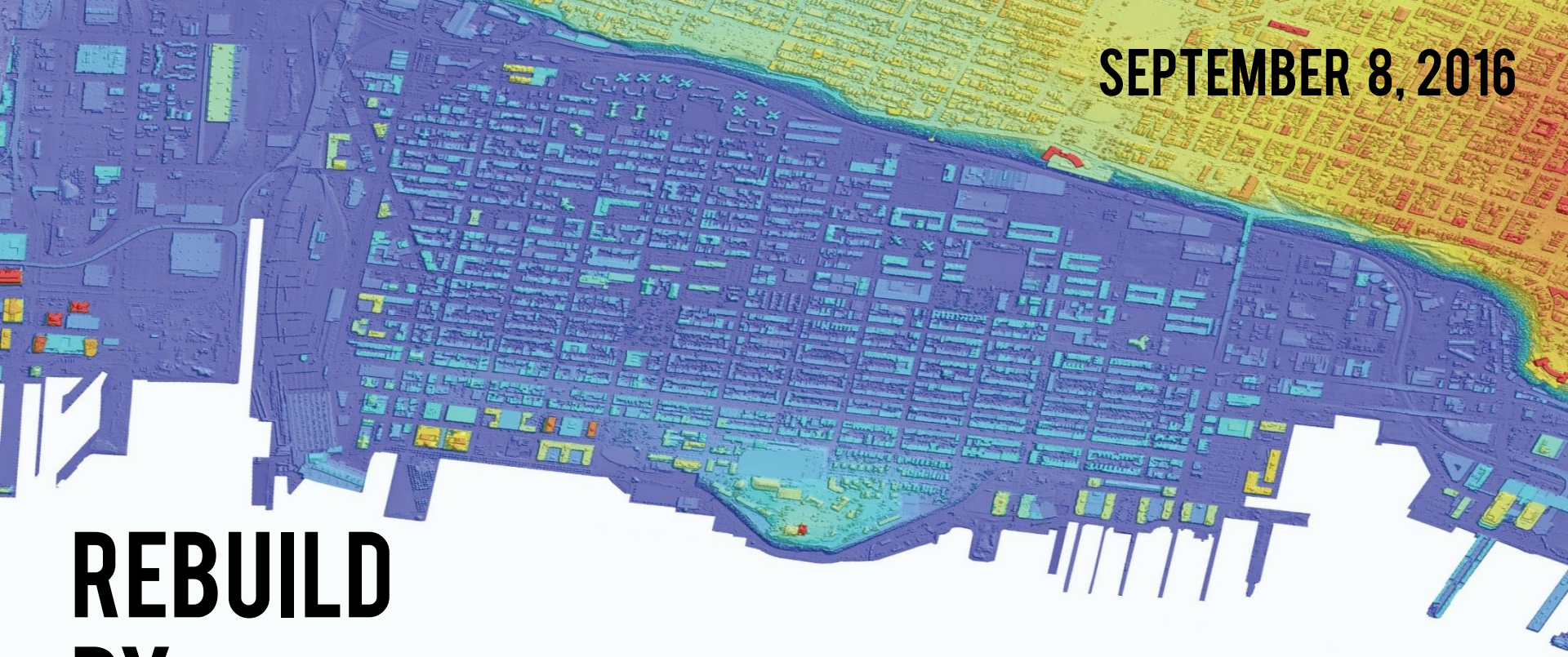


SEPTEMBER 8, 2016

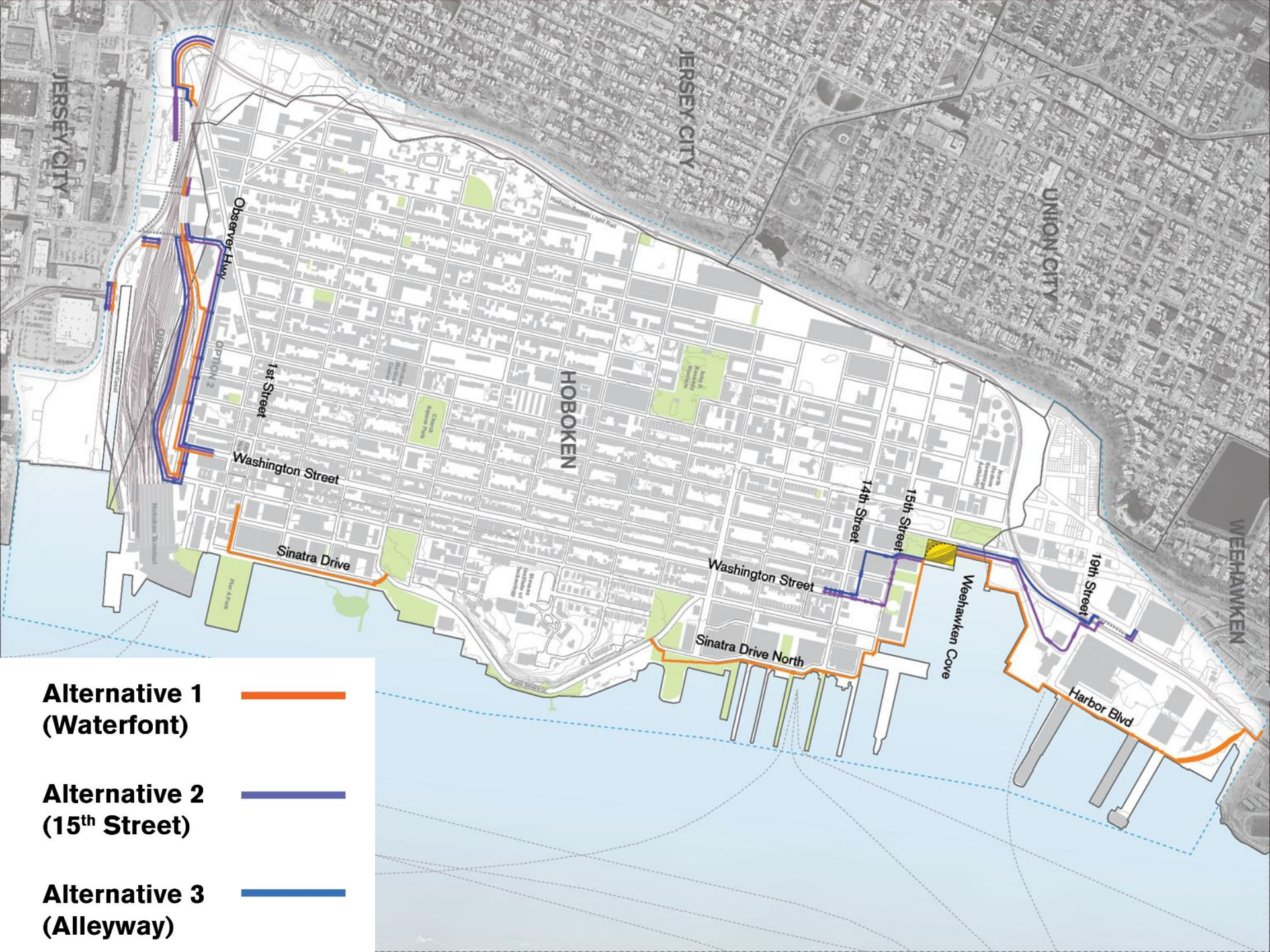
REBUILD BY DESIGN

▪ RESIST ▪ DELAY ▪ STORE ▪ DISCHARGE ▪

HUDSON RIVER

Hoboken Weehawken Jersey City | New Jersey

RECOMMENDATION OF THE PREFERRED ALTERNATIVE


JERSEY CITY
JERSEY CITY
UNION CITY
WEEHAWKEN
HOBOKEN
Observer Hwy
1st Street
Washington Street
Sinatra Drive
14th Street
15th Street
Washington Street
Weehawken Cove
19th Street
Sinatra Drive North
Harbor Blvd
Alternative 1 (Waterfont)
Alternative 2 (15th Street)
Alternative 3 (Alleyway)

ALTERNATIVE 3

Resist - Alternative 3 | Existing Structures | Delay, Store, Discharge

*For more information on Alternative 3, please see the project boards

Dewberry | State of New Jersey Department of Environmental Protection

Meeting Agenda

Introduction

Project Status

Preferred Alternative / Alternatives Recap

Alternatives Analysis


Flood Risk Reduction


Socioeconomics / Built Environment


Benefit Cost Analysis


Maintenance / Operations and Construction


Environmental Impacts

Preferred Alternative

Takeaways / Next Steps

Q&A

Rebuild by Design Vision

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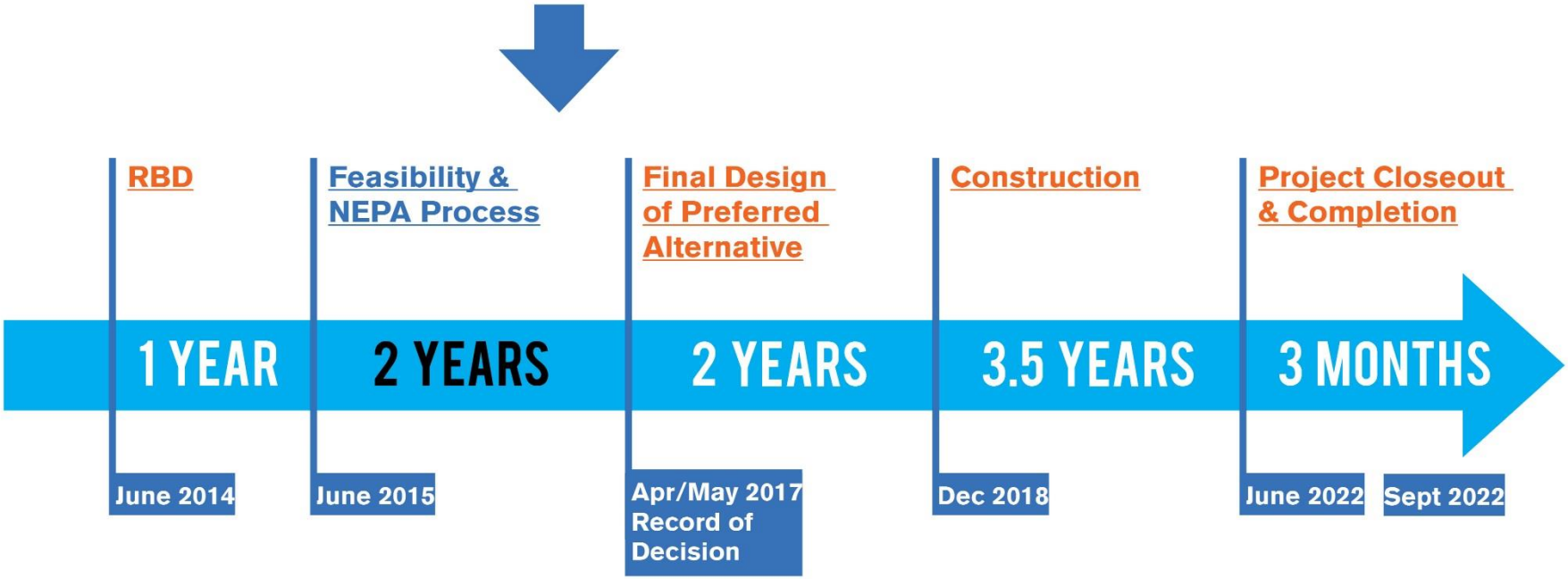
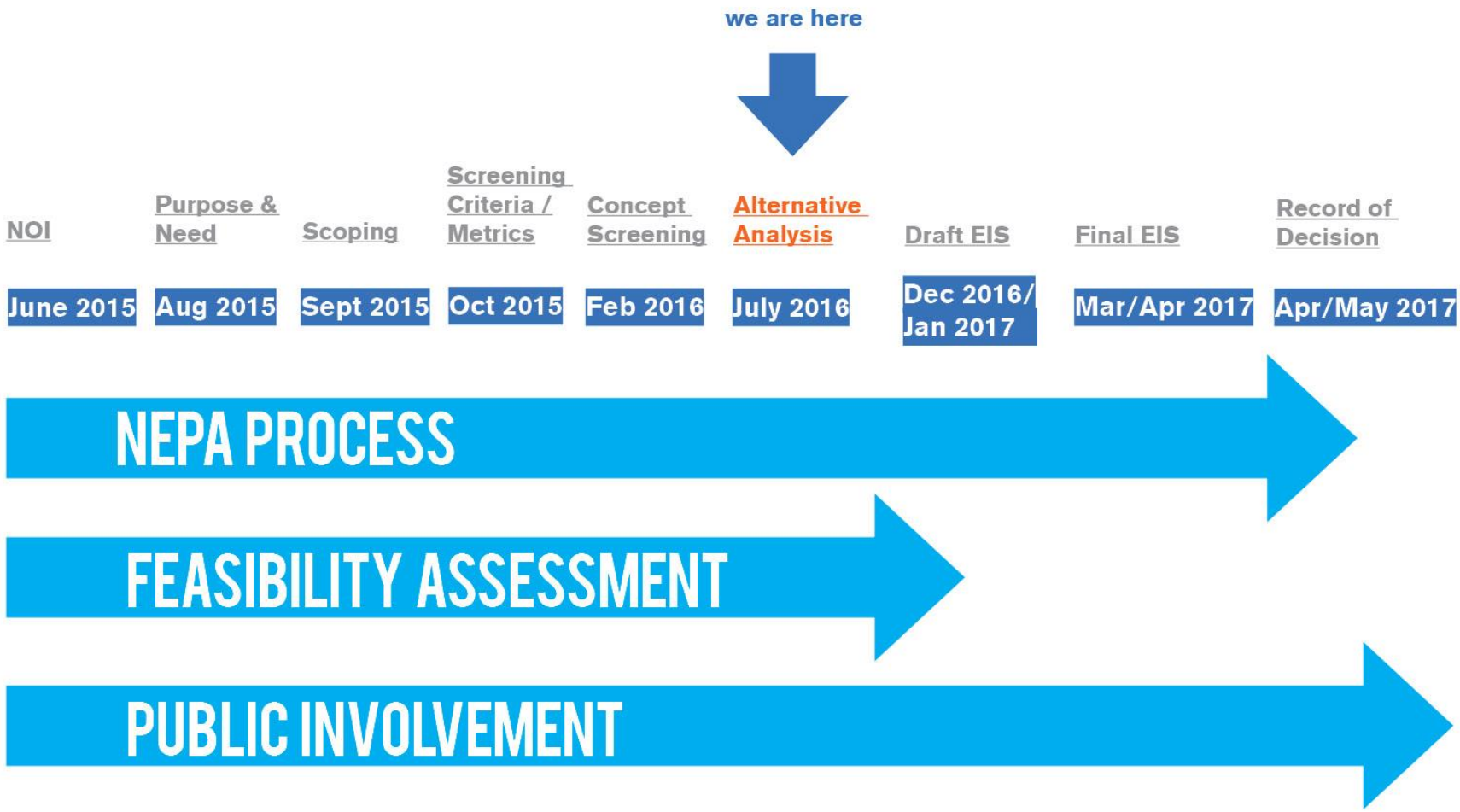
Project Status



The Process


we are here
NOI
June 2015
Purpose & Need
Aug 2015
Scoping
Sept 2015
Screening Criteria / Metrics
Oct 2015
Concept Screening
Feb 2016
Alternative Analysis
July 2016
Draft EIS
Dec 2016/ Jan 2017
Final EIS
Mar/Apr 2017
Record of Decision
Apr/May 2017
NEPA PROCESS
FEASIBILITY ASSESSMENT
PUBLIC INVOLVEMENT

Opportunities to Participate

How are we soliciting community input in this project phase?

