CONCEPT SCREENING – OPEN HOUSE

DECEMBER 10, 2015

Station 1: *Resist Concept A & E

Station 2: Resist Concept C & D

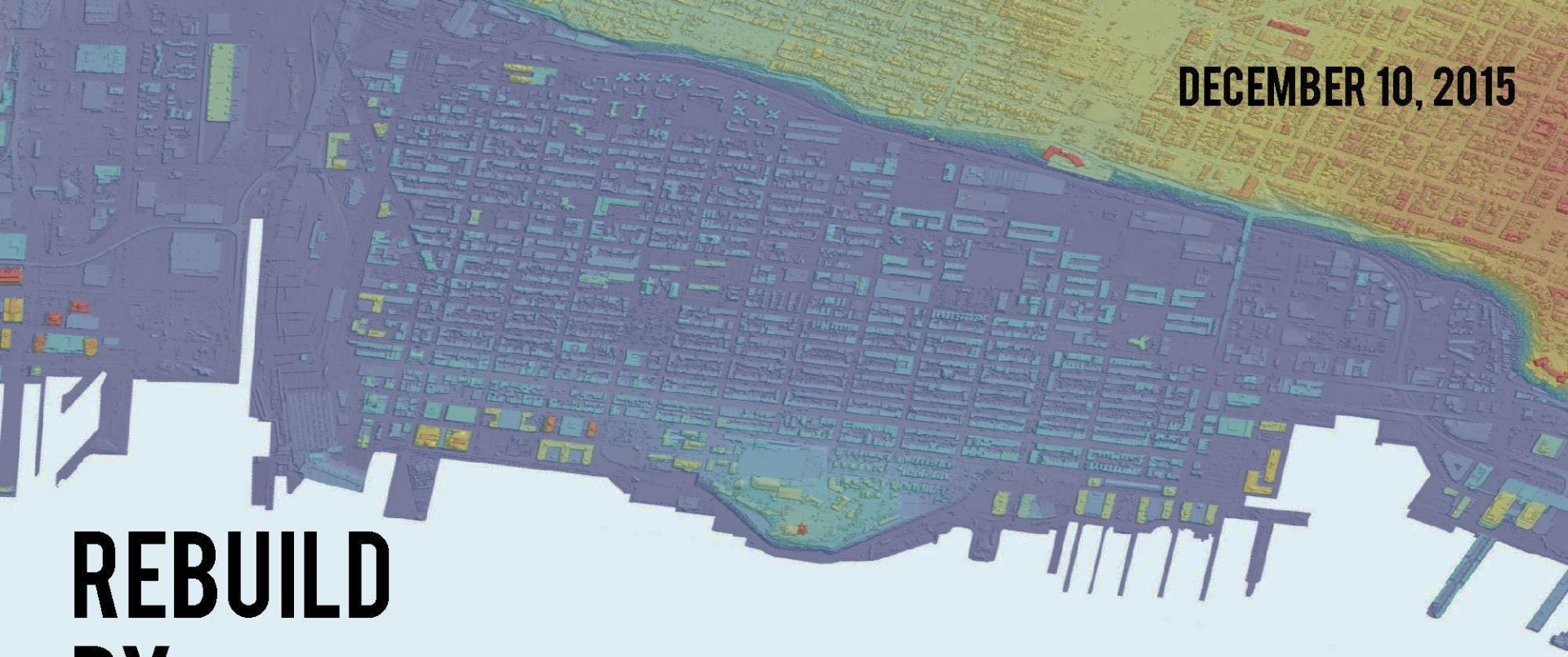
Station 3: Resist Concept B

Station 4:**Delay, Store, Discharge

Station 5: Combined Resist Alignments

Station 6: Existing Conditions

* Resist = Coastal Flood Protection
**Delay, Store, Discharge = Rainfall Protection



