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Infrastructure · Water · Environment · Buildings

CONEY ISLAND CREEK RESILIENCY STUDY UPDATE

July 21st, 2015

NYCEDC

City of New York
Bill de Blasio, Mayor

Presentation Agenda

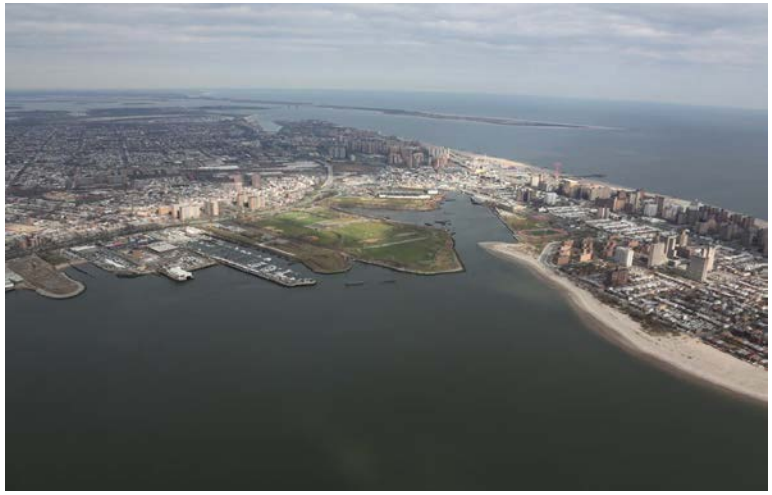
- Overview
- Regional Resiliency
- Long-term Flood Protection Recommendations
  - Creek Side Alignment
  - Floodgate Typologies
  - Water Quality and Ecology
- Outreach and Next Steps

Current Study Status

Overview

Purpose of feasibility study: ***Develop long-term strategy to protect Coney Island & Gravesend from effects of storm surge and sea level rise***

- Conduct robust technical analysis of large-scale tidal barrier & wetlands concept presented in SIRR report
- Identify specific measures to provide near-term flood protection
- Recommend comprehensive flood protection plan and define implementation steps



Coordinated interagency effort:

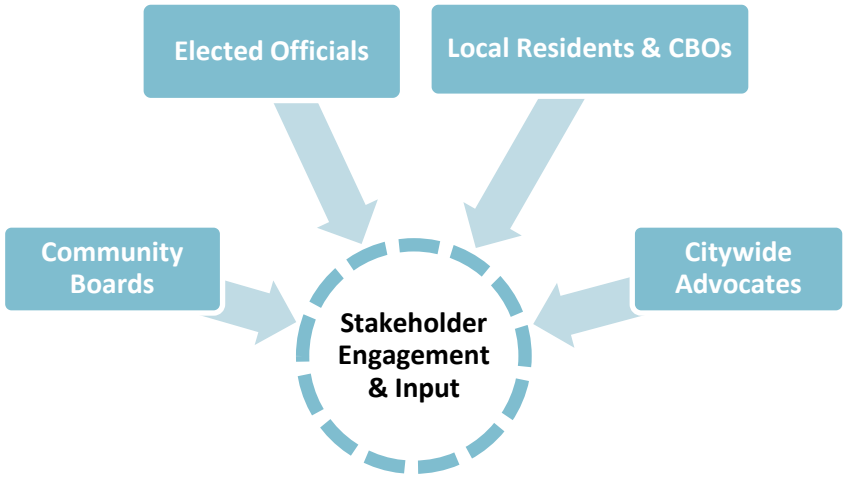
- Managed by NYCEDC on behalf of ORR
- Close partnership with DEP, Parks, City Planning
- State and Federal agencies (e.g., DEC, Army Corps) also involved