CAG Meetings

Public Meetings

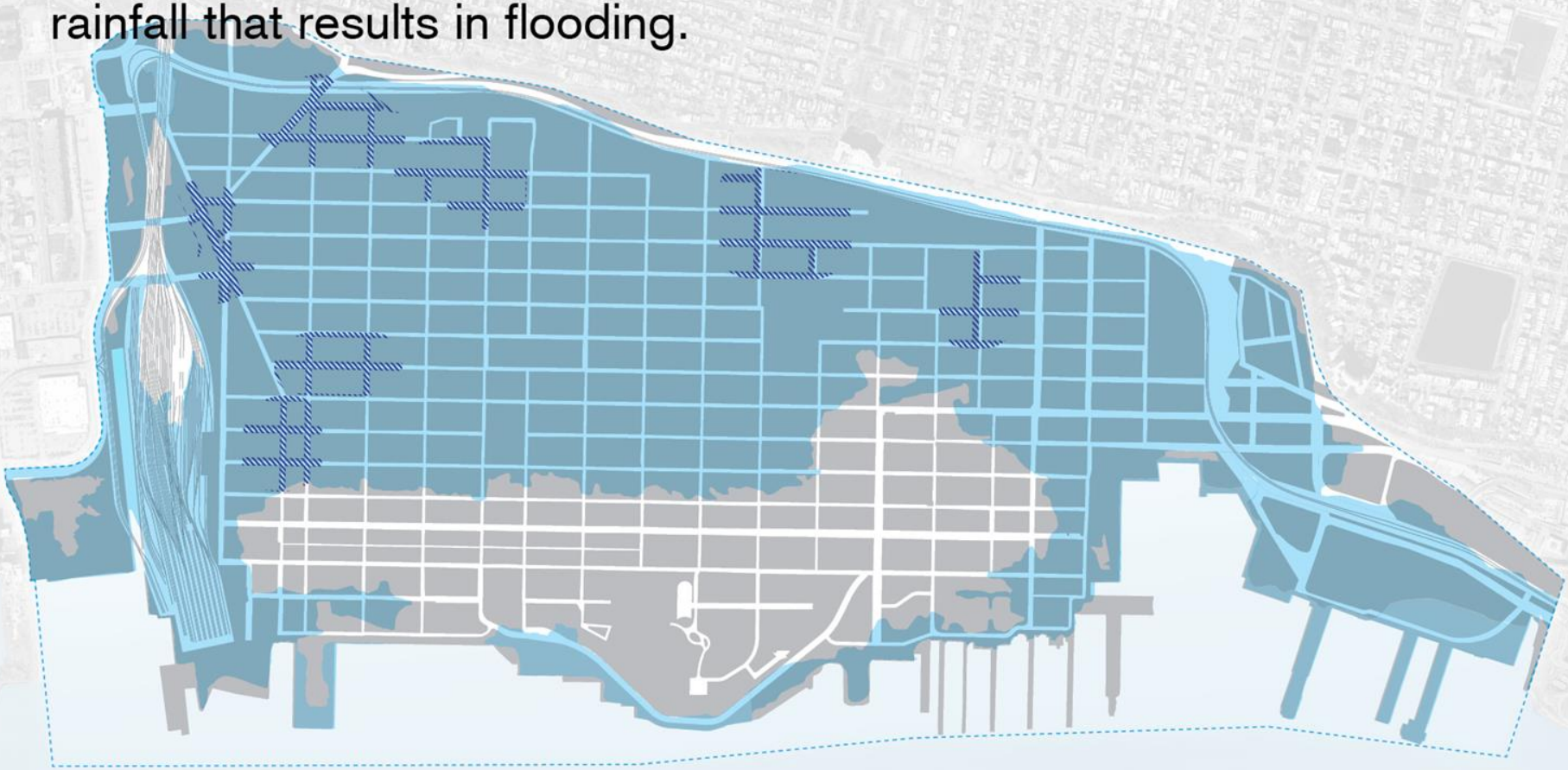
(hudsonreporter.com)

Workshops

PUBLIC INVOLVEMENT

WHY DO WE NEED THE PROJECT?

The project area is at risk from storm surge events and heavy rainfall that results in flooding.



Existing Rainfall Flooding "Hotspots"

2015 Preliminary 1% Annual Chance (100-Year) FEMA

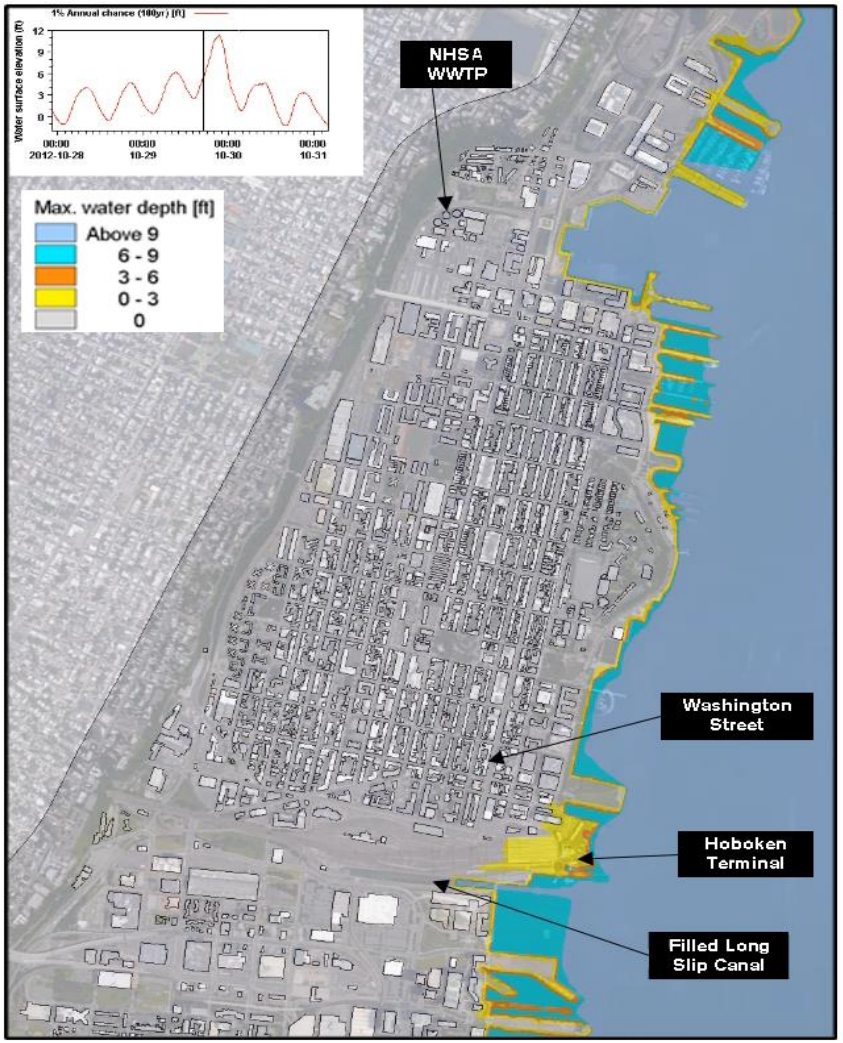
N

What Happens During a Coastal Storm Surge Event?

Coastal flood model demonstrating the concern of coastal storm surge during Superstorm Sandy.

Model depicts "No Action Alternative" (NAA). Estimates future flood (coastal) event if Project is not built.

- **Assumes Long Slip will be built**
- **Assumes Newport development will be built**



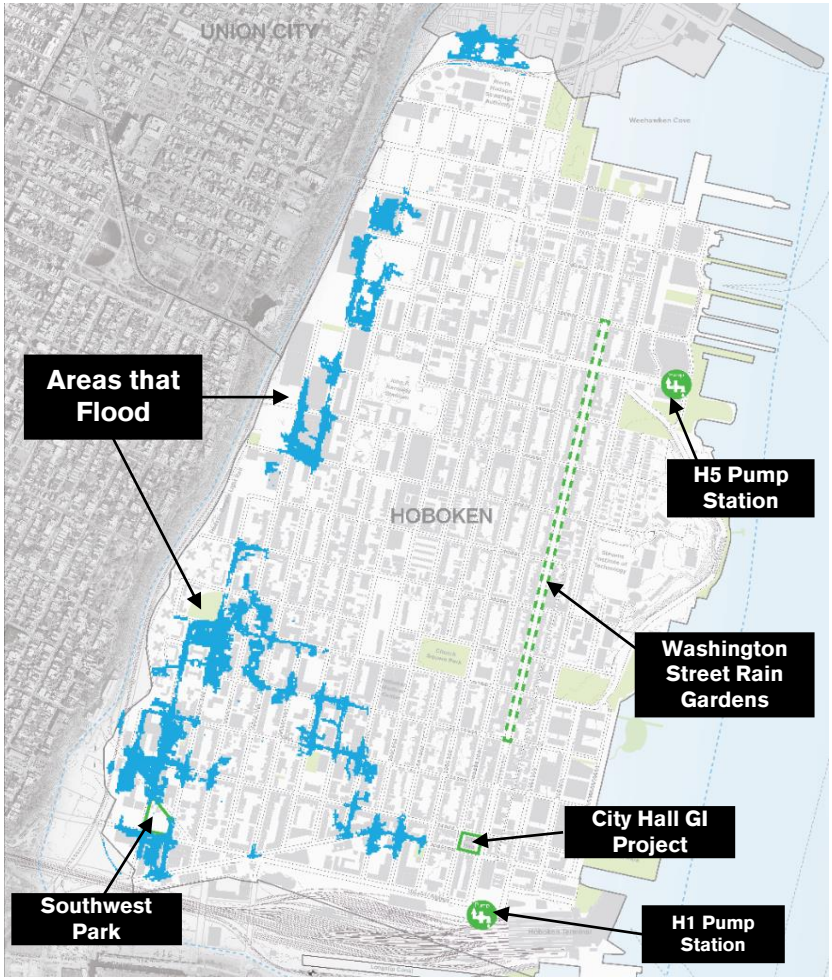
What Happens During a Rainfall Flood Event?

Rainfall model depicting a 5-year rainfall event (high-tide) "No Action Alternative."

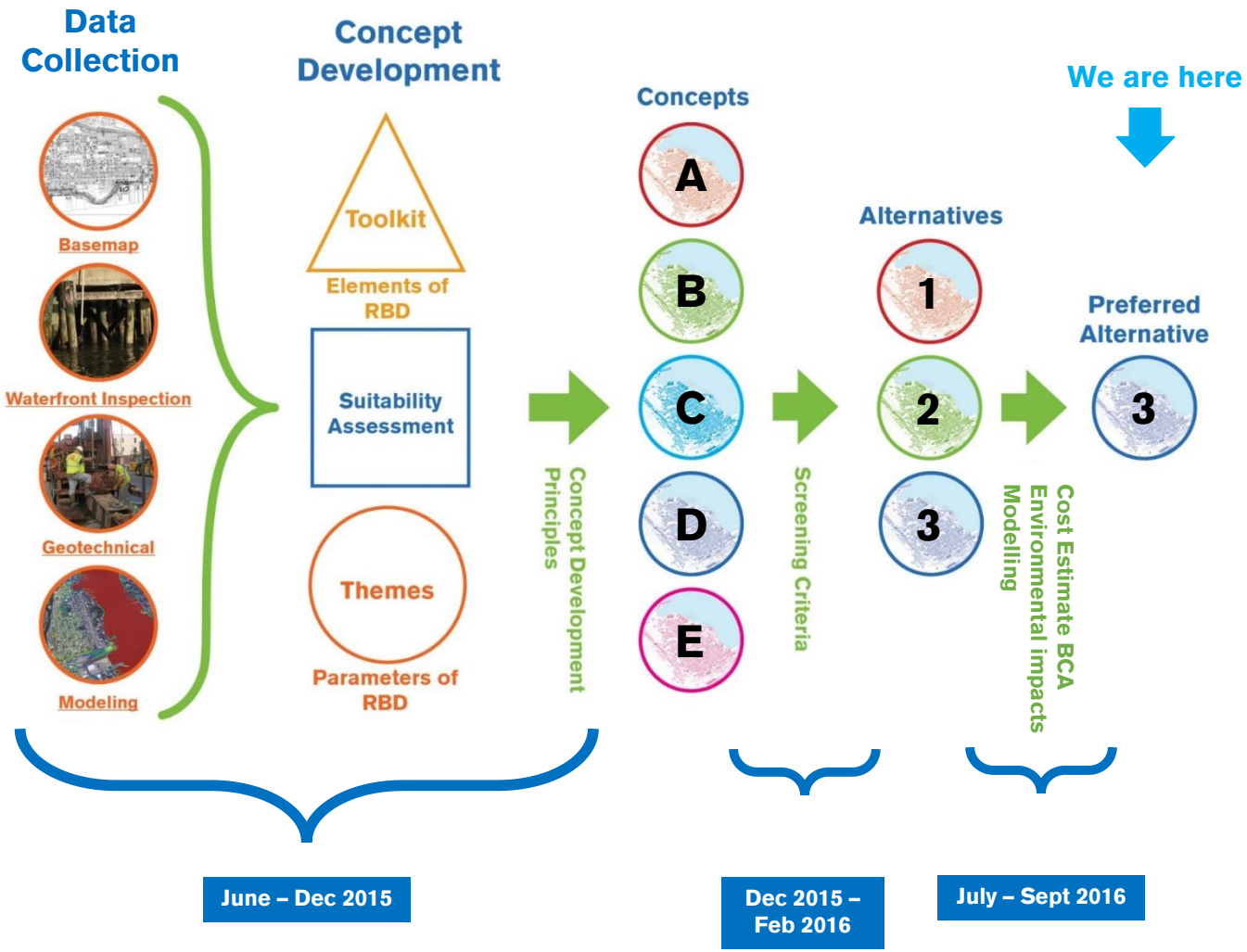
Model estimates future flood (rainfall) event if Project is not built.