DECEMBER 10, 2015

REBUILD BY DESIGN

▪ RESIST ▪ DELAY ▪ STORE ▪ DISCHARGE ▪

HUDSON RIVER

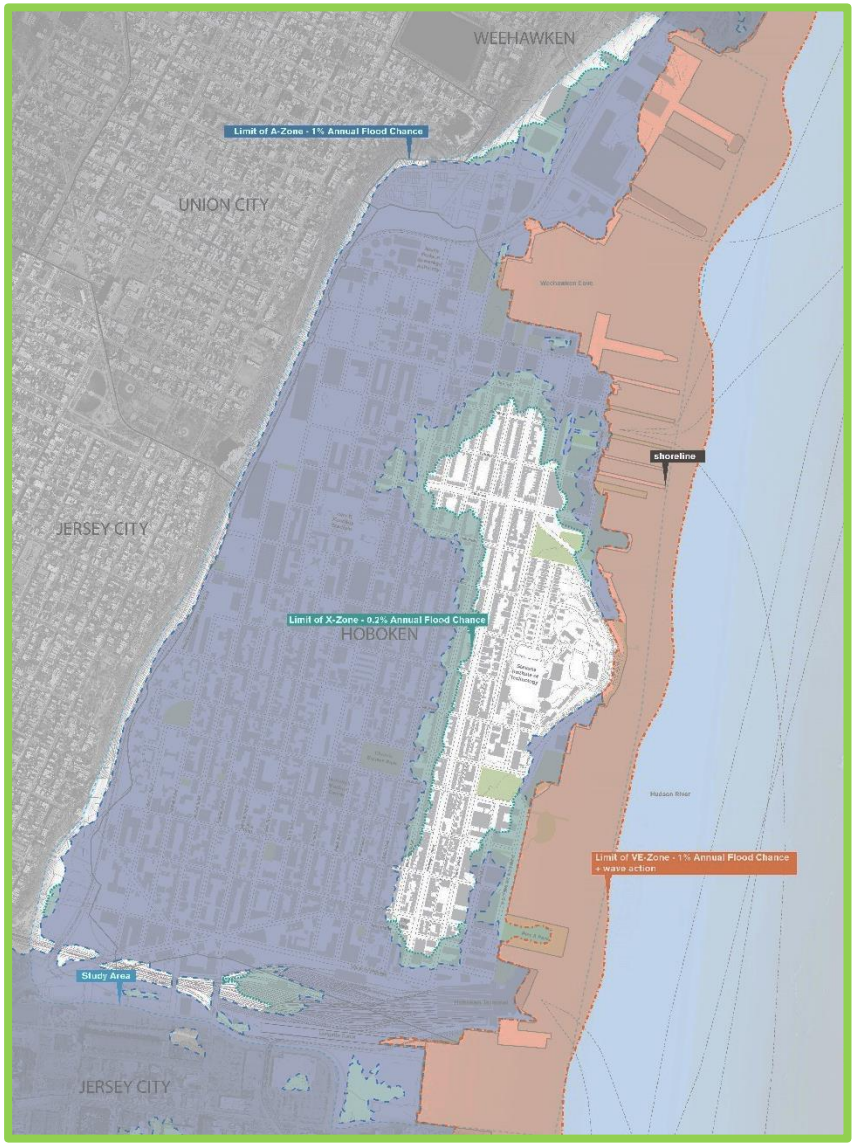
Hoboken Weehawken Jersey City | New Jersey

PUBLIC MEETING - CONCEPT SCREENING

AGENDA

1. Open House (10 minutes)
2. Introductions (5 minutes)
3. Project Status (5 minutes)
4. Concept Development Background (15 minutes)
   - Delay/Store/Discharge
   - Resist
5. Overview of Five Concepts (10 minutes)
6. Breakout Sessions (90 minutes)
7. Wrap-up – Final Q & A (15 minutes)
8. Open House (20 minutes)

WHY ARE WE HERE? (NEED) – REDUCE FLOOD RISK



Legend:

- Limit of AE-Zone
  1% Annual Flood Chance
- Limit of VE-Zone
  1% Annual Flood Chance
- Limit of B-Zone
  0.2% Annual Flood Chance
- AE-Zone
  1% Annual Flood Chance
- VE-Zone
  1% Annual Flood Chance
- B-Zone
  0.2% Annual Flood Chance
- Municipal Boundaries
- Study Area
- Ferry Lines
- Shoreline

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PURPOSES OF TONIGHT'S MEETING

- Project update and review of 5 Concepts
- Review of concept screening and results
- Provide feedback throughout the month