Funding: 100% from first tranche of Sandy CDGB funds

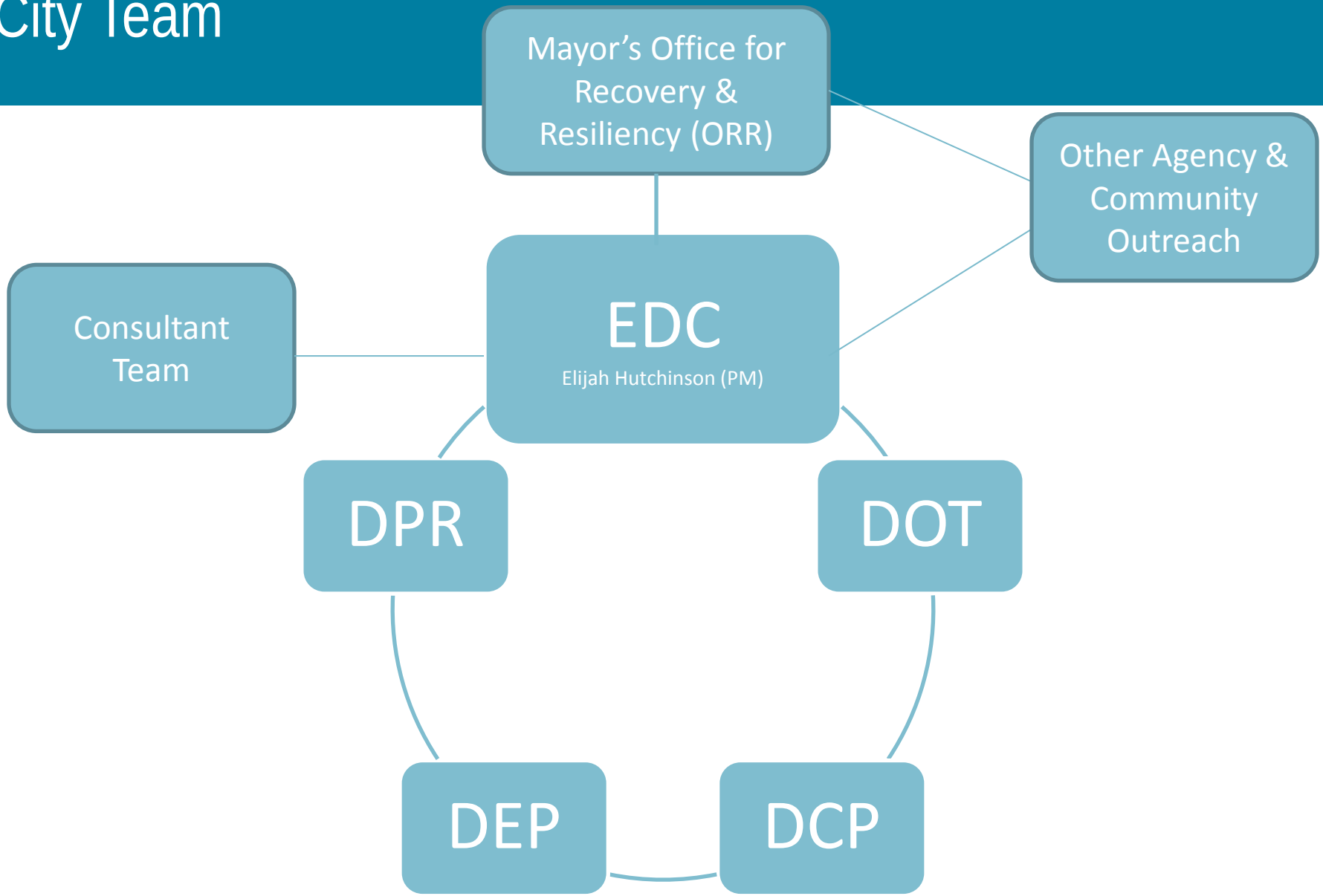
Scope of Study

Questions to be answered:

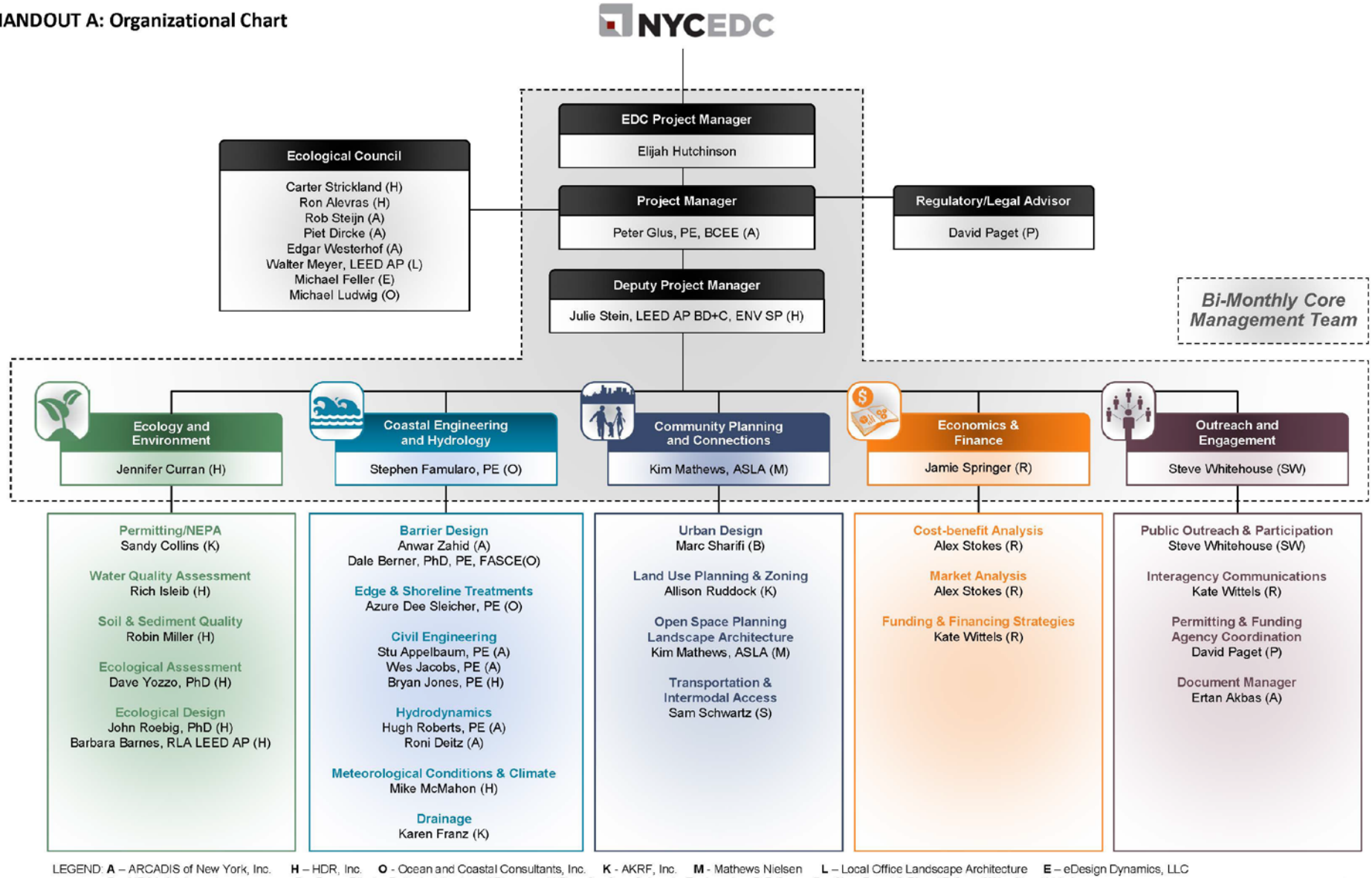
1. Is the tidal barrier & wetlands concept **technically feasible**? What are the environmental, engineering, and regulatory challenges, and how could they be overcome?
2. Is this a **cost-effective** way of addressing the threats severe weather and sea level rise pose to Coney Island and Gravesend?
3. What measures can be advanced to provide **near-term flood protection**?
4. Are there opportunities to provide other **community benefits**, such as improved access to waterfront recreation, without compromising the primary goal of flood protection?
5. What do community stakeholders think about the Creek proposal and how it could **best address their needs**?