Model assumes Hoboken and NHSA's existing on-going initiatives WILL be built:

- **Southwest Park**
- **H1 and H5 Pump Stations**
- **Washington Street Rain Garden**
- **City Hall Green Infrastructure**



Roadmap to Preferred Alternative



Preferred Alternative

ALT-3

- **Provides a high degree of flood risk reduction while balancing public input, cost and urban amenities**
- **Resist can be constructed with available funds**
- **Significantly reduced impact to built environment compared to ALT-1 ; slightly lower than ALT-2**
- **Lowest annual maintenance cost**
- **Fewest number of gates**
- **Minimal impact to waterfront access and views**

Alternative 3

ALTERNATIVE 3

Resist - Alternative 3 | Existing Structures | Delay, Store, Discharge

*For more information on Alternative 3, please see the project boards

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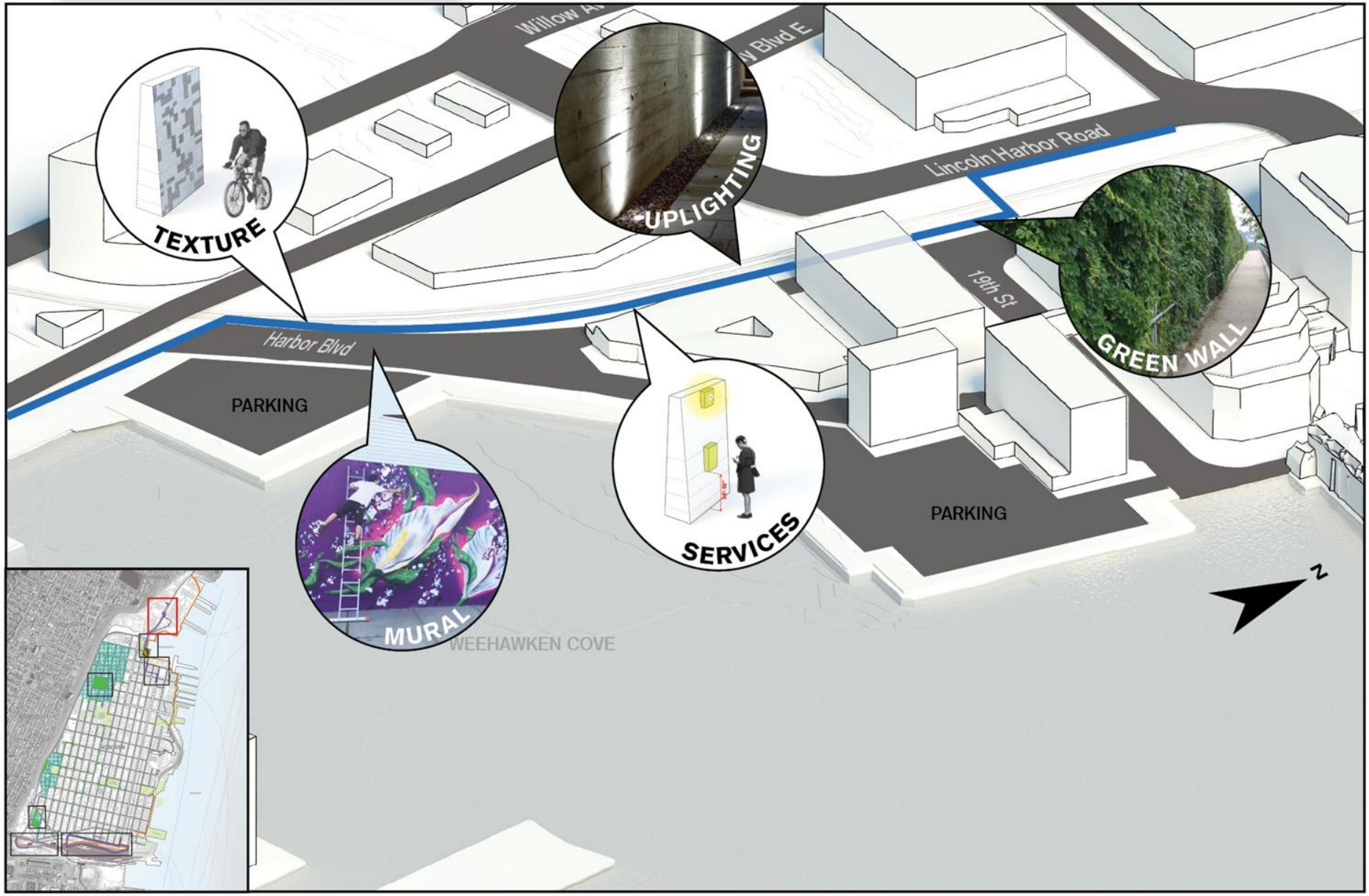
Weehawken Tie-In

ALT-3




Garden St. and Alleyway
ALT-3
Harborside Lofts
Hudson Tea Building
Parking Garage
1450 Washington
Garden Street
Alleyway
Washington Street


Cove Park
Weehawken Cove
ALT-1
ALT-2
ALT-3
Boathouse
View Deck
Beach
Harborside Lofts
Playground
Lawn
Multi-Game Court
Multi-Game Court
Sliding Gate
Lawn

Cove Park

ALT-1 ALT-2 ALT-3

Cove Park

ALT-1 ALT-2 ALT-3

Cove Park

ALT-1 ALT-2 ALT-3

Cove Park

ALT-1 ALT-2 ALT-3

Cove Park

ALT-1 ALT-2 ALT-3

Cove Park

ALT-1 ALT-2 ALT-3

Garden St.

ALT-3

Sloped Planter

Parking Structure Egress

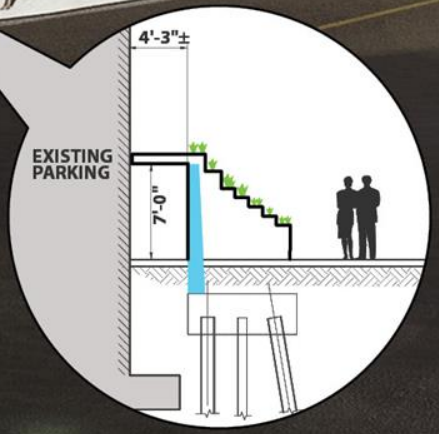
Hudson Tea Parking Garage

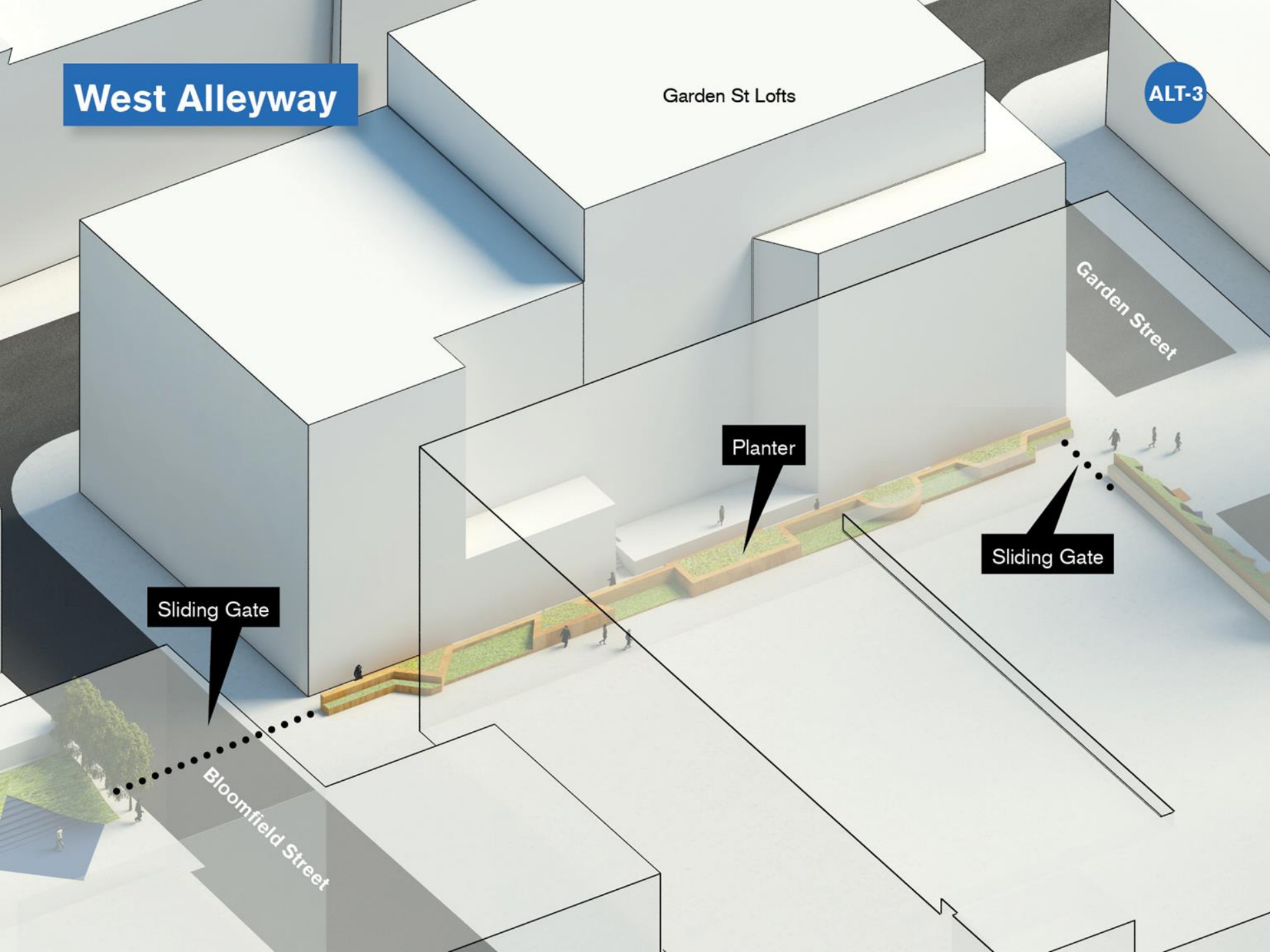
Inset Seating

Garden Street

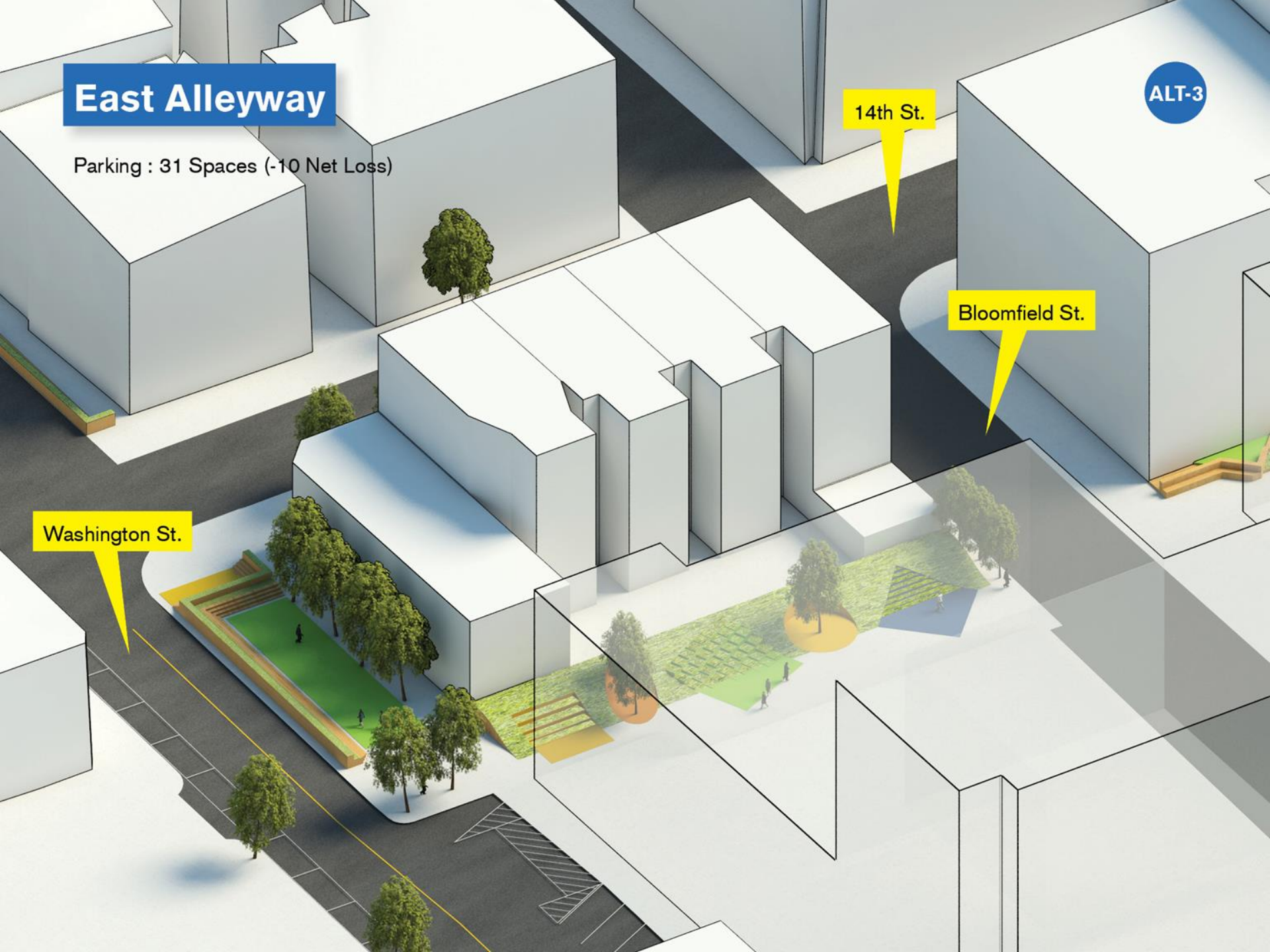
Garden St.

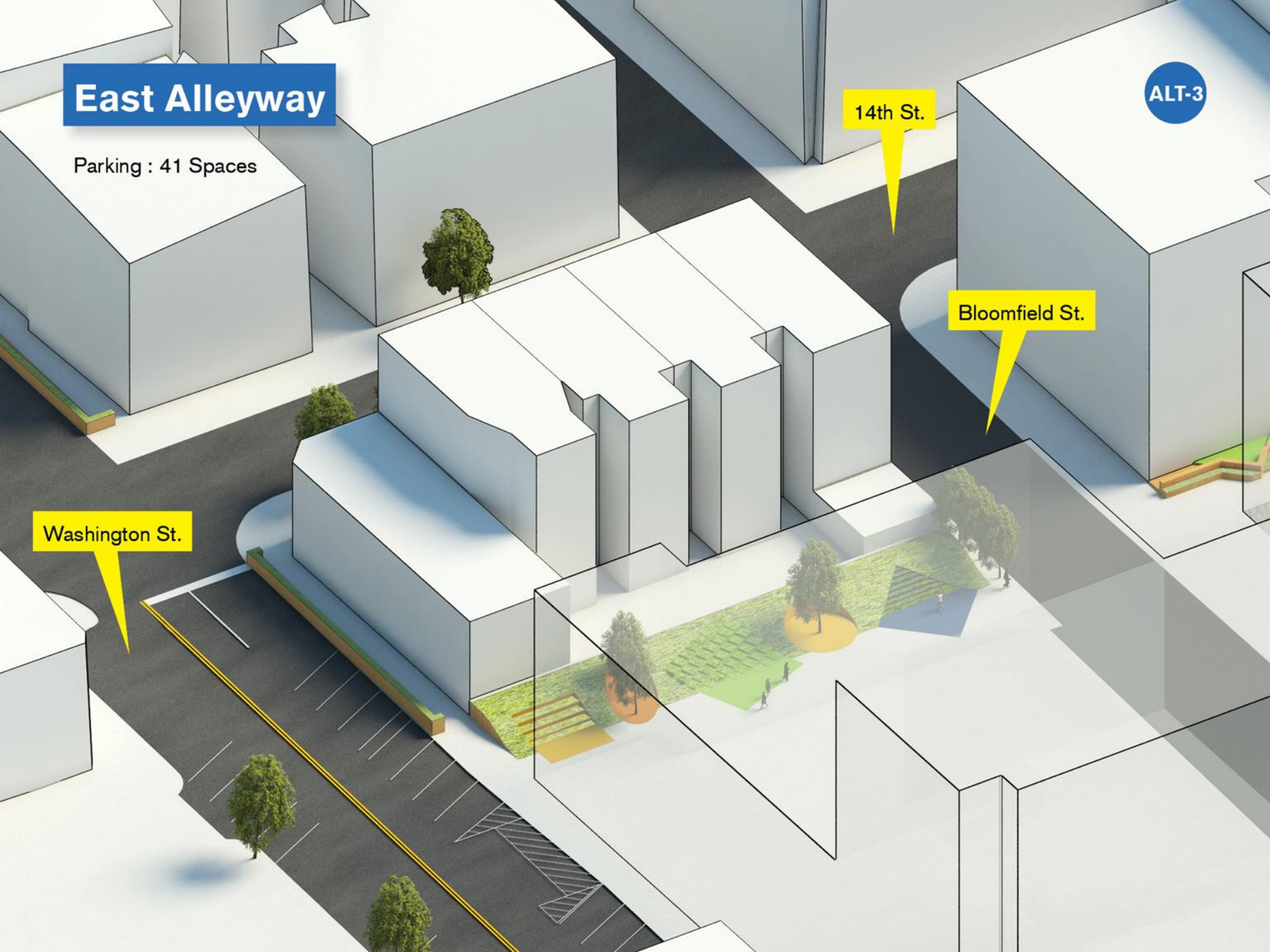
ALT-3




West Alleyway
Garden St Lofts
ALT-3
Garden Street
Planter
Sliding Gate
Sliding Gate
Bloomfield Street