PROJECT STATUS

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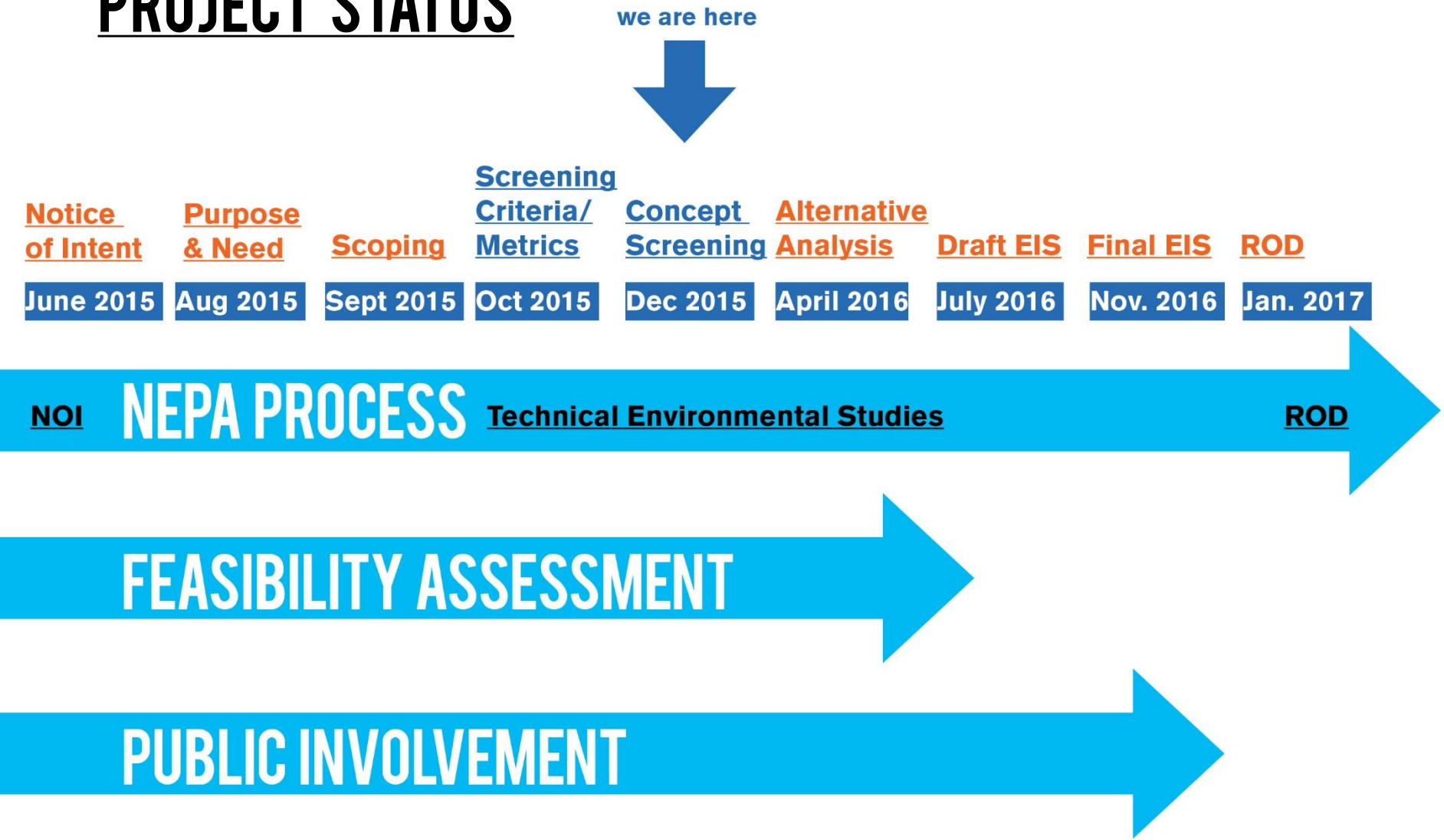
PROJECT STATUS



NOI - Notice of Intent **ROD** - Record of Decision **EIS** - Environmental Impact Statement

we are here

Data Collection

Basemap

Waterfront Inspection

Geotechnical

Modeling

Concept Development

Toolkit

Elements of RBD

Suitability Assessment

Themes

Parameters of RBD

Concept Development Principles

Concepts

Screening Criteria

Alternatives

Alternative Analysis

Preferred Alternative

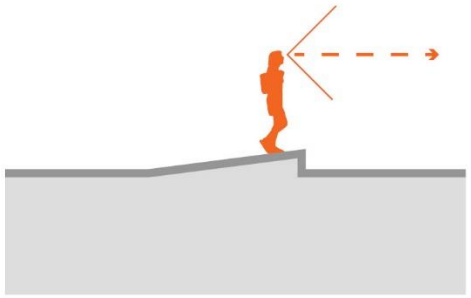
CONCEPT SCREENING CRITERIA AND METRICS

- Criteria are factors that help us evaluate the concepts in terms of:
  - Meeting Purpose and Need
  - Potential Benefits to the Community
  - Potential Impacts to the Natural and Built Environment
- Metrics are how we measure the criteria.