City Team


Mayor's Office for Recovery & Resiliency (ORR)
Other Agency & Community Outreach
Consultant Team
EDC
Elijah Hutchinson (PM)
DPR
DOT
DEP
DCP

HANDOUT A: Organizational Chart



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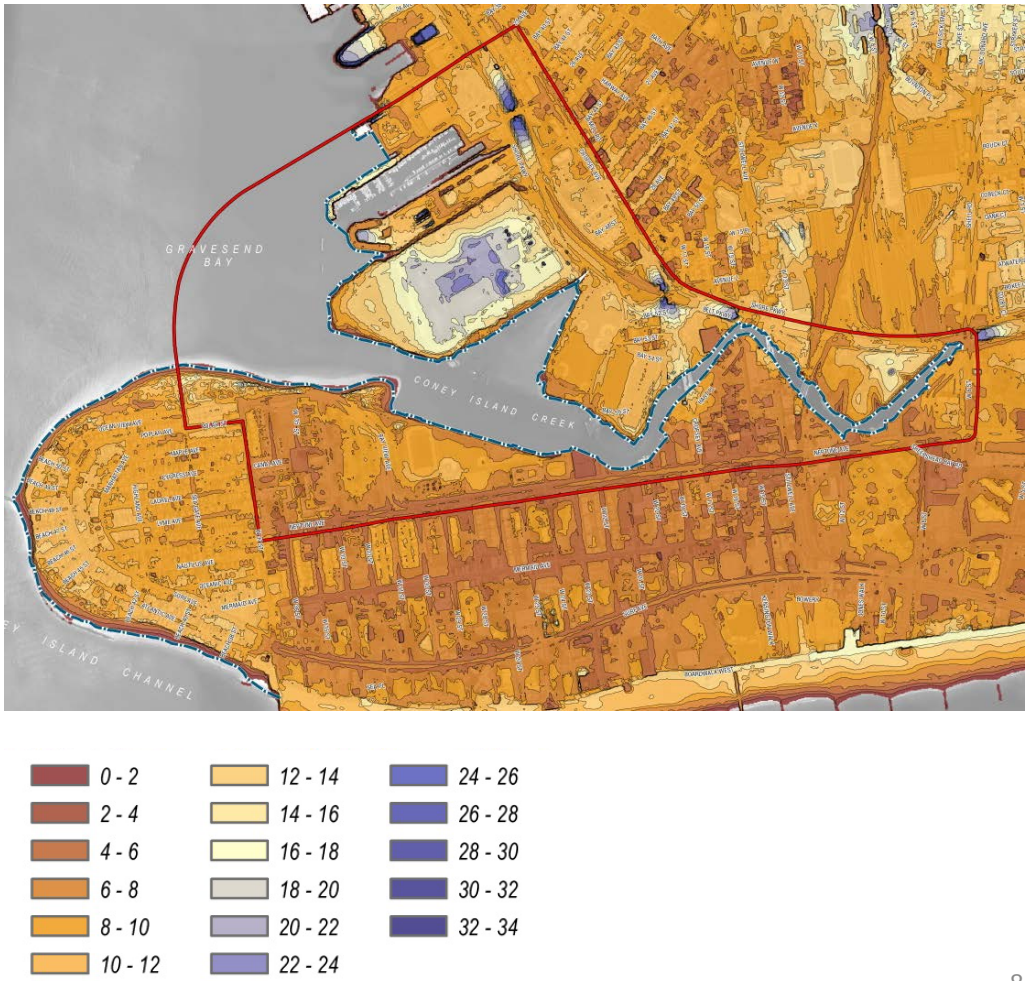
Study Area – Coney Island Creek

- Shoreline is primarily low-lying
  - Majority of the shoreline between 6 and 9 feet NAVD88
  - Regions below 6 feet NAVD88 are easy entryways for flood waters during low- and high-frequency storm events
- Low-lying areas are often adjacent to important community facilities, including public schools, NYCHA, senior housing developments, and community clinics

Elevation (feet NAVD88)



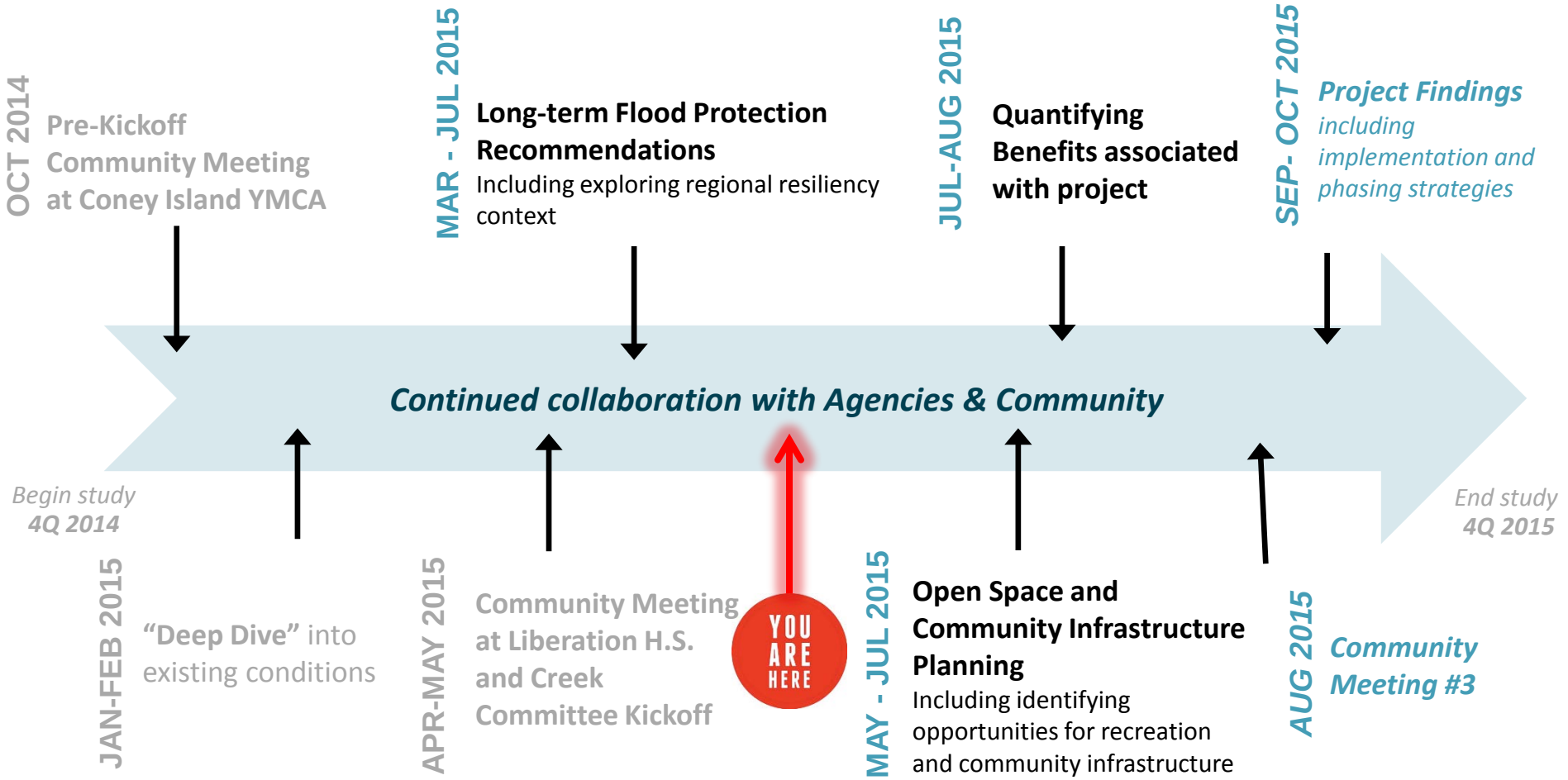
Rapid Waterfront Inspection Assessment
Shoreline Condition

