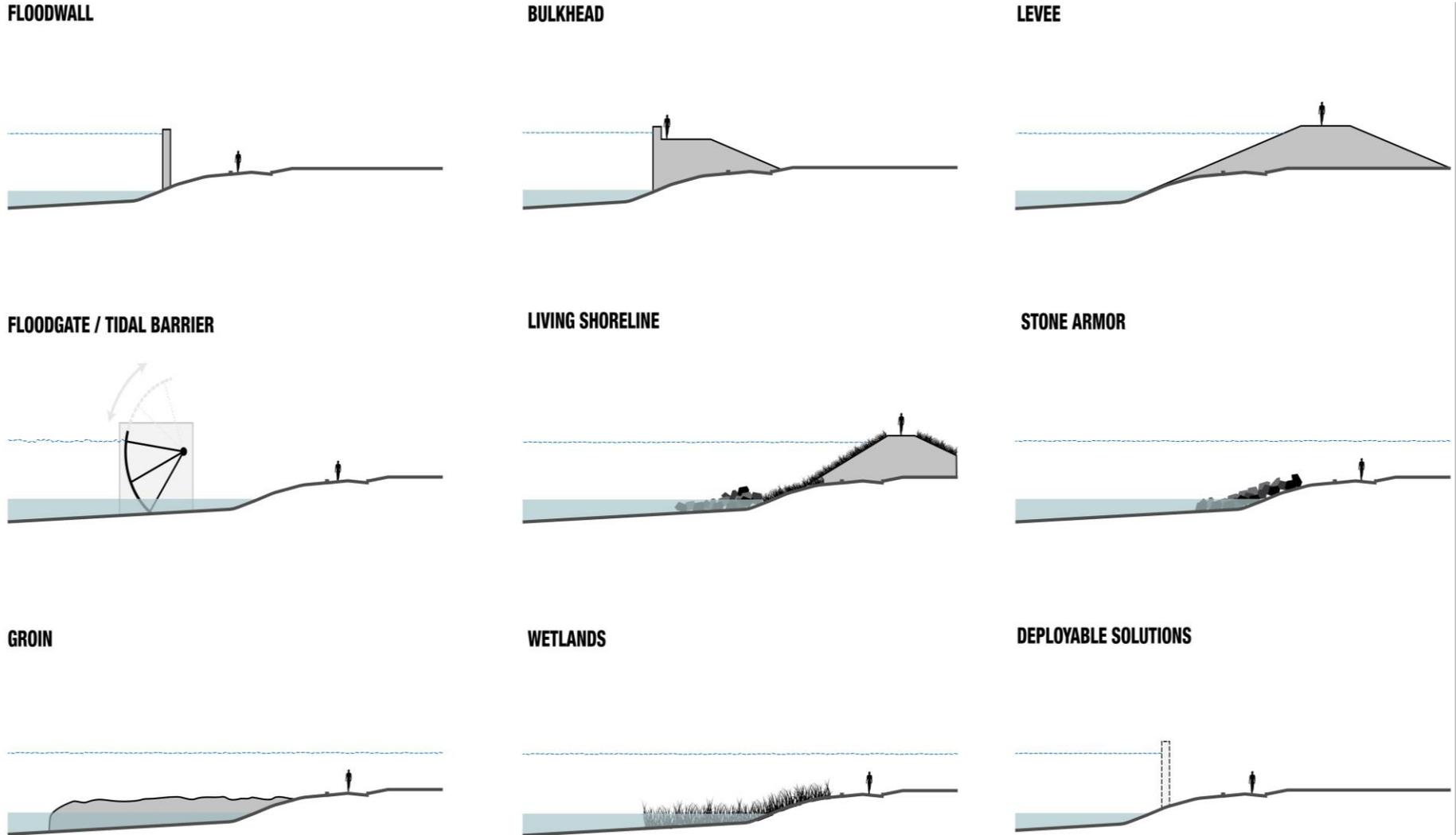
What did we learn during the study?