CRITERIA	Flood Risk Reduction	Built Environment	Environmental Impacts	Construction
METRIC	% of Population receiving flood risk reduction	Number of new amenities created	Number of Historic Properties Affected	Degree of difficulty to construct

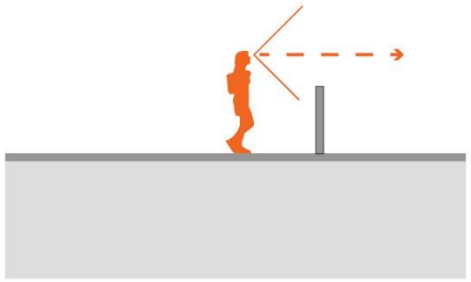
QUALITATIVE METRICS – BUILT ENVIRONMENT

View Corridors



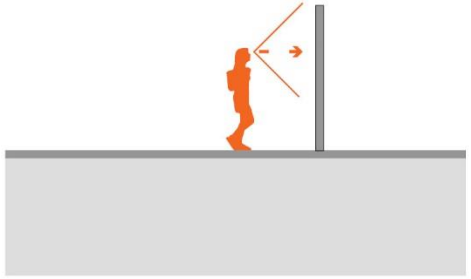
GOOD

Enhanced views from the city to the water (improves/creates additional view corridors); Little to no impact on views from the city to the water.



FAIR

Little to moderate impact on views from the city to the water (few barriers over 5' in height).



POOR

Many views from the city to the water are blocked (many barriers over 5' tall); visual impact on the city skyline (barriers are visible from NY side of the river).

QUANTITATIVE METRICS

Coastal Flood Risk Reduction

Within the 100-year floodplain boundary...

50% of the Study Area receives flood risk reduction benefits.

DELAY STORE DISCHARGE

OVERALL STRATEGY

- Design proposal aims to maximize the potential to capture, store, infiltrate, evaporate, and release stormwater.
- Goal is to achieve community co-benefits while improving management of stormwater that could reduce rainfall flooding.
- Besides BASF site, all stormwater management strategies are entirely on publicly-owned land.
- Proposal uses both "green" and "grey" stormwater management strategies.
- The team considered physical, environmental and infrastructure constraints in locating and designing specific interventions.

Legend:

- Delay + Store - Parks
- Water Storage Sites
- Catchment Area
- New Outfall Pipe
- New Storm Sewer Pipe
- Hybrid Tank
- Tank
- Tank Bumpout
- Ongoing Projects
- Existing Flooding "Hotspot"
- Municipal Boundaries
- Study Area
- Ferry Lines

N 0' 400' 800' 1,600'

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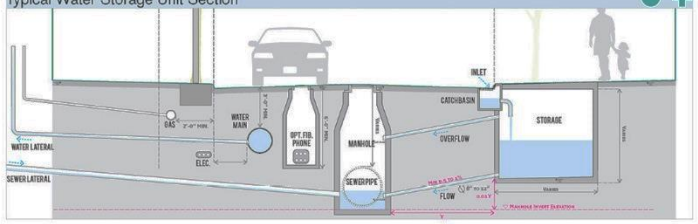
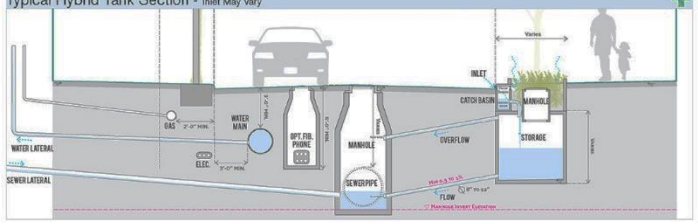
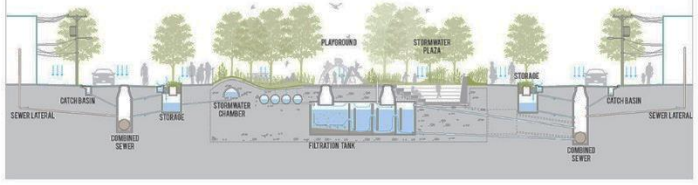
Typical Water Storage Unit Section



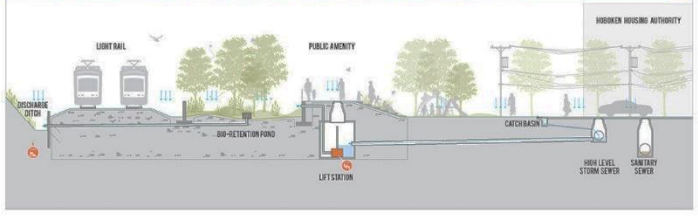
Typical Hybrid Tank Section - Inlet May Vary