- Rapid Waterfront Inspection Assessment was
- Some engineered shorelines in “serious” condition along the Creek

Rapid Waterfront Inspection Assessment
Shoreline Types

- Shoreline configurations include:
  - Engineered structures:
    - Bulkhead
    - Revetment
  - Non-engineered shorelines
    - Debris-strewn embankments
    - “Homemade" bulkheads

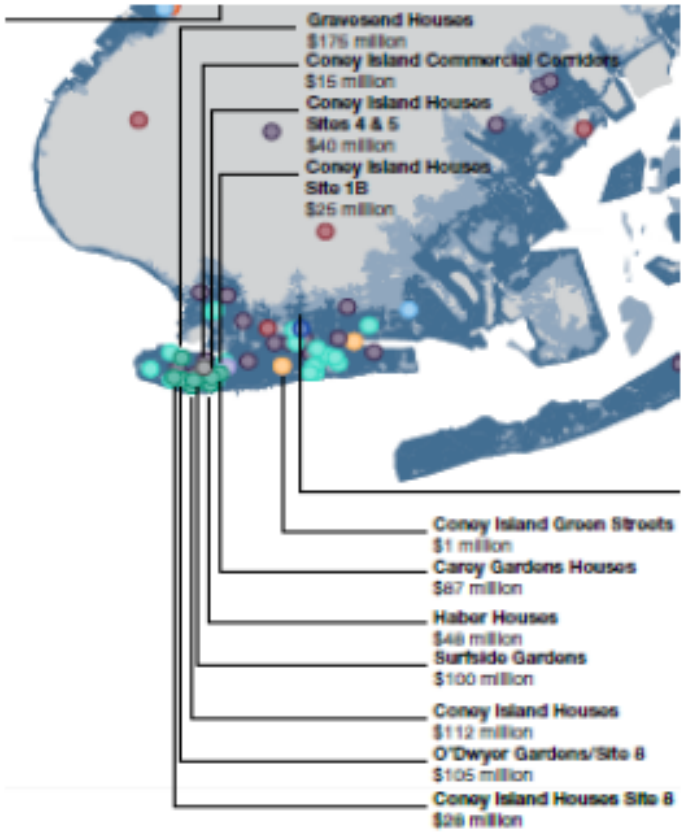
Study Milestones

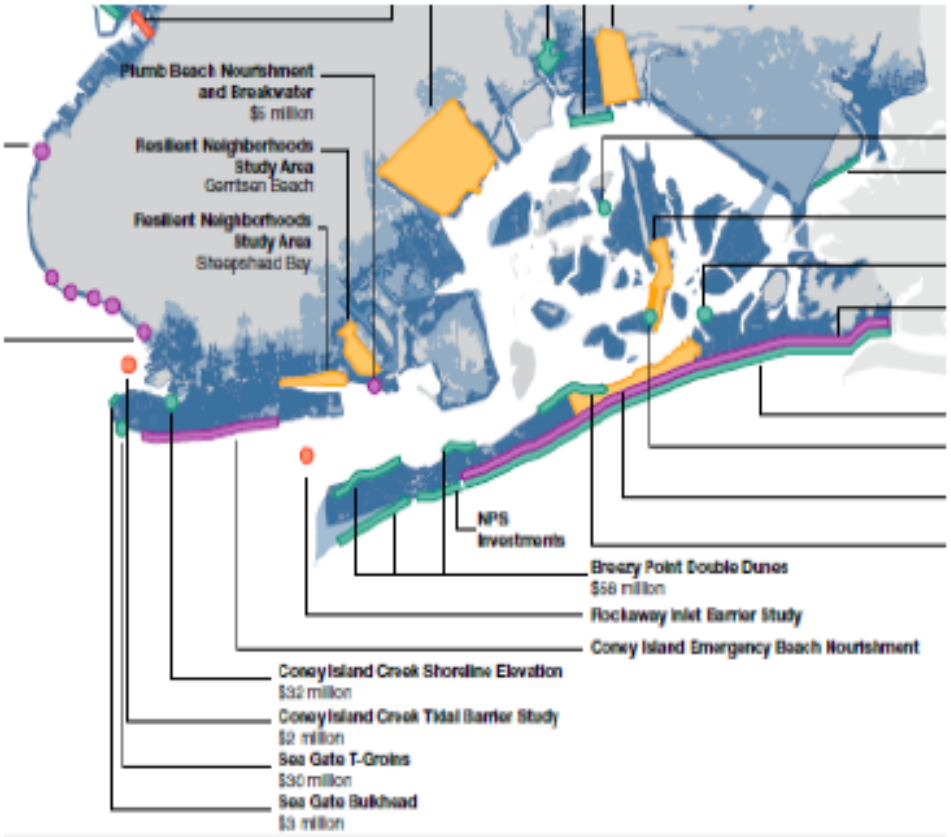


Regional Resiliency Efforts

A Regional View

Regional Resiliency Efforts





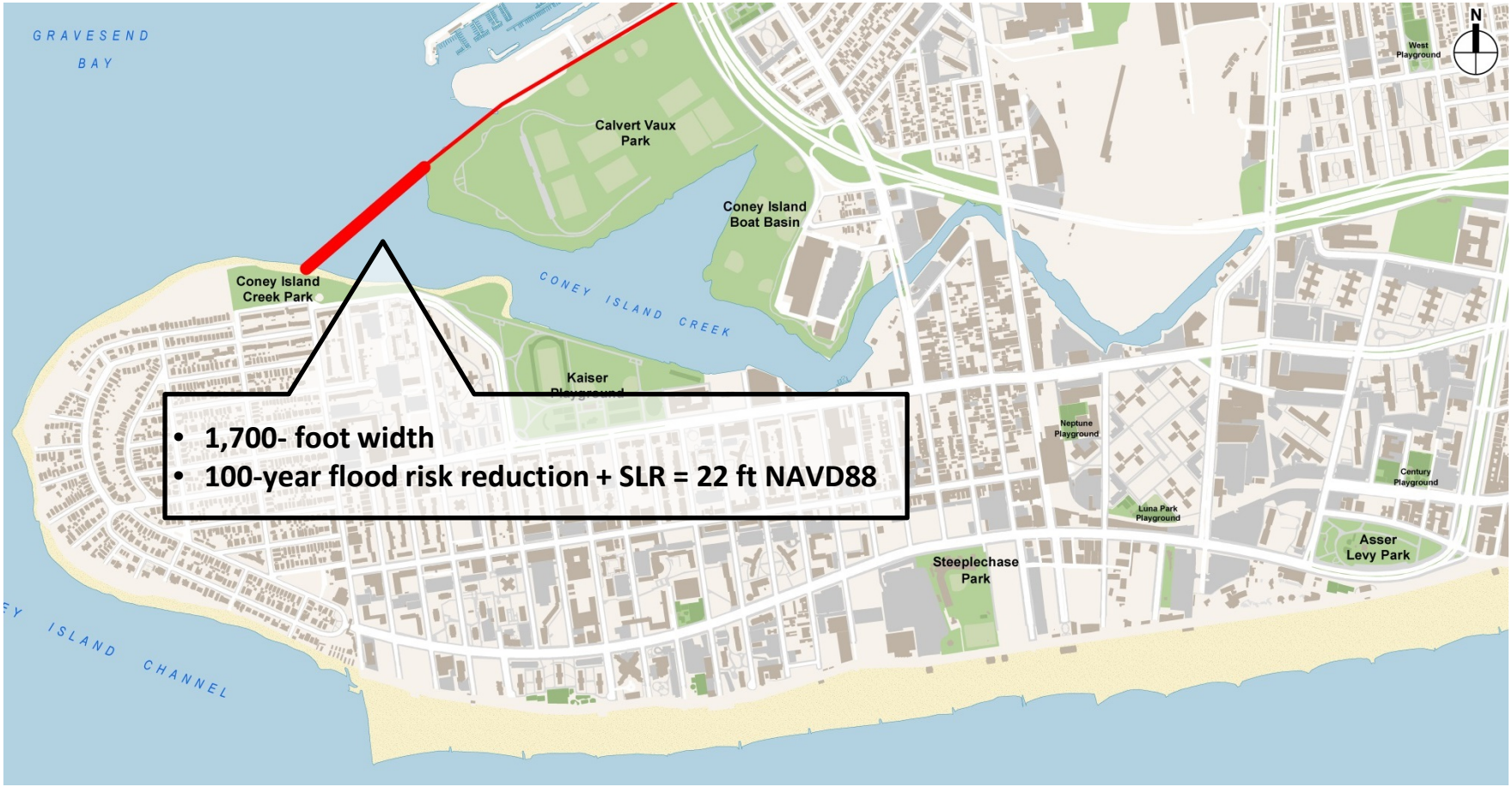
Long-term Flood Protection Recommendations

Elevation (ft NAVD88) in Coney Island

Creek Side Opportunities

West Barrier Alignment

West Barrier Alignment



Flood Protection Strategies and Considerations

Feasibility Considerations:

- Flood Risk Reduction
- Ecological Enhancement
- Drainage
- Community Infrastructure
  - Recreation
  - Connectivity
  - Economic Opportunities
- Implementability / Feasibility