West Alleyway
ALT-3


East Alleyway
Parking : 31 Spaces (-10 Net Loss)
14th St.
Bloomfield St.
Washington St.
ALT-3

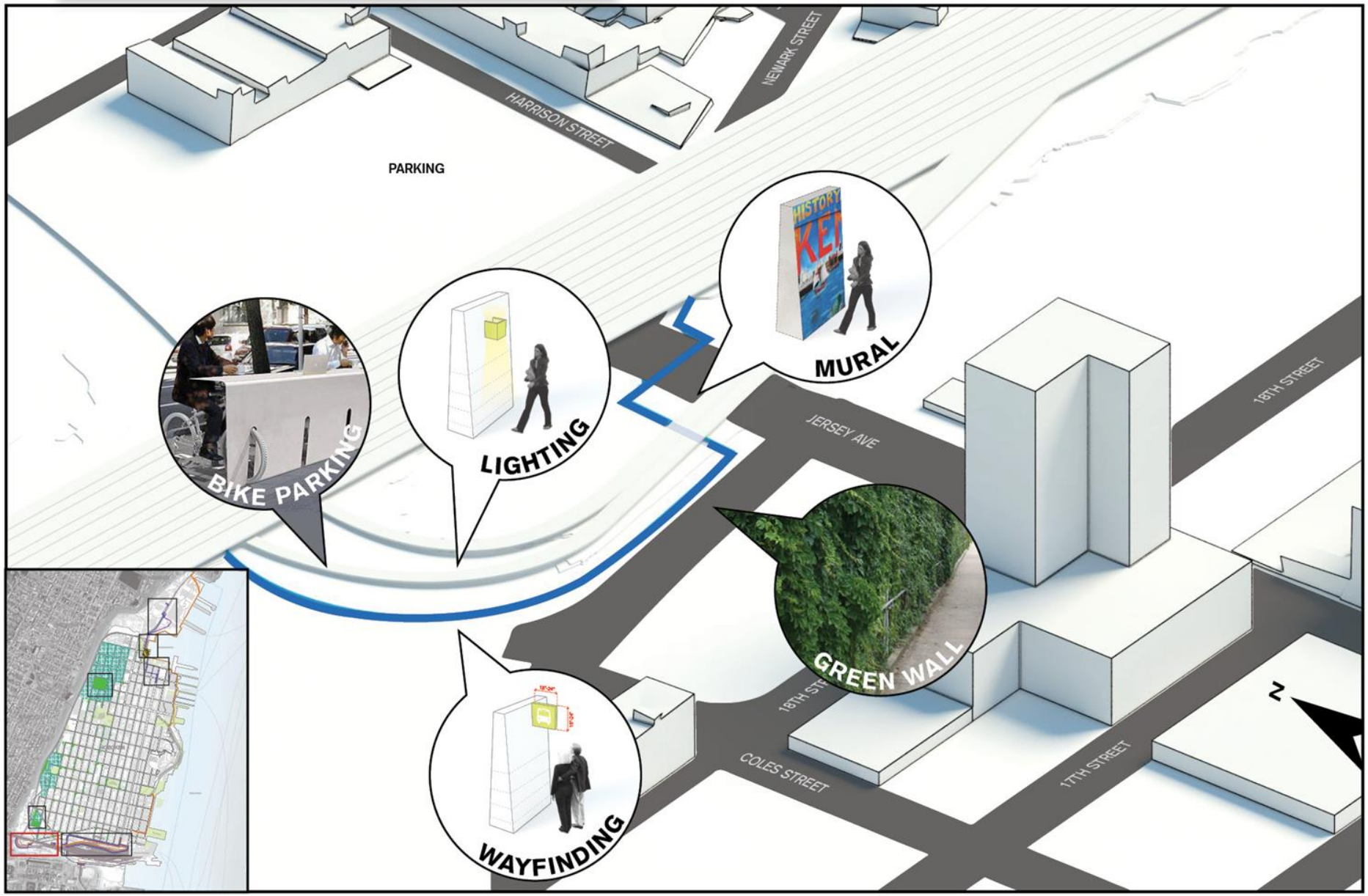

East Alleyway
Parking : 41 Spaces
14th St.
Bloomfield St.
Washington St.
ALT-3

East Alleyway

ALT-3

Jersey Ave. Railyard Tie-in

ALT-3

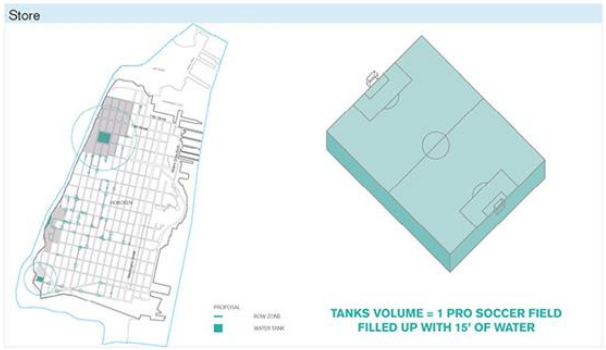


Delay, Store, Discharge

DELAY
STORE
DISCHARGE

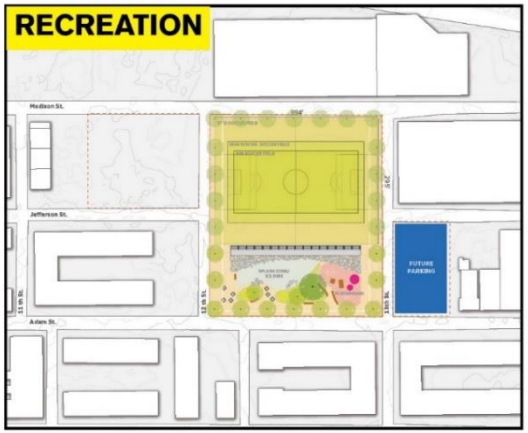
OVERALL STRATEGY

Legend:
- Catchment Area
- Municipal Boundaries
- Study Area
- Ferry Lines



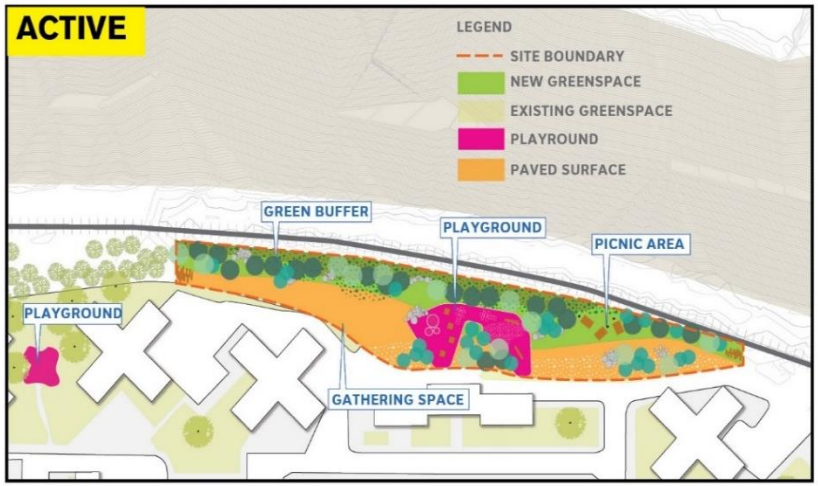
BASF Site

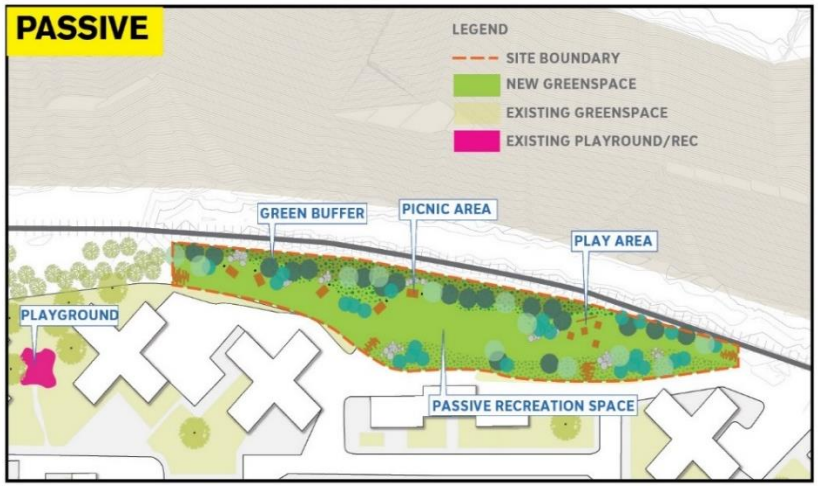

DESTINATION
Madison St.
Jefferson St.
Adam St.
FUTURE PARKING


RECREATION
Madison St.
Jefferson St.
Adam St.
FUTURE PARKING

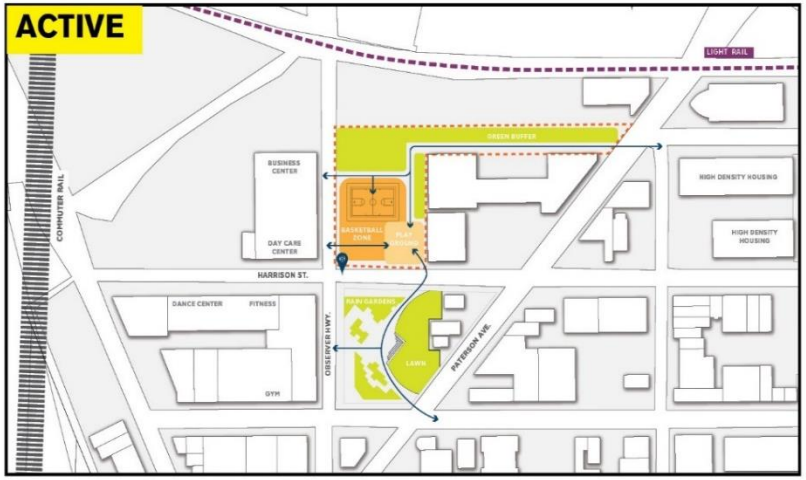

ECO
Madison St.
Jefferson St.
Adam St.
FUTURE PARKING

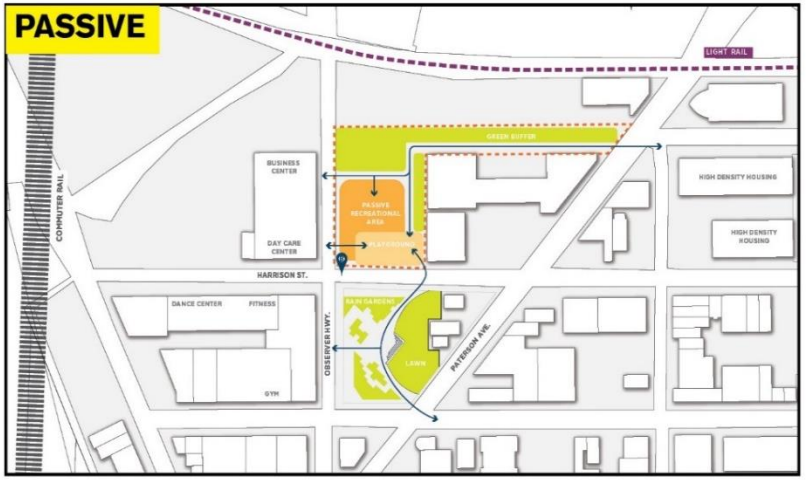
NJ TRANSIT Site





Block 10





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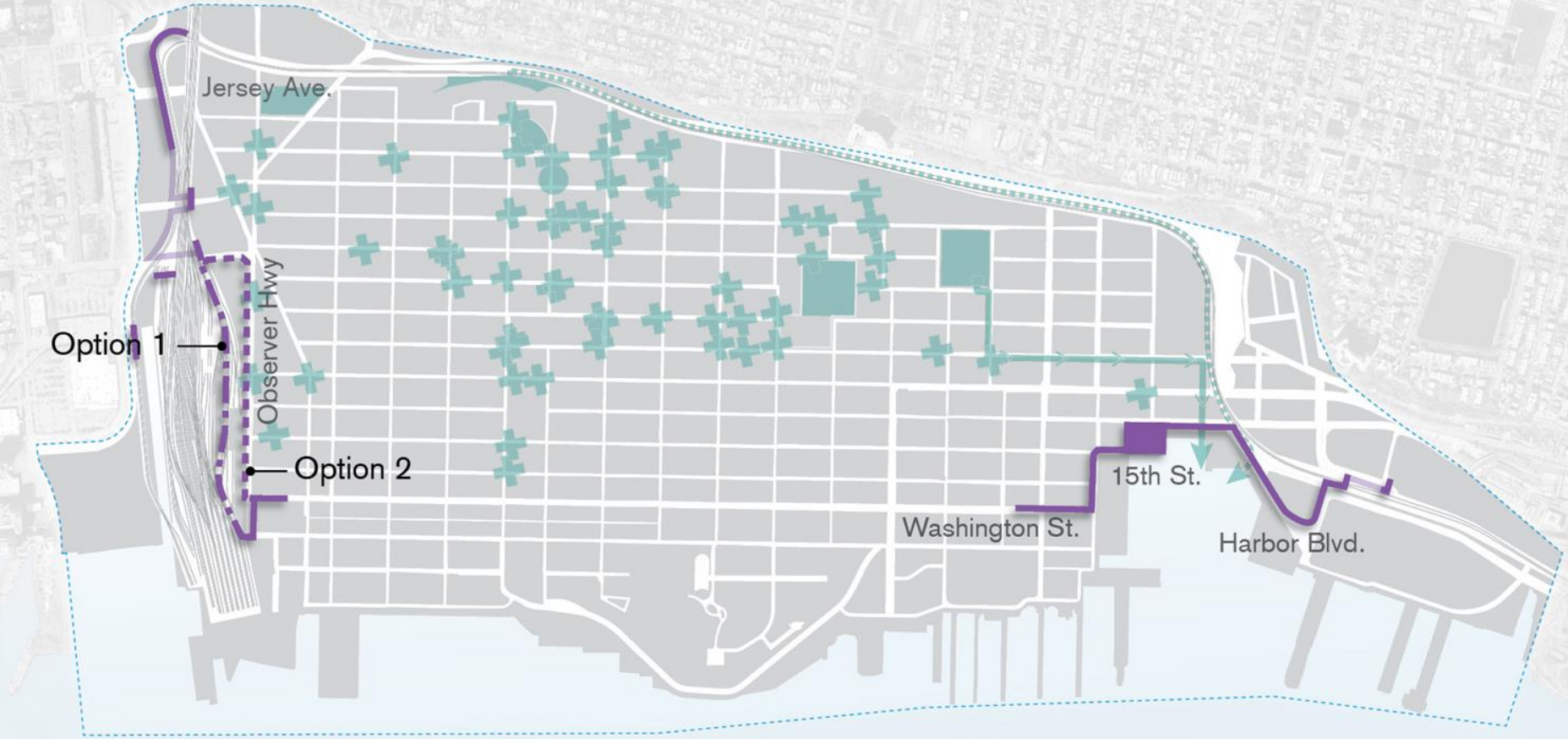
Delay, Store, Discharge