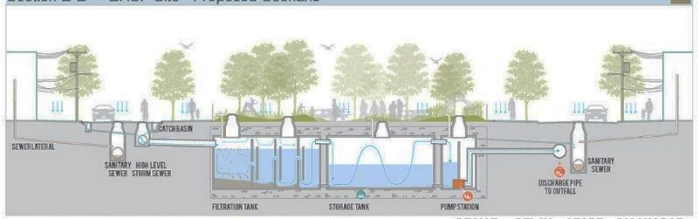
Typical Retrofited Park Condition - Proposed Scenario



Section A-A - Hoboken Housing Authority and NJ Transit - Proposed Scenario



Section B-B - BASF Site - Proposed Scenario



RESIST ▪ DELAY ▪ STORE ▪ DISCHARGE ▪

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CONCEPT A

Least costly resist barrier which provides the least coastal storm surge risk reduction benefits to the study area.

- Approximately 86% of people in the study area receive flood risk reduction benefits.
- 8,100 to 8,400 linear feet of structure and 21 gates.
- North Waterfront takes Boathouse into account.
- North Hoboken on-street protection provided along Garden Street until elevation tie-in.
- Hoboken Terminal does not receive flood risk reduction benefits.
- South Waterfront constructed independent of Longslip Canal.
- Permanent movable gates proposed to address flood risk reduction along the underpass.

(12/10) DRAFT IDEAS FOR DISCUSSION PURPOSES ONLY

Legend:

- Gate - Sliding
- Gate - Swinging
- Deployable Flood Wall
- Landscape
- Berm
- Revetment
- Raised Path
- Seawall
- Flood Wall
- T Wall
- Ramp
- Municipal Boundaries
- Study Area
- Ferry Lines
- Preliminary FEMA 100 year Flood Plain

MIN DFE : Approx. Min. FEMA Certification

MAX DFE : Approx. 500 Year + 2075 NOAA SLR

*All DFE's are Approximate and Subject to Change

N

0' 400' 800' 1,600'

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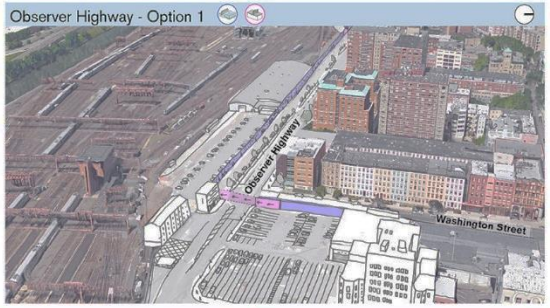

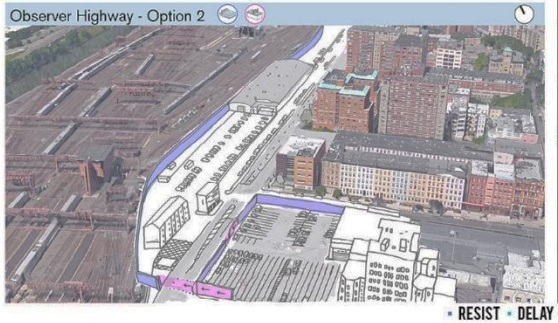

Alignment Options	Option 1	Option 2
Flood Risk Reduction		
Percent of Population with Coastal Storm Surge Risk Reduction Benefits	86	86
Potential to Adapt to Higher Coastal Flood Event (i: 500yr and Sea Level Rise)	●	●
Rainfall	●	●
Built Environment		
View Corridors	●	●
Waterfront Access	●	●
Potential Community Benefits	●	●
Connectivity/ Circulation	●	●
Environmental Justice Populations	●	●
Construction/ Maintenance & Operation		
Constructability	●	●
Construction Duration	●	●
Maintenance and Operation for Overall System	●	●
Environmental Impacts		
Potential Hazardous Waste Sites (Resist Only)	32	28
Wetlands	Yes	Yes
Essential Fish Habitat	No	No
Threatened and Endangered Species	No	No
Army Corp. Permits	No	No
Historic Properties	Yes	Yes
Archaeological Resources	●	●
Benefit/Cost Analysis		
Benefits	High	High
Costs	Lowest	Lowest
Benefit/Cost Ratio	●	●

▪ RESIST ▪ DELAY ▪ STORE ▪ DISCHARGE ▪

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CONCEPT B

High coastal storm surge risk reduction with substantial resist structure construction in the northern study area.

- Approximately 98% of people in the study area receive flood risk reduction benefits.
- 13,430 linear feet of resist structure and 21 gates.
- Weehawken tie-in at Lincoln Tunnel.
- Permanent built structures on North Waterfront provide flood risk reduction benefits.
- Hoboken Terminal does not receive flood risk reduction benefits.
- South Waterfront constructed independent of Longslip Canal.
- Permanent movable gates proposed to address flood risk reduction along the underpass.