West Barrier

West Barrage + Wetlands

East Barrier

East Barrage + Wetlands

Perimeter Flood Protection

All Wetlands

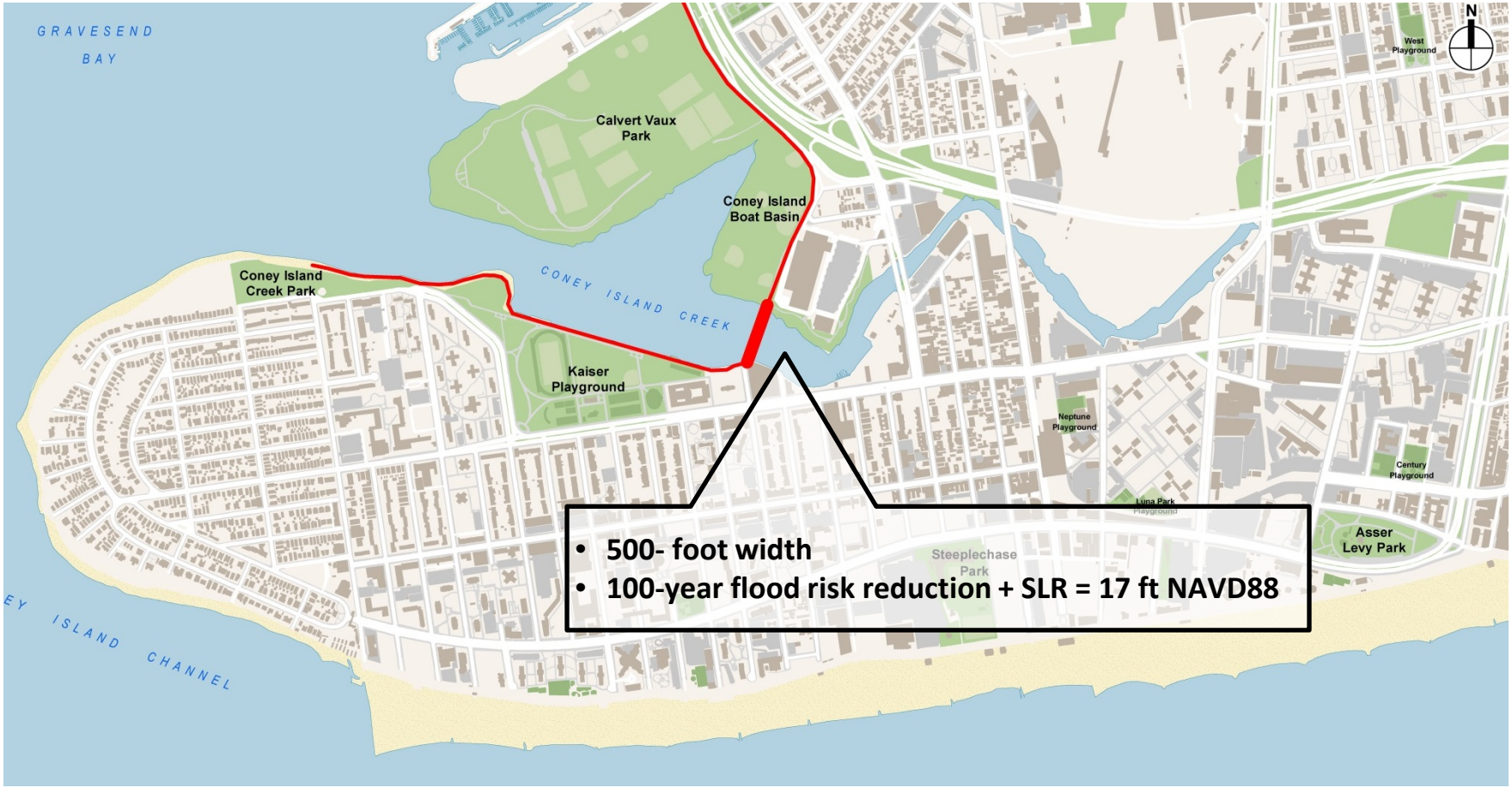
Flood Protection Strategies Comparison

Strategy	Flood Risk Reduction	Ecological Impact	Drainage	Recreation & Connectivity	Economic Opportunities	Implementation Feasibility
West Barrier						
West Barrage + Wetlands						
East Barrier						
East Barrage + Wetlands						
Perimeter Protection						
All Wetlands						

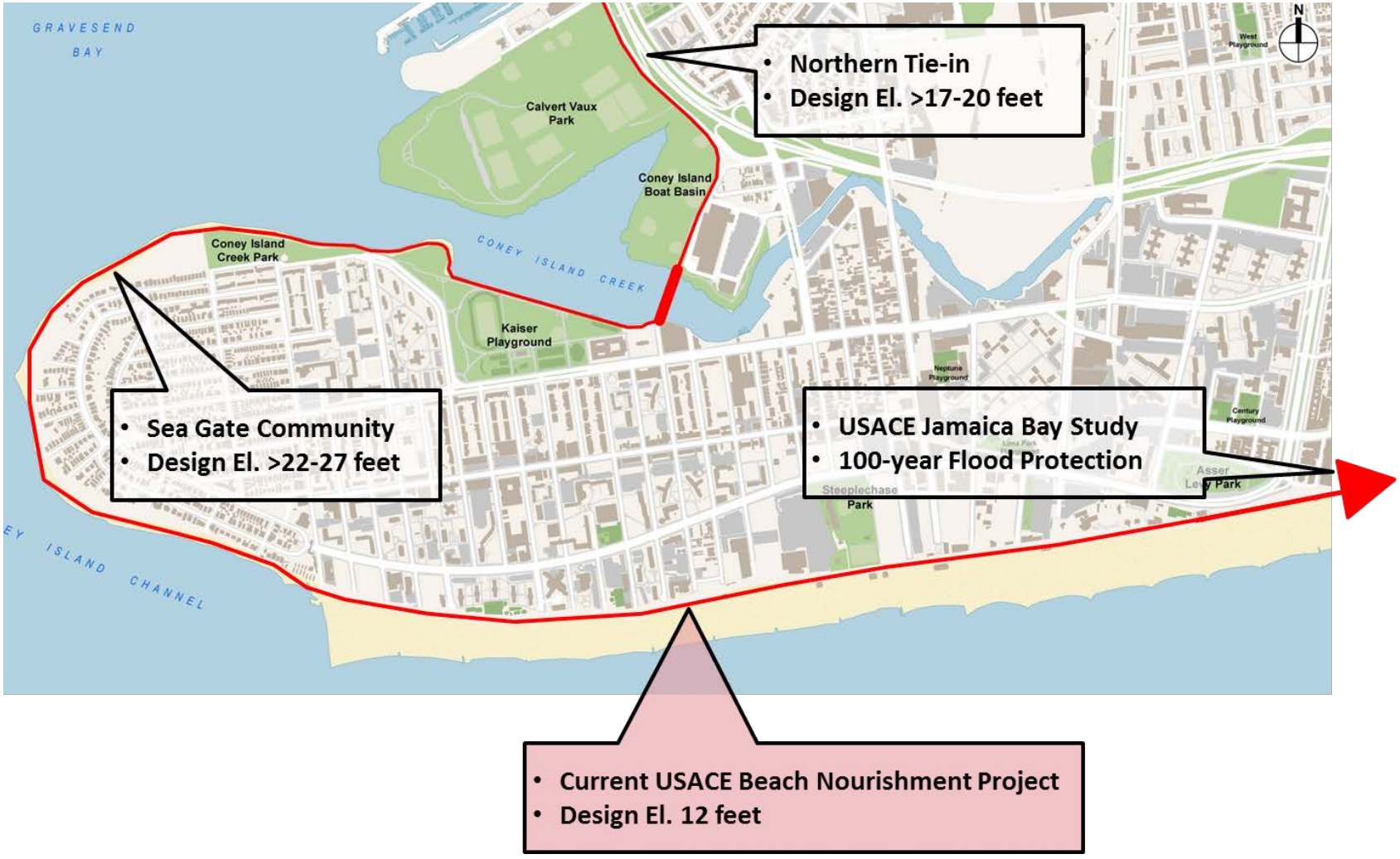
Flood Protection Strategies Comparison

Strategy	Flood Risk Reduction	Ecological Impact	Drainage	Recreation & Connectivity	Economic Opportunities	Implementation Feasibility
West Barrier						
West Barrage + Wetlands						
East Barrier						
East Barrage + Wetlands						
Perimeter Protection						
All Wetlands						