UNDERGROUND WATER STORAGE UNIT

TYPICAL CONDITION

Alternative 2

ALTERNATIVE 2



Resist - Alternative 2 | Existing Structures | Delay, Store, Discharge

*For more information on Alternative 2, please see the project boards


15th St. and Washington St.
ALT-2
Harborside Lofts
Hudson Tea Building
1450 Washington
Parking Garage

15th St. Landscape

ALT-2

Washington Street - Looking South

ALT-2

Alternative 1

ALTERNATIVE 1

Resist - Alternative 1

Existing Structures

Delay, Store, Discharge

*For more information on Alternative 1, please see the project boards

Tea Building Viewing Platforms + Landscape

ALT-1

Independence Court Waterfront

ALT-1

Review of Matrix Results

Flood Risk Reduction

Socioeconomics and Built Environment

Benefit Cost Analysis

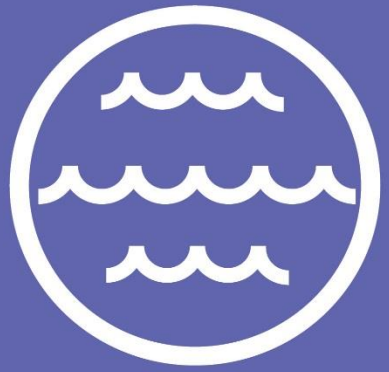
Construction / Maintenance and Operations

Environmental Impacts

Review of Matrix Results - Alternative 3

	**Alternative 3 provides substantial flood risk reduction (85% of the community and majority of critical facilities).**
	**Alternative 3 provides amenities while minimizing impacts to the built environment.**
	**Alternative 3 has the highest Benefit/Cost Ratio of all the alternatives.**
	**Alternative 3 has the lowest construction cost of all the Alternatives.**
	**Alternative 3 will require the least amount of disposal of soils.**

Flood Risk Reduction



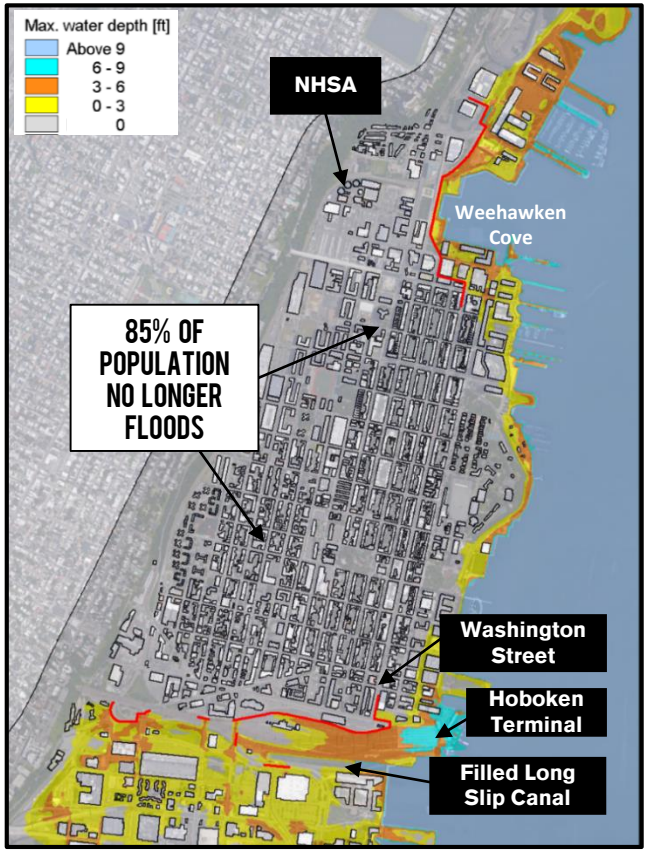
Alternative 3 provides substantial flood risk reduction:

- 85% of community receives flood reduction from Coastal Surge (Resist)
- All critical facilities protected except one fire station (1313 Washington Street)
- 14,000 people receive rainfall flood reduction benefits (from Delay, Store, Discharge)

NAA AND ALTERNATIVE 3 WITH 100-YEAR COASTAL STORM SURGE

NAA

ALT-3

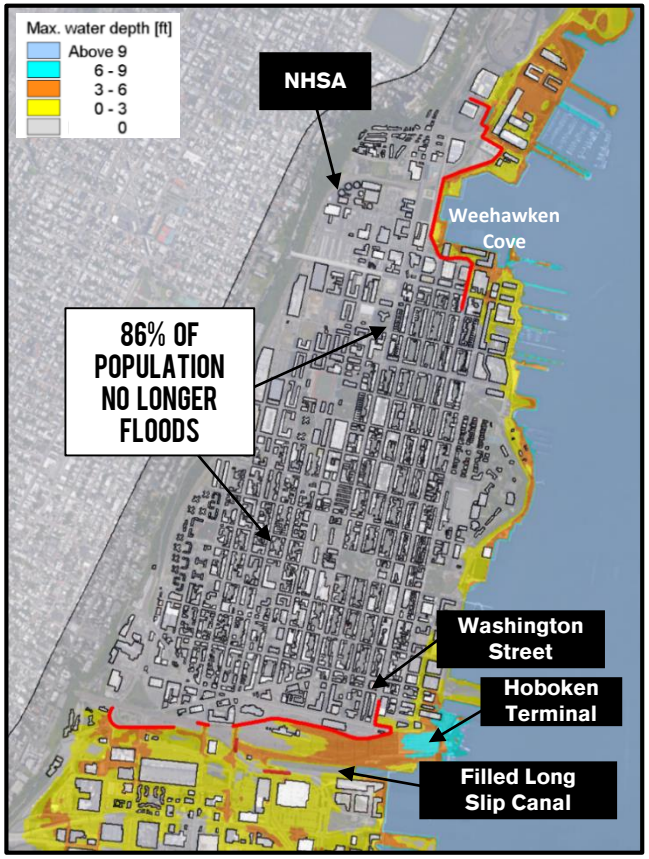


shows resist feature alignment

NAA AND ALTERNATIVE 2 WITH 100-YEAR COASTAL STORM SURGE

NAA

ALT-2



shows resist feature alignment

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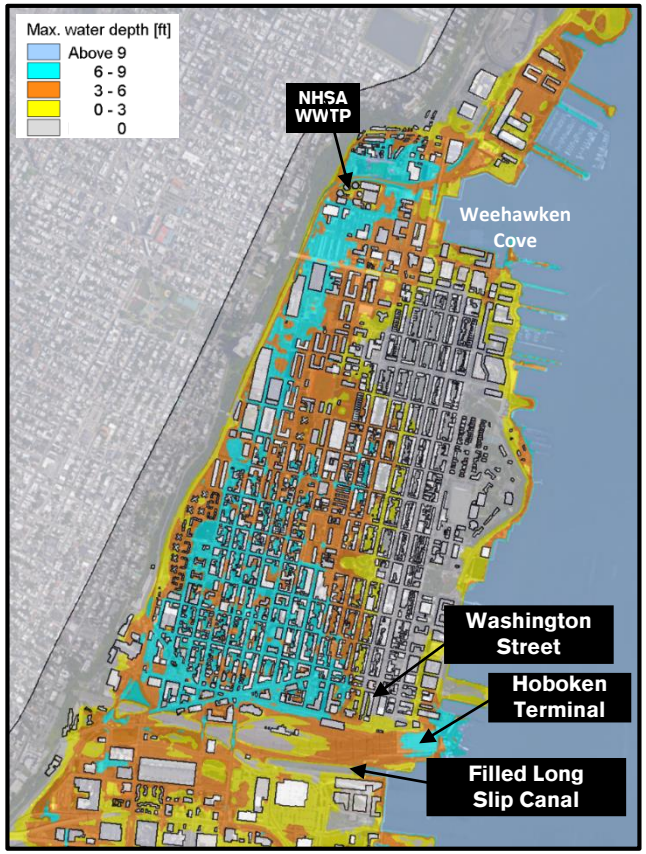
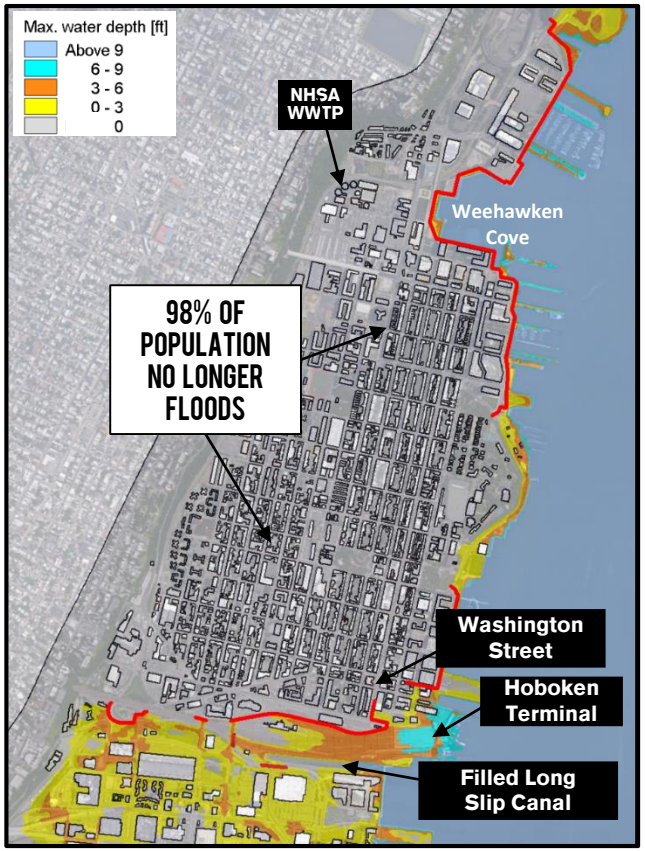
NAA AND ALTERNATIVE 1 WITH 100-YEAR COASTAL STORM SURGE

NAA



ALT-1



shows resist feature alignment

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Delay, Store, Discharge: Drainage Area

Proposed underground detention facilities with green/open space on ground surface with discharge features such as pumps to manage rainfall runoff volume

BASF site

- **Manages rainfall runoff for approx. 55 acres**

NJ Transit site

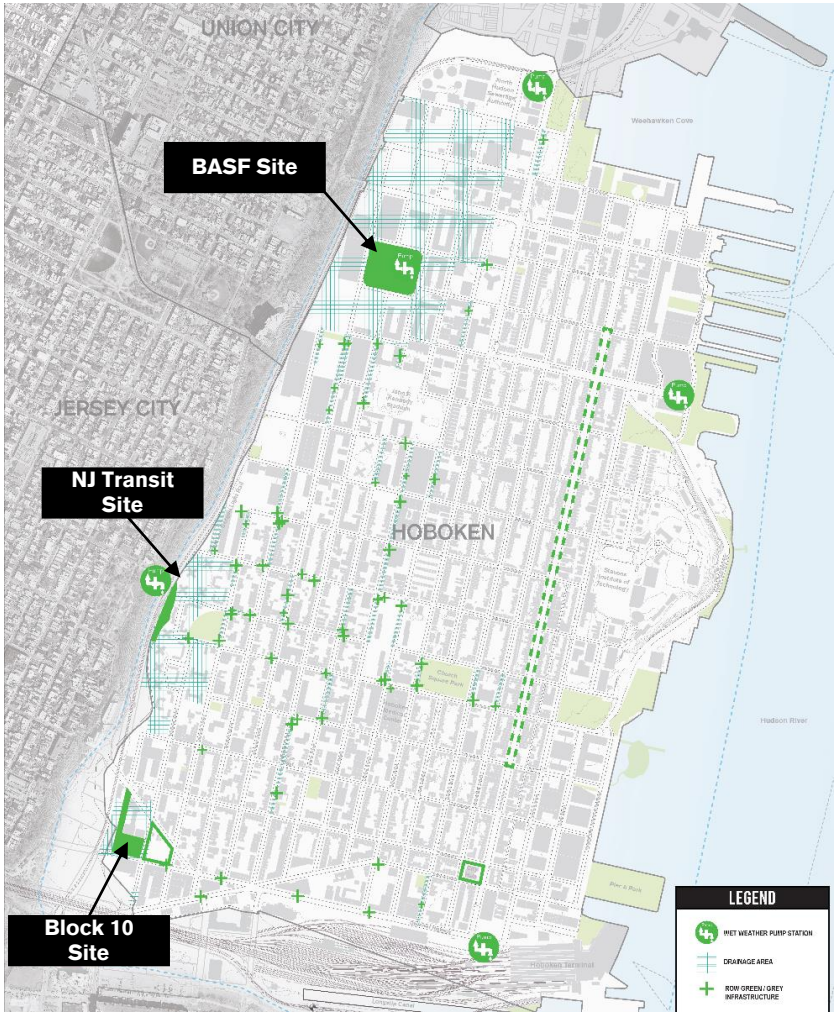
- **Manages rainfall runoff for approx. 15 acres**

Block 10 site

- **Manages rainfall runoff for approx. 8 acres**

ROW Green/Grey Infrastructure Practices

- **Total of 61 sites to manage street drainage for approx. 13 acres**



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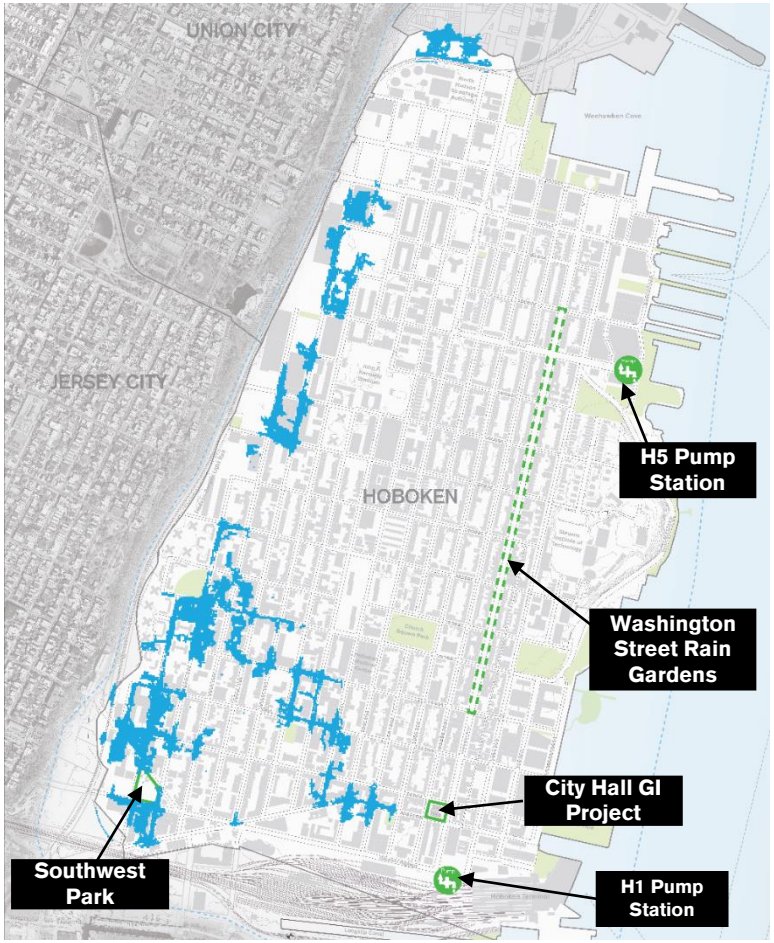
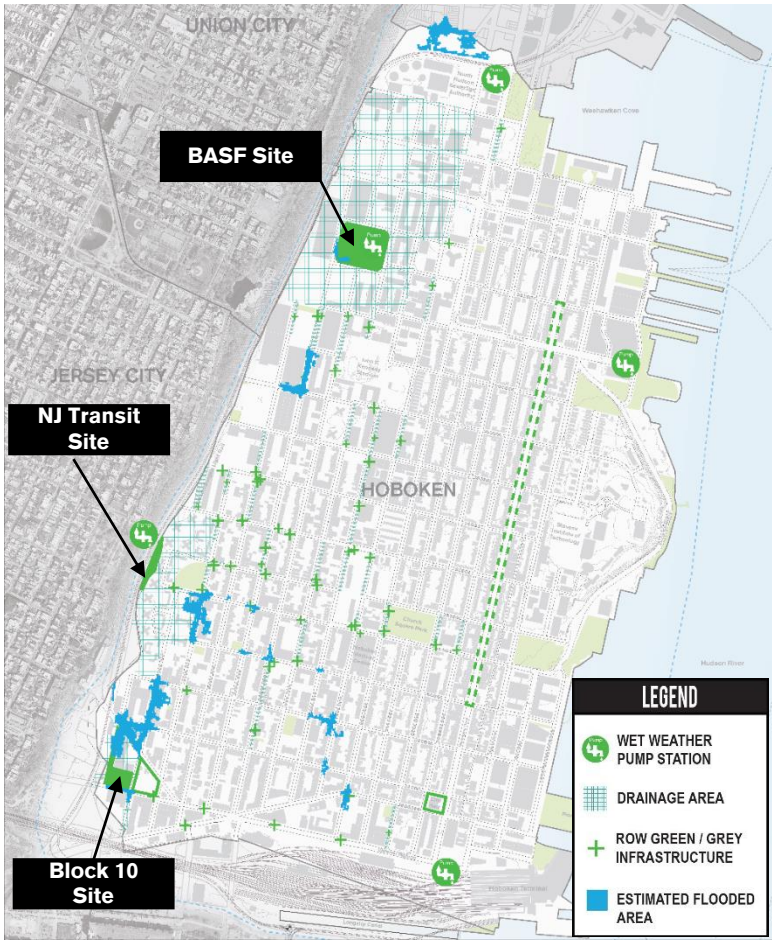
State of New Jersey Department of Environmental Protection