Legend:

- Gate - Sliding
- Gate - Swinging
- Deployable Flood Wall
- Landscape
- Berm
- Revetment
- Raised Path
- Seawall
- Flood Wall
- T Wall
- Ramp
- Municipal Boundaries
- Study Area
- Ferry Lines
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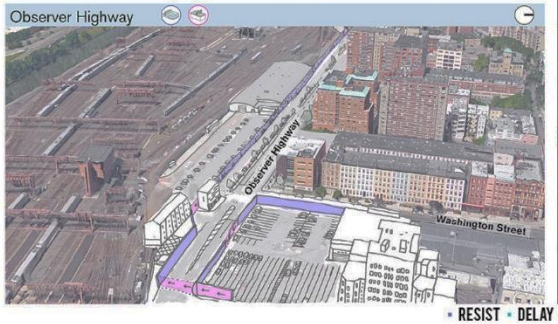

Alignment Options	Option 1	Option 2
Flood Risk Reduction		
Percent of Population with Coastal Storm Surge Risk Reduction Benefits	98	98
Potential to Adapt to Higher Coastal Flood Event (+ 900yr and Sea Level Rise)	●	●
Rainfall	●	●
Built Environment		
View Corridors	●	●
Waterfront Access	●	●
Potential Community Benefits	●	●
Connectivity/ Circulation	●	●
Environmental Justice Populations	●	●
Construction/ Maintenance & Operation		
Constructability	●	●
Construction Duration	●	●
Maintenance and Operation for Overall System	●	●
Environmental Impacts		
Potential Hazardous Waste Sites (Resist Only)	31	28
Wetlands	Yes	Yes
Essential Fish Habitat	Yes	Yes
Threatened and Endangered Species	Yes	Yes
Army Corp. Permits	Yes	Yes
Historic Properties	Yes	Yes
Archaeological Resources	●	●
Benefit/Cost Analysis		
Benefits	High	High
Costs	High	High
Benefit/Cost Ratio	●	●

▪ RESIST ▪ DELAY ▪ STORE ▪ DISCHARGE ▪

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CONCEPT C

Highest construction costs which provide highest coastal storm surge risk reduction using free-standing, in-water revetments.

- Approximately 99% of people in the study area receive flood risk reduction benefits.
- 14,730 linear feet of on land structures with 16 gates.
- 2,700 linear feet of in-water resist barriers with 5 gates.
- An in-water revetment is planned in Weehawken Cove, and to the North a Lincoln Tunnel tie-in.
- Permanent built structures on North Waterfront provide flood risk reduction benefits.
- Programmed Bulkheads offer added community benefits, while providing flood risk reduction benefits to those on the water.
- South Waterfront constructed assuming the proposed construction of the Longslip Canal project.
- Hoboken Terminal does receive flood risk reduction benefits; resist portion is planned in-water in front of the Terminal.
- Permanent movable gates proposed to address flood risk reduction along the underpass.

Legend:

- Gate - Sliding
- Gate - Swinging
- Deployable Flood Wall
- Landscape
- Berm
- Revetment
- Raised Path
- Seawall
- Flood Wall
- T Wall
- Ramp
- Municipal Boundaries
- Study Area
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0' 400' 800' 1,600'

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Flood Risk Reduction	
Percent of Population with Coastal Storm Surge Risk Reduction Benefits	99
Potential to Adapt to Higher Coastal Flood Event (≥ 500yr and Sea Level Rise)	●
Rainfall	●
Built Environment	
View Corridors	●
Waterfront Access	●
Potential Community Benefits	●
Connectivity/ Circulation	●
Environmental Justice Populations	●
Construction/ Maintenance & Operation	
Constructability	●
Construction Duration	●
Maintenance and Operation for Overall System	●
Environmental Impacts	
Potential Hazardous Waste Sites (Resist Only)	18
Wetlands	Yes
Essential Fish Habitat	Yes
Threatened and Endangered Species	Yes
Army Corp. Permits	Yes
Historic Properties	Yes
Archaeological Resources	●
Benefit/Cost Analysis	
Benefits	Highest
Costs	Highest
Benefit/Cost Ratio	●

▪ RESIST ▪ DELAY ▪ STORE ▪ DISCHARGE ▪

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CONCEPT D

High construction cost which provides highest coastal storm surge risk reduction with no free standing, in-water revetments.