East Barrier Alignment



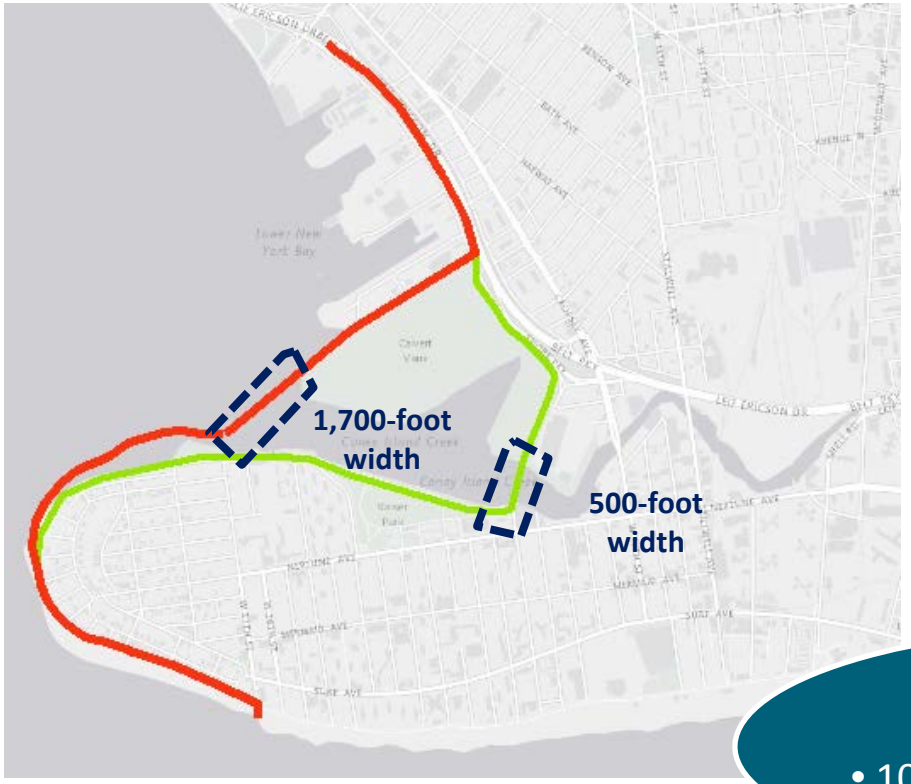
Regional Resiliency Context
(100-Year Design Elevation 2050 SLR [NAVD88])



Tidal Barrier Alignments

Level of Protection for in-water measures

Plan View

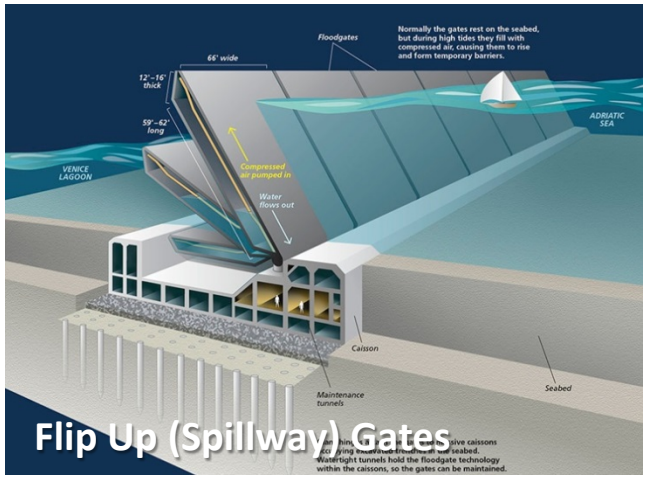


Bird's Eye View

Flood Protection Precedents

Rhode Island, USA

Venice, Italy



Marina Bay, Singapore

Thames River, UK

Long-Term Flood Protection
Opening Size

No Opening

- **Passive Flood Protection is most reliable**
- Most cost-effective
- Connection across Creek
- Minimal O&M
- Pumps needed for WQ

Narrow Opening

- Combination of passive and mechanical parts
- Cost-effective
- Connection across Creek is feasible with non-nav.
- O&M required to maintain and operate mechanical components
- Pumps needed for WQ

Wide Opening

-Most mechanical parts; least reliable

-Most expensive option

-Connection across Creek is feasible with non-nav.

-Most O&M required

-**Least impact on WQ and aquatic habitat**

FOR BOTH "WEST" AND "EAST" ALIGNMENTS

Ecological Considerations for Barrier

- Minimize impacts based on **opening size, footprint, alignment**
- East Alignment preferred:
  - **Decreases** substrate and habitat disturbance
  - **Avoids** existing aquatic habitat value
  - **Lessens** impact on water flow throughout Creek
  - Provides more opportunities for **restoration**