COMPARISON OF FLOODING AREAS WITH 5-YEAR / HIGH TIDE - NAA AND PROPOSED DSD

Baseline Conditions (NAA)



Proposed DSD Alternative



Flood Risk Reduction: Summary

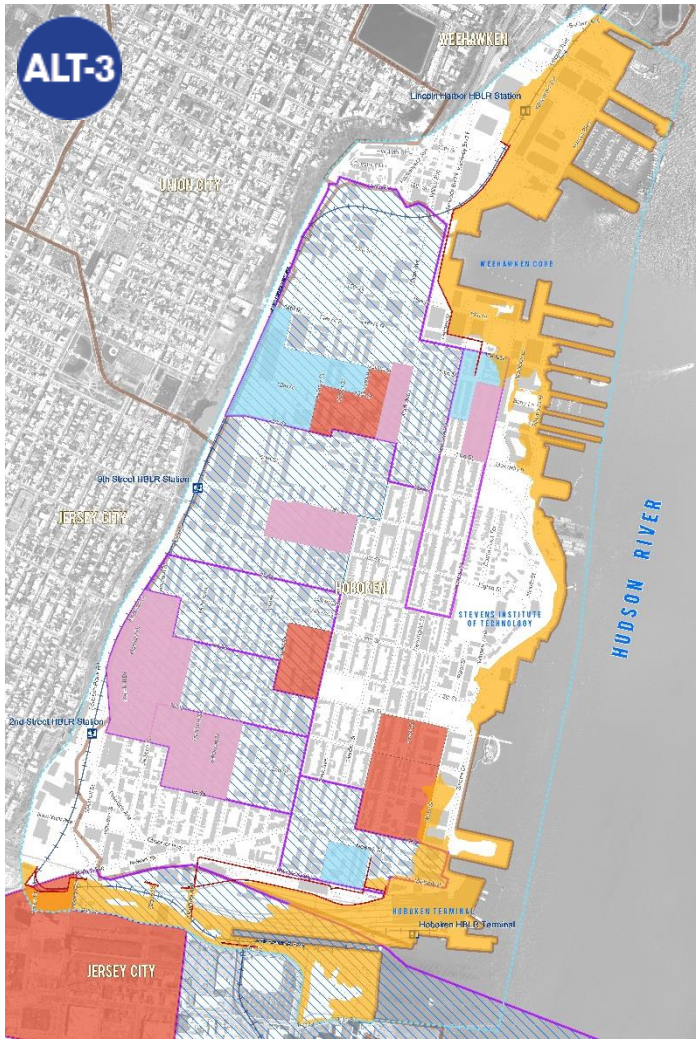
Flood Risk Reduction	ALT-1	- Reduces flood risk to 98% of population - All critical facilities protected
	ALT-2	- Reduces flood risk to 86% of population - One critical facility remains exposed (Fire station)
	ALT-3	- Reduces flood risk to 85% of population - One critical facility remains exposed (Fire station)

Socioeconomics and Built Environment

Alternative 3 provides amenities while minimizing impacts to the built environment:

- Approximately 7 acres of new/improved park space
- Minimal impact to waterfront access
- Least number of gates required
- Reduces flood risk for Environmental Justice communities from coastal surge and rainfall flooding

Coastal Flooding and Environmental Justice

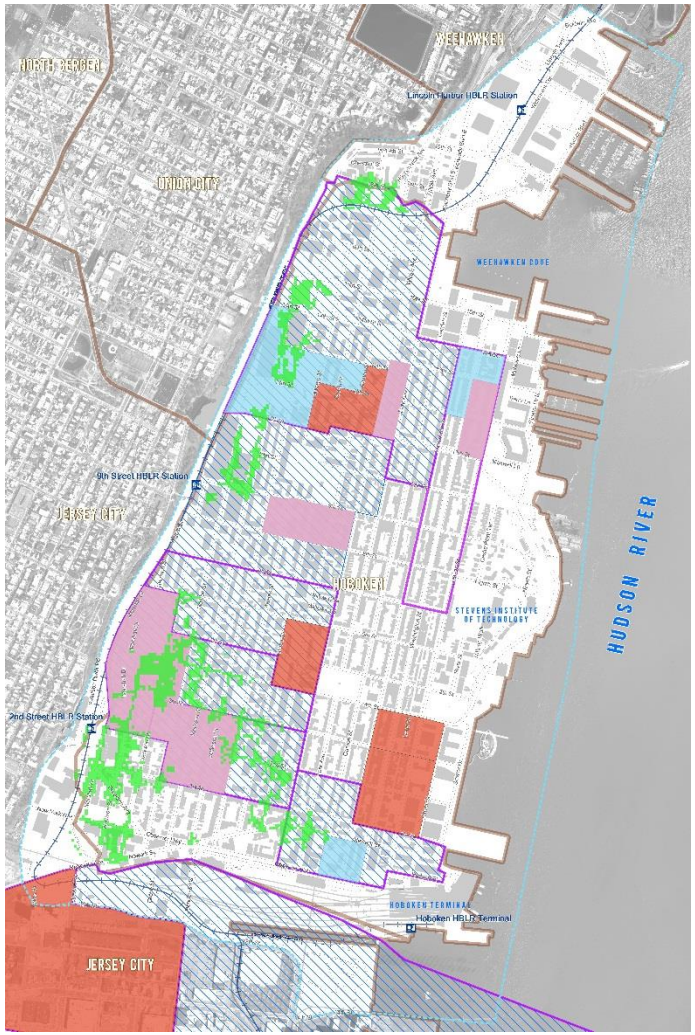


Legend

- Study Area
- Municipal Boundary
- Hudson-Bergen Light Rail (HBLR)
- Proposed Resist Structure - Alternative 3
- 100-Year Floodplain Area not Protected by Resist Structure
- Minority Block Groups
- Hispanic Block Groups
- Population (Over 75) Block Groups
- Households in Poverty Census Tracts
- Families with Children in Poverty Census Tracts

ALT-1	**Greatest number of EJ populations receive flood reduction benefits**
ALT-2	**Slightly fewer number of EJ populations receive flood risk reduction benefits compared to Alt-1**
ALT-3	

Rainfall Flooding and Environmental Justice



Legend

- Study Area
- Municipal Boundary
- Hudson-Bergen Light Rail (HBLR)
- Minority Block Groups
- Hispanic Block Groups
- Population (Over 75) Block Groups
- Households in Poverty Census Tracts
- Families with Children in Poverty Census Tracts
- Area of Reduced Flooding (Based on 5-Year Storm Model)

ALT-1

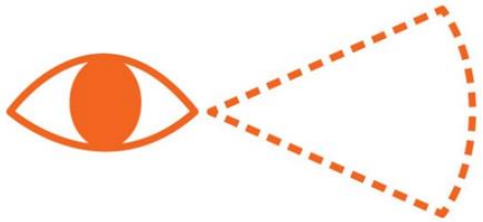
ALT-2

ALT-3

48.1 acres flood during NAA (5-year rainfall):

- **All receive rainfall flood reduction**
- **35.5 acres no longer flood at all**

Alternatives Analysis Screening Criteria



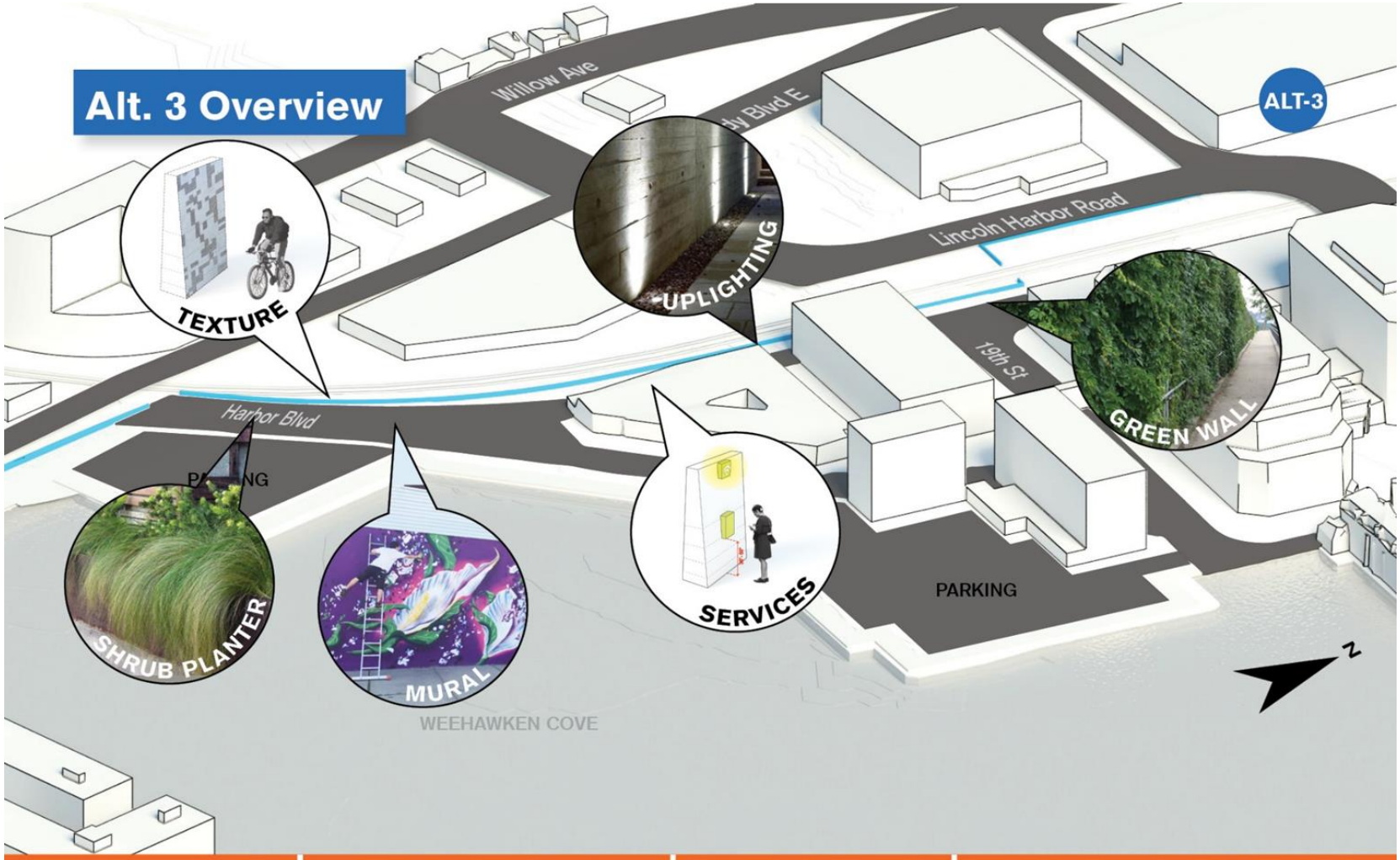
View Corridors

Waterfront Access

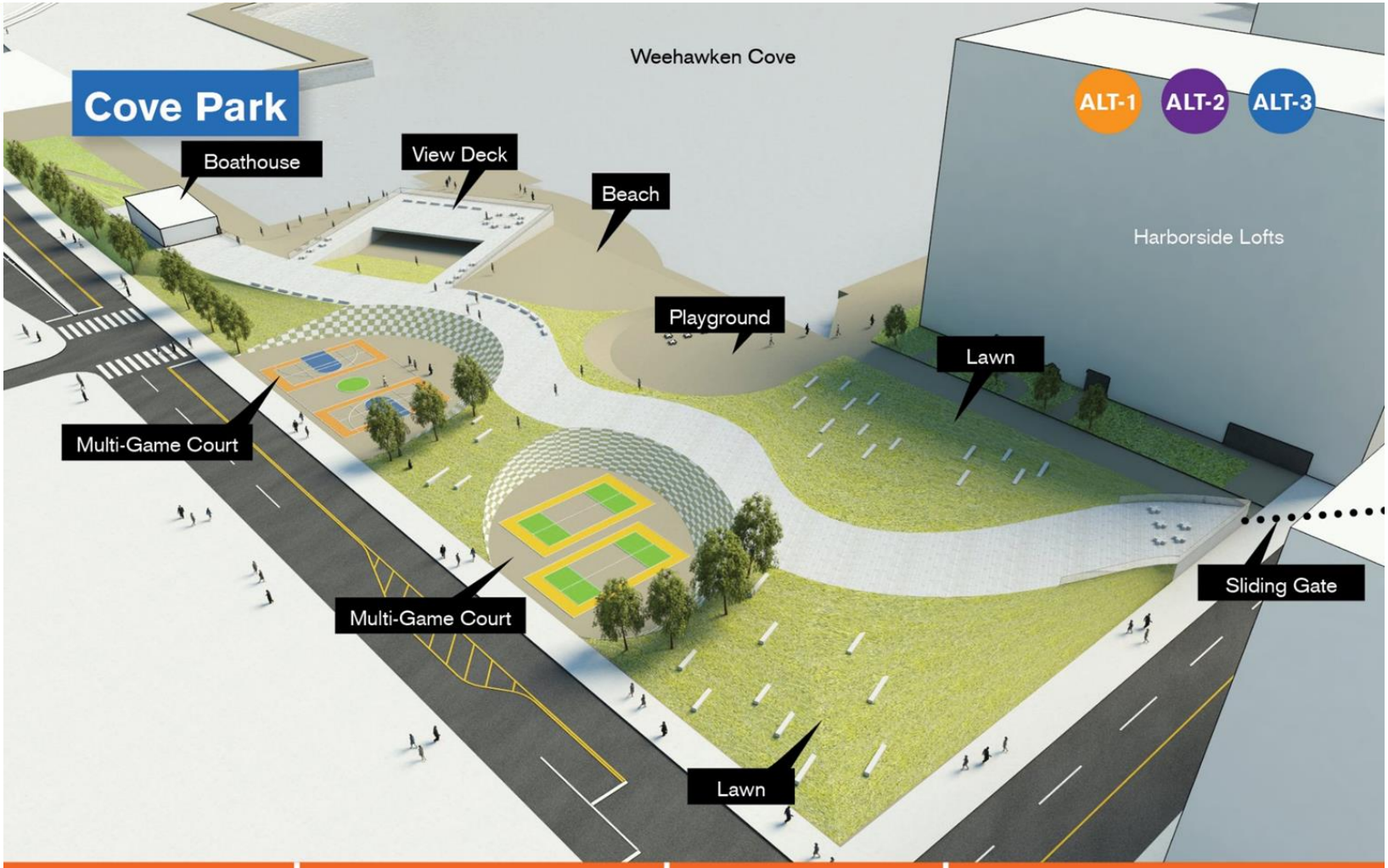
Park Space

Connectivity/Circulation

Alt. 3 Overview



View Corridors	Waterfront Access	Park Space	Connectivity/Circulation
Recreational impacts	No Waterfront access impact	N/A	0 Parking Impacted, 3 Gates