- Approximately 99% of people in the study area receive flood risk reduction benefits.
- 16,230 linear feet of resist structure and 20 gates.
- North Resist portion offers Lincoln Tunnel Tie-In.
- Permanent built structures on North Waterfront provide flood risk reduction benefits.
- Programmed Bulkheads offer added community benefits, while providing flood risk reduction benefits to those on the water.
- South Waterfront constructed assuming the proposed construction of the Longslip Canal project.
- Alignment goes through Hoboken Terminal, offering flood risk reduction benefits to essential electrical and utility assets (allows for continued operations in the case of an event).
- Permanent movable gates proposed to address flood risk reduction along the underpass.

Legend:

- Gate - Sliding
- Gate - Swinging
- Deployable Flood Wall
- Landscape
- Berm
- Revetment
- Raised Path
- Seawall
- Flood Wall
- T Wall
- Ramp
- Municipal Boundaries
- Study Area
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0' 400' 800' 1,600'

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Flood Risk Reduction	
Percent of Population with Coastal Storm Surge Risk Reduction Benefits	99
Potential to Adapt to Higher Coastal Flood Event (≥ 500yr and Sea Level Rise)	●
Rainfall	●
Built Environment	
View Corridors	●
Waterfront Access	●
Potential Community Benefits	●
Connectivity/ Circulation	●
Environmental Justice Populations	●
Construction/ Maintenance & Operation	
Constructability	●
Construction Duration	●
Maintenance and Operation for Overall System	●
Environmental Impacts	
Potential Hazardous Waste Sites (Resist Only)	20
Wetlands	Yes
Essential Fish Habitat	Yes
Threatened and Endangered Species	Yes
Army Corp. Permits	Yes
Historic Properties	Yes
Archaeological Resources	●
Benefit/Cost Analysis	
Benefits	Highest
Costs	Highest
Benefit/Cost Ratio	●

▪ RESIST ▪ DELAY ▪ STORE ▪ DISCHARGE ▪

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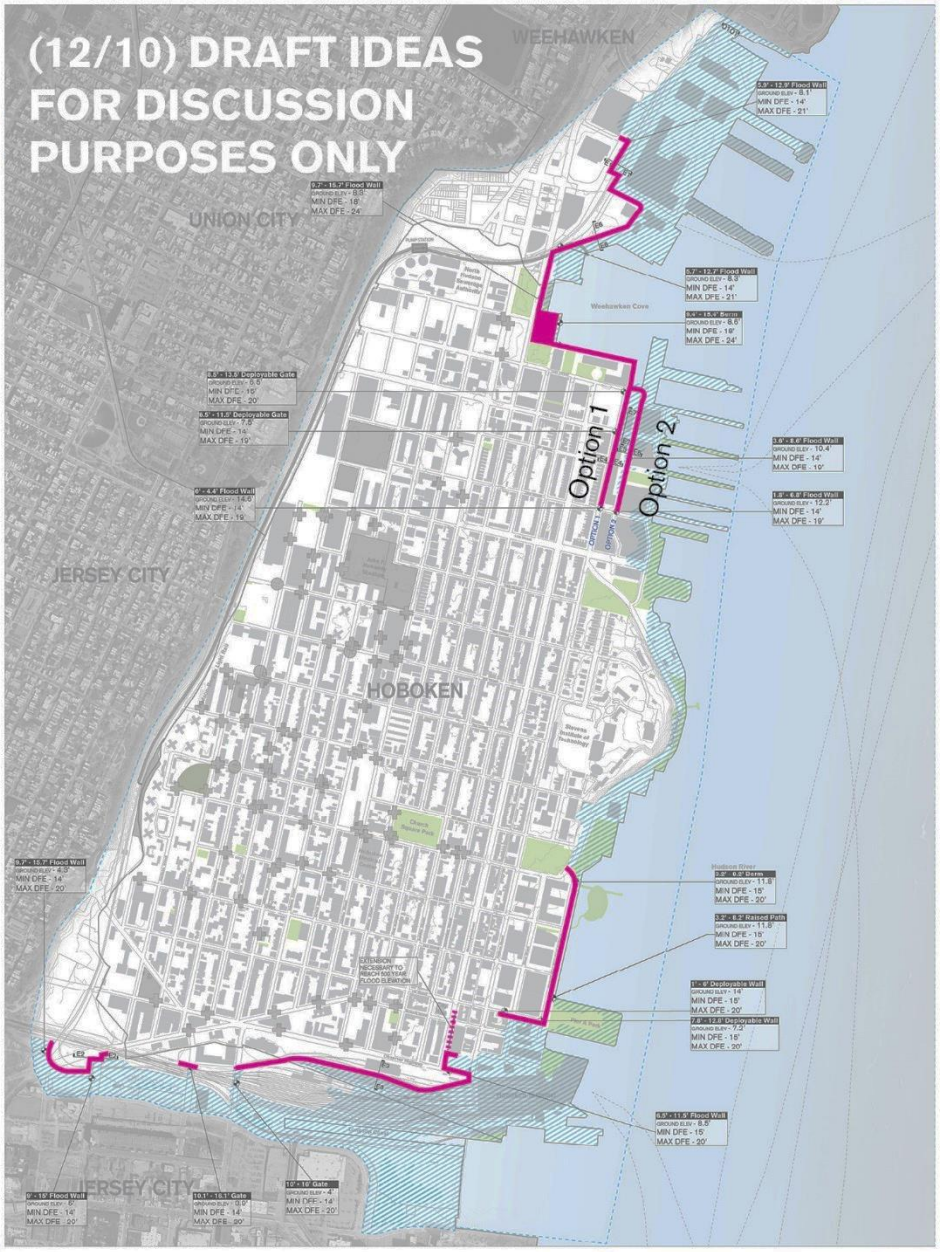
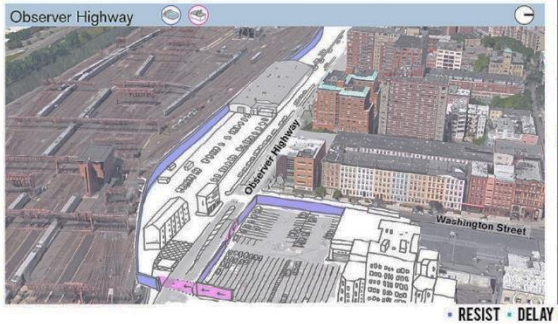
CONCEPT E