Ecological Opportunities for Programming


Maritime Forest / Shrubland


Beach / Dune


Fishing


Salt Marsh


Boat Launch


Passive Parkland

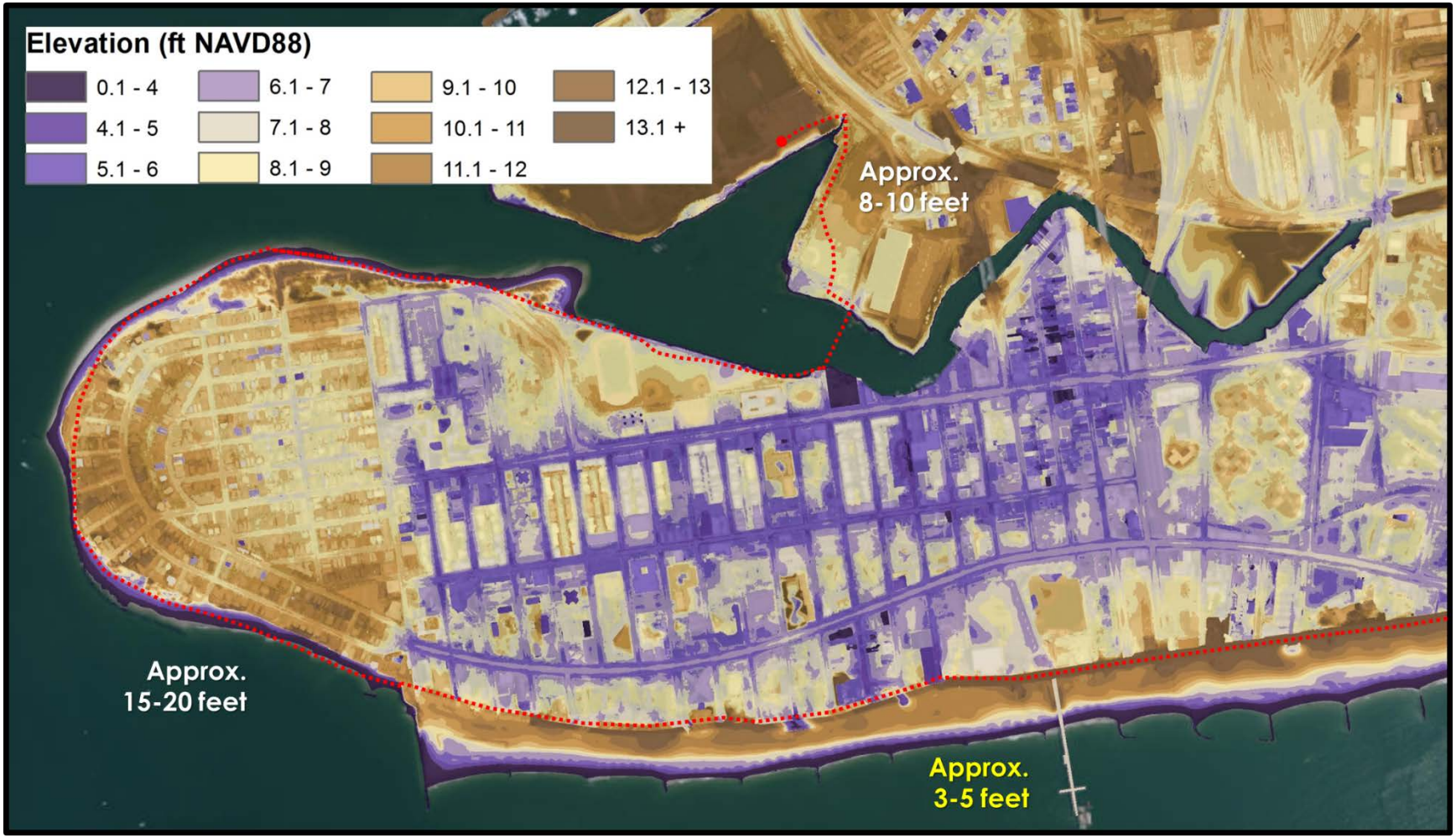
Beach Side Opportunities

100-Year Flood Risk Reduction

Design Elevations

100-Year Flood Risk Reduction

Design Heights



Design Precedents


Coastal Promenade, The Netherlands


Vegetated Dunes, Ocean City, MD


Deployable Floodwalls, The Netherlands


Inflatable Dams, New Orleans, LA

Outreach and Next Steps

Outreach Next Steps

- April - Community Meeting #1:
  Existing Conditions; Community Needs & Vision
- May – Coney Creek Committee:
  Shoreline Conditions Assessments; Water Quality modeling; Barrier Options; Outreach Planning
- Summer – Ongoing community events, presentations, and access to experts
- July 23rd – Coney Creek Committee:
  Preliminary Findings; Outreach and Next Steps for Study; Community Meeting Planning