View Corridors	Waterfront Access	Park Space	Connectivity/Circulation
Residential impacts	No Waterfront access impact	New Park Space	0 Parking Impacted, 1 Gate

View Corridors	Waterfront Access	Park Space	Connectivity/Circulation
Residential impacts Retail/Dining impacts	No Waterfront access impact	New Park Space	0-10 Parking Impacted, 4 Gates

View Corridors	Waterfront Access	Park Space	Connectivity/Circulation
Residential impacts Retail/Dining impacts	No Waterfront access impact	N/A	0 Parking Impacted, 2-5 Gates

View Corridors	Waterfront Access	Park Space	Connectivity/Circulation
Residential impacts	No Waterfront access impact	N/A	0 Parking Impacted, 1-3 Gates

Socioeconomics / Built Environment: Summary

Socioeconomics and Built Environment 	ALT-1	- Most impact to waterfront access - Most impact to river and city views - Most opportunity for new/improved park amenities - 29-31 gates
	ALT-2	- Least impact to waterfront access - Least impact to river and city views - Less opportunity for new/improved park amenities - 21-25 gates
	ALT-3	- Least impact to waterfront access - Least impact to river and city views - Least opportunity for new/improved park amenities - 19-23 gates

Benefit Cost Analysis

Benefit Cost Analysis

Alternative 3 has the highest Benefit/Cost Ratio of all the alternatives

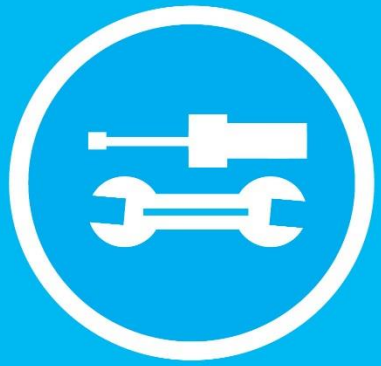
Comparison of Benefit-Cost Analysis Results

Build Alternative	Benefit-Cost Ratio (BCR)
ALT-1	2.21
ALT-2	3.83
ALT-3	3.94

Benefit Cost Analysis: Summary

Benefit Cost Analysis	ALT-1	- **Most expensive, lowest BCR**
	ALT-2	- **Less expensive, higher BCR**
	ALT-3	- **Least expensive, highest BCR**

Maintenance / Operations and Construction



Maintenance / Operations and Construction

Alternative 3 has the lowest construction cost of all the Alternatives

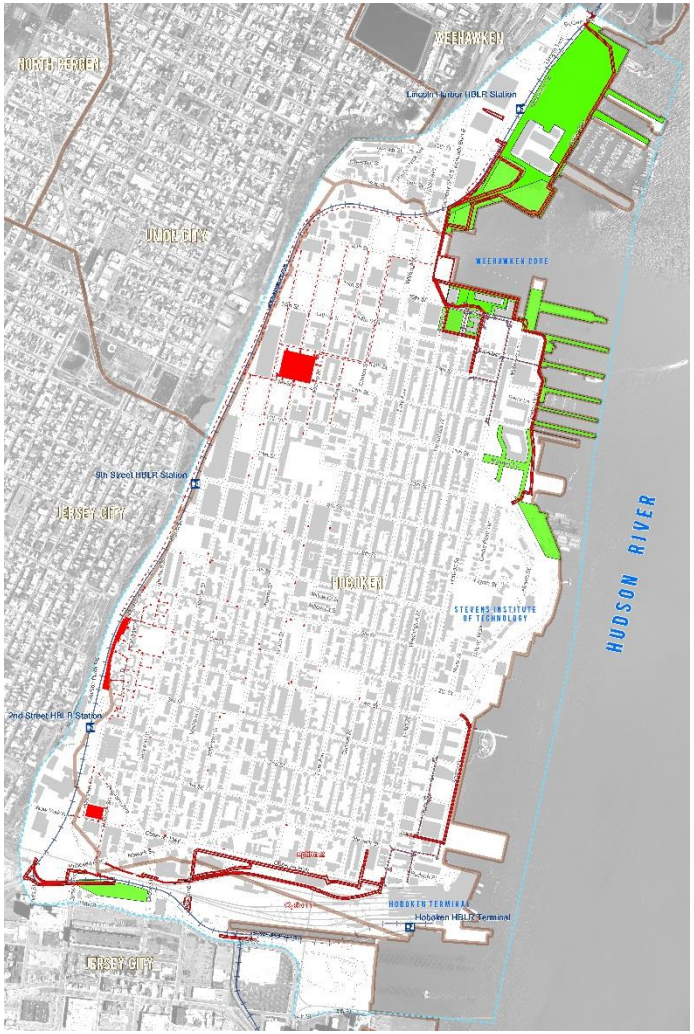
- Lowest construction cost
- Lowest estimated annual maintenance cost

Maintenance / Operations and Construction

Resist Feature: Operations and Maintenance Annual Cost (Estimate, $M)	
ALT-1 Option 1	$3.6 - $5.4
ALT-1 Option 2	$3.7 - $5.5
ALT-2 Option 1	$1.5 - $2.4
ALT-2 Option 2	$1.6 - $2.6
ALT-3 Option 1	$1.4 - $2.3
ALT-3 Option 2	$1.5 - $2.4

O&M will be further refined at the next phase of the project. Currently, the DSD O&M is estimated at 1% of the construction costs.

Constructability - Potential Private Property Easement



Legend

- Study Area
- Proposed Resist Structure
- Proposed Underground Tank
- Proposed Underground Piping
- Municipal Boundary
- Hudson-Bergen Light Rail (HBLR)
- Potential Private Property Easement

ALT-1	**- 15 properties with potential easements** **- Approx. 4,860-4,600 feet of utility relocation**
ALT-2	**- 6 properties with potential easements** **- Approx. 2,300-2,060 feet of utility relocation**
ALT-3	**- 6 properties with potential easements** **- Approx. 1,280-1,030 feet of utility relocation**

Maintenance / Operations and Construction: Summary

Construction / Maintenance and Operations	ALT-1	- Most expensive annual cost - Greatest amount of utility impacts - 15 properties w/potential easements
	ALT-2	- Less expensive annual cost - Less amount of utility impacts - 6 properties w/potential easements
	ALT-3	- Least expensive annual cost - Least amount of utility impacts - 6 properties w/potential easements

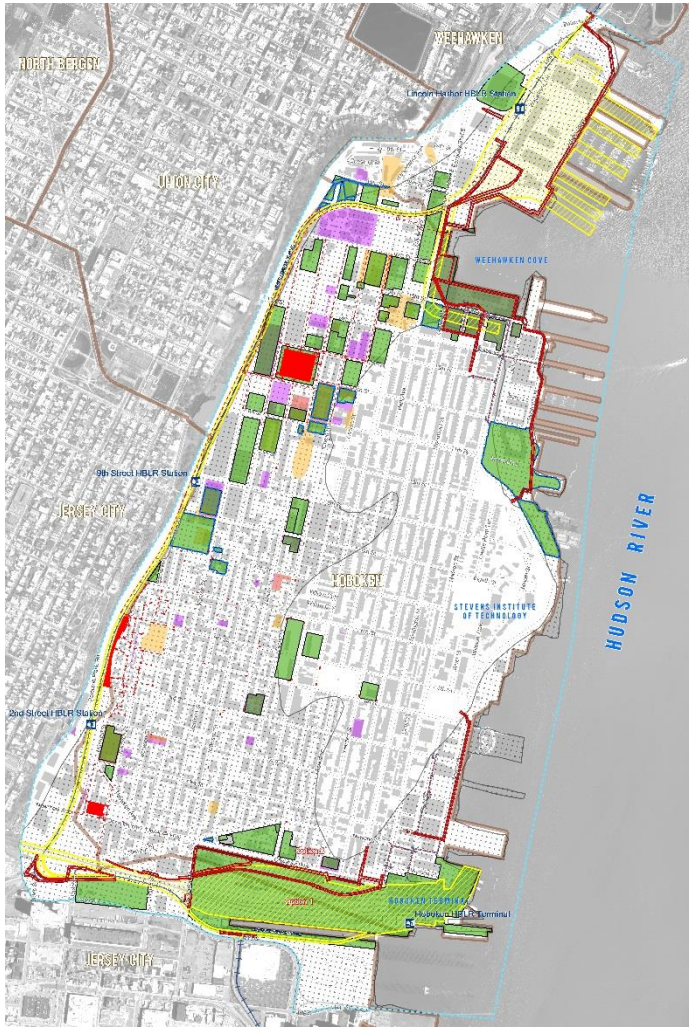
Environmental Impacts

Environmental Impacts

All three alternatives have varying degrees of environmental impacts.

- Alternative 3 will require the least amount of disposal of soils
- Alternative 3 (and Alternative 2) will impact the fewest noise receptors during construction.

Recognized Environmental Conditions

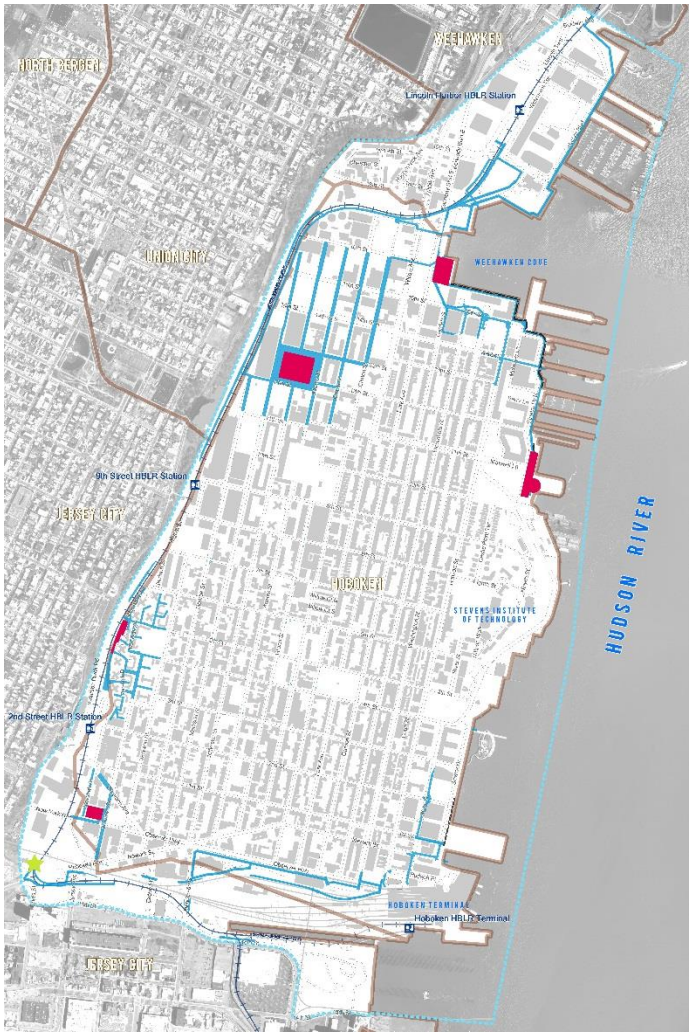


Legend:

- Study Area
- Proposed Resist Structure
- High Level Storm Sewer System
- Proposed Underground Tank
- Proposed Underground Piping
- Municipal Boundary
- Hudson-Bergen Light Rail (HBLR)
- NJDEP Mapped Historic Fill (REC 1)
- Current and Historic Rail Area (REC 2)
- REC Site Impacted by Chlorinated Solvents
- REC Parcels
- NJDEP Mapped Classification Exception Areas
- NJDEP Mapped Deed Notice Parcels

ALT-1	**- 43-46 RECs - Approx. 150,000 tons soil (total) potentially requiring off-site disposal**
ALT-2	**- 45-49 RECs - Approx. 138,000 tons soil (total) potentially requiring off-site disposal**
ALT-3	**- 45-49 RECs - Approx. 137,000 tons soil (total) potentially requiring off-site disposal**

Environmental Permitting



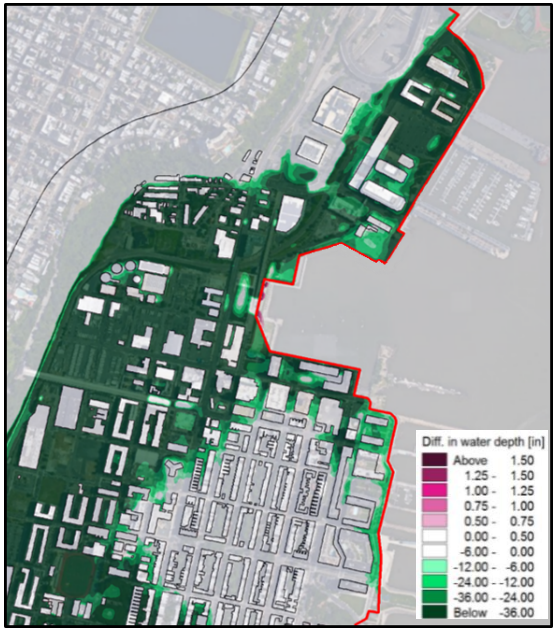
Legend

- Study Area
- Municipal Boundary
- Hudson-Bergen Light Rail (HBLR)
- Positive Floodplain Benefit
- Bulkhead Replacement
- Permanent and Temporary Floodplain Impacts
- Freshwater Wetland Impact

ALT-1	**- Potential minor impacts due to in-water work - Individual permits (USACE, NJDEP)**
ALT-2	**- Negligible impacts from outfalls - Nationwide Permit (USACE) - Individual Permits (NJDEP)**
ALT-3	**- Negligible impacts from outfalls - Nationwide Permits (USACE) - Individual Permits (NJDEP)**