1. Regional Resiliency planning is critical and results in an estimated project benefit of \$4.8B in avoided damages.
2. A FEMA certified flood protection system is feasible.
3. Stormwater drainage and surface water mitigation must be an integral part of all flood protection strategies.
4. An barrier with a wide-opening, that remains open, is required to avoid negative impacts on water quality.
5. To reduce maintenance and increase reliability, fewer parts that need to be deployed or operated is preferred.
6. Community and stakeholder involvement is a critical element in furthering a long-term flood protection strategy.
7. There are several significant cost drivers leading to large cost uncertainties depending on alternative.



Flood Mitigation – Kit of Parts

Components of a flood mitigation system:



Alternatives for Flood Mitigation System

Areas within the red line “line of protection” is behind the flood mitigation system.*



GOALS	Calvert Vaux Alignment	Six Diamonds Alignment
Flood risk reduction and reliability	<ul style="list-style-type: none"> - Entire study area protected - Operable gates required maintenance 	<ul style="list-style-type: none"> - Entire study area protected - Fewer operable gates required for increased reliability
Ecological Considerations	<ul style="list-style-type: none"> - Wide opening / Always open - More pristine environment impacted 	<ul style="list-style-type: none"> - Wide opening / Always open - Less ecology disturbed
Community Benefits	<ul style="list-style-type: none"> - Potential for additional means of egress 	<ul style="list-style-type: none"> - Potential for additional means of egress - Lower height required, better public safety and accessibility - Opportunity to enhance parks
Cost Considerations	<ul style="list-style-type: none"> - High Cost \$\$\$ 	<ul style="list-style-type: none"> - Lower Cost \$\$
Implementability	<ul style="list-style-type: none"> - Permitting challenges 	<ul style="list-style-type: none"> - Reduced permitting challenges

*Additional alignments considered

Flood Mitigation

Resiliency investments can also enhance public spaces.



Flood Mitigation

A comprehensive system to protect the entire peninsula will have to incorporate a variety of strategies.



Maritime Forest / Shrubland



Beach / Dune



Fishing



Salt Marsh



Boat Launch



Passive Parkland

Flood Mitigation

Resiliency investments can also enhance public spaces.



Flood Mitigation

Resiliency investments can also enhance public spaces.



Flood Mitigation

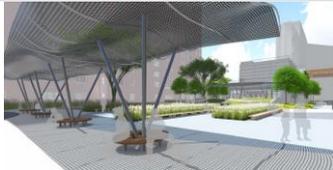
Resiliency investments can also enhance public spaces.



Creek Study Phase 1 Implementation

Resiliency Initiatives for 2016

Implementation Funding	Beachside Resiliency	Pumping Station
		
<p>Status: City has allocated \$32 M for Coney Island shoreline protection</p>	<p>Status: EDC/Parks planning in progress</p>	<p>Status: EDC/DCAS planning in progress</p>
<p>Next Step: The City will issue a request for proposal (RFP) in Spring 2016</p>	<p>Next step: Investigate alternatives and cost estimates</p>	<p>Next step: Test structural useful life; identify activation opportunities</p>

Stormwater Management	Resiliency Education	Small Business & Resident Support	Coney Tie-In for Jamaica Bay
			
<p>Status: NYCHA application for funding complete</p>	<p>Status: Coordination with educators</p>	<p>Status: Program in development by SBS and Center for NYC Neighborhoods</p>	<p>Status: Coordination with Army Corps ongoing</p>
<p>Next step: NYCHA obtain FEMA Phase I approval</p>	<p>Next step: Support curriculum on resiliency, ecology, and history</p>	<p>Next step: Launch assistance to 100 businesses & residents</p>	<p>Next step: Include new "Coney Tie-In" in Jamaica Bay planning</p>

Key Next Steps

Ongoing coordination with federal, state, and local partners remains a City priority.

- The city will release the *Coney Island Creek Resiliency Study – Public Report* in the Spring 2016 and use it as a tool to secure additional funding for Coney Island resiliency measures.
 - **For example:** The City will continue to strongly advocating alongside our federal, state and local elected officials for USACE to include Coney Island in their Rockaway Reformulation Study.
- The City will continue to work with our partners to advance *New York/New Jersey Harbor & Tributaries Feasibility Study*.
- The City will continue working with elected officials and community groups on planning for future Coney Island resiliency initiatives.
- The City will issue a request for proposal (RFP) to implement near-term shoreline protection measures in Spring 2016.