Moderate coastal flood risk reduction benefits within the study area at moderate cost.

- Approximately 90% of people in the study area receive flood risk reduction benefits.
- 12, 010 linear feet of resist structure and 16 gates.
- North Waterfront takes Boathouse into account.
- North Hoboken on-street protection provided along Hudson Blvd (Option 1) and Shipyard Lane (Option 2) until elevation tie-in.
- Some programmed bulkhead and other resist structures proposed along South Waterfront.
- Permanent movable gates proposed to address flood risk reduction along the underpass.





Alignment Options	Option 1 Hudson Street	Option 2 Shipyard Lane
Flood Risk Reduction		
Percent of Population with Coastal Storm Surge Risk Reduction Benefits	90	90
Potential to Adapt to Higher Coastal Flood Event (1: 500yr and Sea Level Rise)	●	●
Rainfall	●	●
Built Environment		
View Corridors	●	●
Waterfront Access	●	●
Potential Community Benefits	●	●
Connectivity/ Circulation	●	●
Environmental Justice Populations	●	●
Construction/ Maintenance & Operation		
Constructability	●	●
Construction Duration	●	●
Maintenance and Operation for Overall System	●	●
Environmental Impacts		
Potential Hazardous Waste Sites (Resist Only)	30	30
Wetlands	Yes	Yes
Essential Fish Habitat	Yes	Yes
Threatened and Endangered Species	Yes	Yes
Army Corp. Permits	Yes	Yes
Historic Properties	Yes	Yes
Archaeological Resources	●	●
Benefit/Cost Analysis		
Benefits	High	High
Costs	High	High
Benefit/Cost Ratio	●	●

▪ RESIST ▪ DELAY ▪ STORE ▪ DISCHARGE ▪

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BREAKOUT SESSION

DECEMBER 10, 2015

Station 1: *Resist Concept A & E

Station 2: Resist Concept C & D

Station 3: Resist Concept B

Station 4:**Delay, Store, Discharge

Station 5: Combined Resist Alignments

Station 6: Existing Conditions

* Resist = Coastal Flood Protection
**Delay, Store, Discharge = Rainfall Protection

Q&A AND NEXT STEPS

DECEMBER 10, 2015

- **December 2015** - Public comment period on 5 concepts ends Dec. 31, 2015
- **January 7th 2016** – CAG meeting open to public to discuss the 3 concepts going forward
- **Spring 2016** - Public meeting on 3 build alternatives and no action alternative

Still Have Questions?

December 14th 6:00 pm

Hoboken Walking tour (Historical Museum)

December 15th 6:30 – 8:30 pm

Drop in Session follow up to Public Meeting
(St. Lawrence Church Community Room, 22 Hackensack Ave., Weehawken)

December 17th 6:30 – 8:30 pm

Drop in Session follow up to Public Meeting
(Hoboken Housing Authority Senior Building, 221 Jackson St., Hoboken)