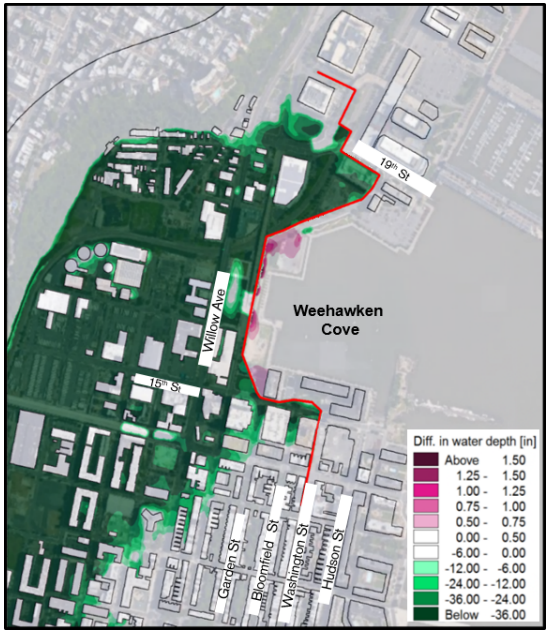
COMPARISON OF DIFFERENCES IN WATER DEPTH (IN INCHES) BETWEEN NAA THREE ALTERNATIVES IN THE NORTH STUDY AREA FOR THE 100-YEAR COASTAL STORM

ALT-1



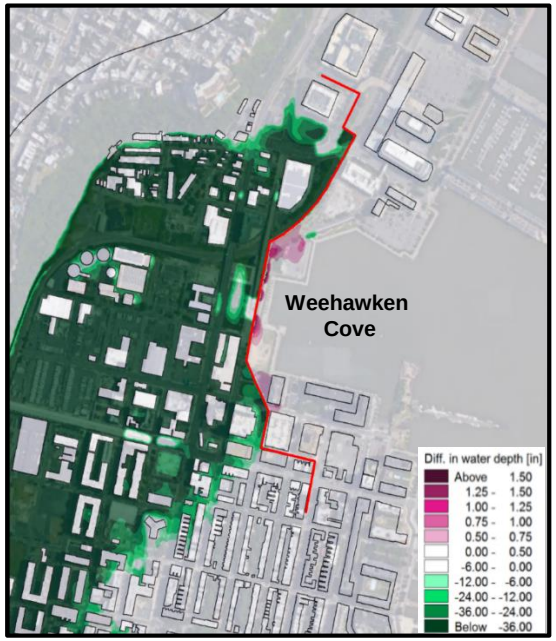
GREEN shows decreases in flood depth in inches

ALT-2



PINK shows increases in flood depth in inches

ALT-3



shows resist feature alignment

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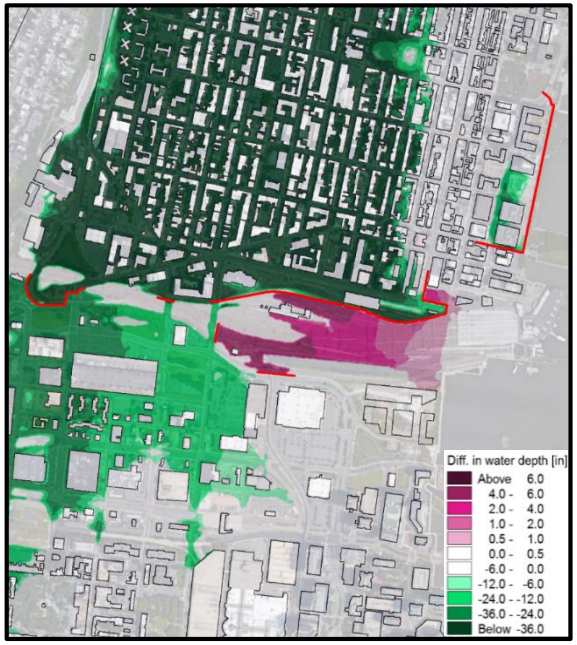
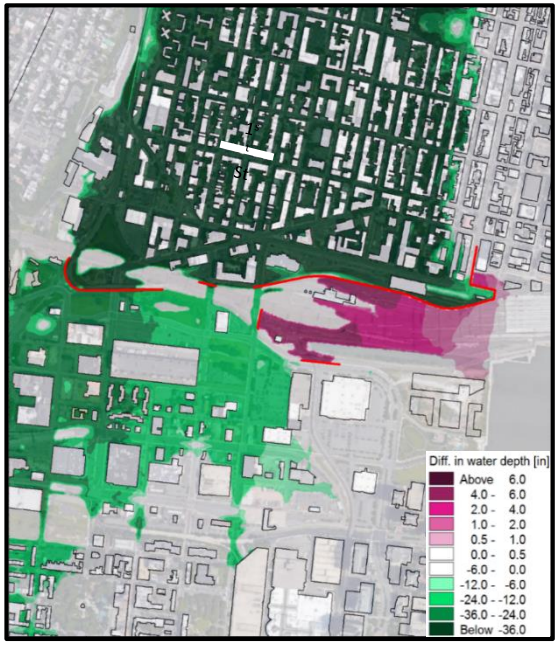
COMPARISON OF DIFFERENCES IN WATER DEPTH (IN INCHES) BETWEEN NAA THREE ALTERNATIVES IN THE SOUTH STUDY AREA FOR THE 100-YEAR COASTAL STORM

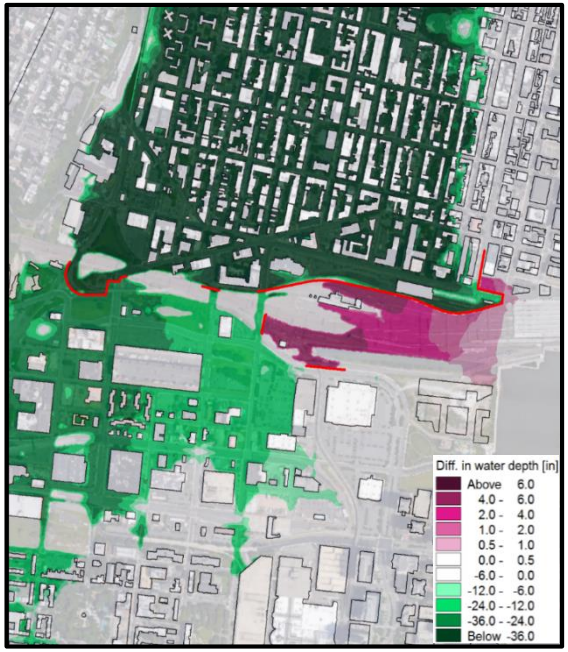
ALT-1



ALT-2



ALT-3

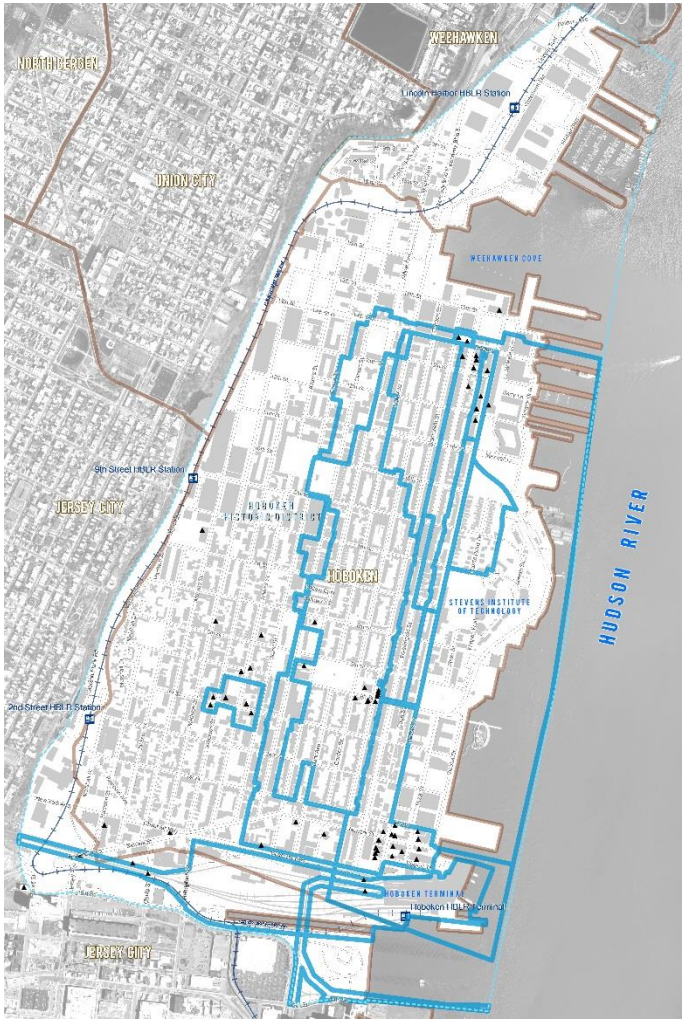


GREEN shows decreases in flood depth in inches

PINK shows increases in flood depth in inches

shows resist feature alignment

Historic Architecture

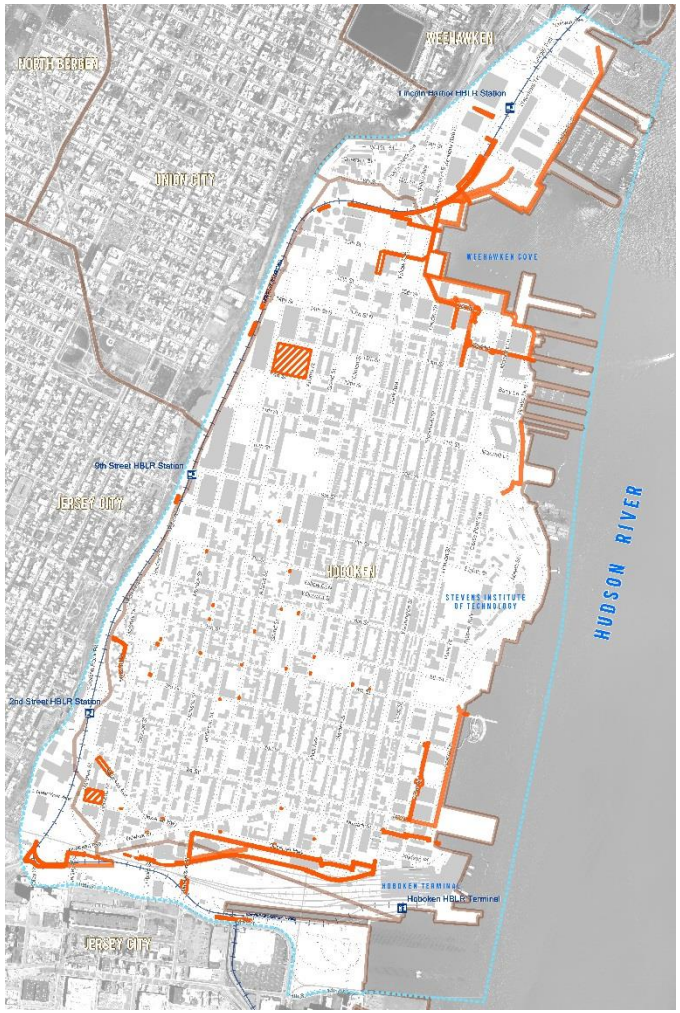


Legend

- Study Area
- Municipal Boundary
- Hudson-Bergen Light Rail (HBLR)
- @ Historic Properties with Potential Adverse Affects
- Historic Districts

ALT-1	**45 historic properties potentially Impacted**
ALT-2	**65 historic properties potentially impacted**
ALT-3	**64 historic properties potentially impacted**

Area of Archaeological Potential Impact

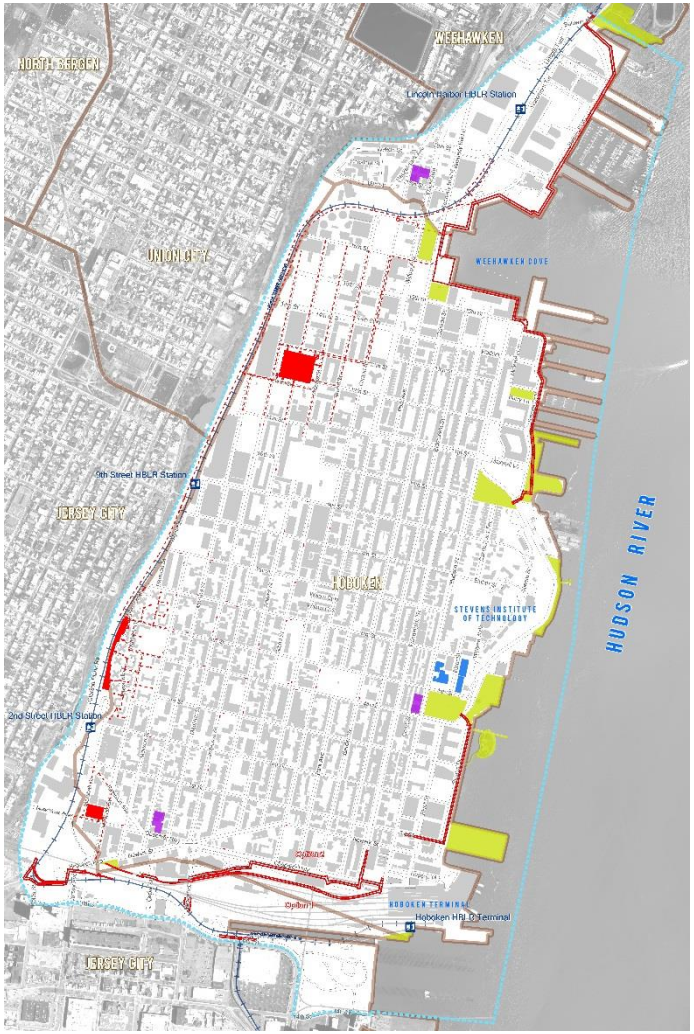


Legend:

- Study Area
- Municipal Boundary
- Hudson-Bergen Light Rail (HBLR)
- Area of Archaeological Potential Impact

ALT-1	**Approx. 16.8 acres potentially impacted**
ALT-2	**Approx. 15.7 acres potentially impacted**
ALT-3	**Approx. 14.7 acres potentially impacted**

Noise Receptors



Legend

- Study Area
- Municipal Boundary
- Hudson-Bergen Light Rail (HBLR)
- Proposed Resist Structure
- Proposed Underground Tank
- Proposed Underground Piping
- Noise Receptor - Parks
- Noise Receptor - Schools
- Noise Receptor - Places of Worship

ALT-1	**- Schools: 4** **- Parks: 13** **- Places of Worship: 3**
ALT-2	**- Schools: 0** **- Parks: 4** **- Places of Worship: 2**
ALT-3	**- Schools: 0** **- Parks: 4** **- Places of Worship: 2**

Environmental Impacts: Summary

Environmental Impacts	ALT-1	- **Greatest amount of off-site soil disposal** - **2 properties potentially impacted (pursuant to land use regulations)**
	ALT-2	- **Less amount of off-site soil disposal** - **5 properties potentially impacted (pursuant to land use regulations)**
	ALT-3	- **Least amount of off-site soil disposal** - **5 properties potentially impacted (pursuant to land use regulations)**

Preferred Alternative

Preferred Alternative

ALT-3

- **Provides a high degree of flood risk reduction while balancing public input, cost and urban amenities**
- **Resist can be constructed with available funds**
- **Significantly reduced impact to built environment compared to ALT-1 ; slightly lower than ALT-2**
- **Lowest annual maintenance cost**
- **Fewest number of gates**
- **Minimal impact to waterfront access and views**

Alternative 3 - Flyover

Key Takeaways

Alternative 3 is a technically feasible cost effective project that was recommended through the alternatives analysis.

1. Contribute to Community Resiliency
2. Reduce Risks to Public Health
3. Contribute to On-going community efforts to reduce FEMA flood insurance rates
4. Deliver Co-benefits
5. Connectivity to the Waterfront
6. Activation of Public Space
7. Consider Impacts from Climate Change

The Design efforts will continue into Final Design.

Next Steps

Publication of the Draft Environmental Impact Statement (DEIS) ..... **Dec. 2016/Jan. 2017**

Public Hearing for DEIS ..... **Jan. 2017**

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Q&A