- August 6th - Community Meeting #2:
  Technical Analysis & Preliminary Recommendations; Trade-Off Considerations; Confirm Concept Options
- Fall – Coney Creek Committee & Community meeting #3:
  Present Community Vision; Refine Vision & Implementation Strategies

Study Next Steps

→ Advance short-term recommendations

→ Continue evaluation and case-making for long-term flood protection strategies

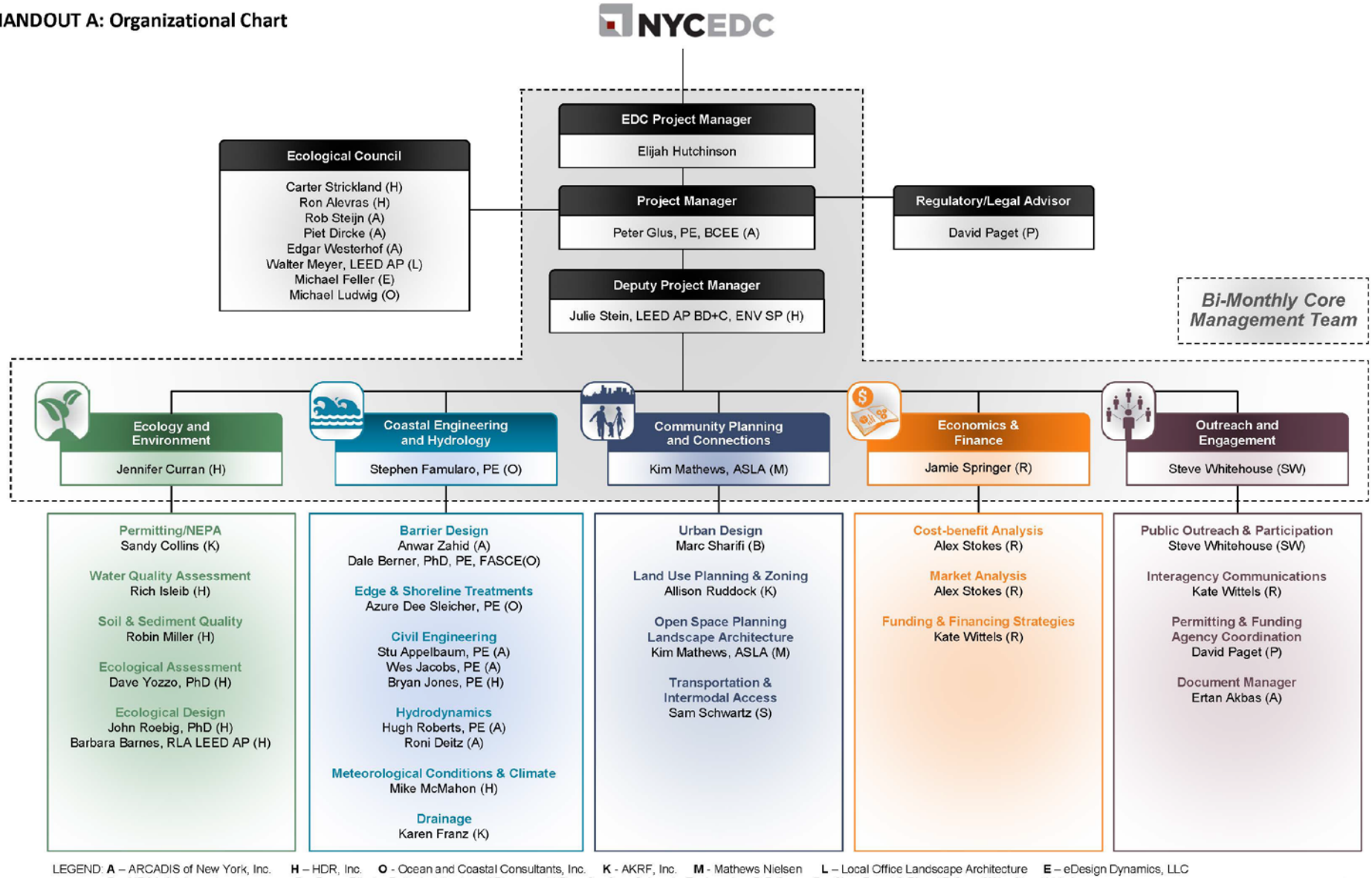
→ Coordinate study findings and recommendations with key City Agencies, other stakeholders, and on-going coordination with Community Board

→ Refine ecological analyses in coordination with DEP and DEC

→ Advance Creek study in context of regional resiliency planning for City in coordination with Army Corps

APPENDIX

HANDOUT A: Organizational Chart



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