



<b>Subject</b>	<b>Meeting Minutes - Citizen Advisory Group (CAG) Meeting #8</b>
<b>Meeting Date</b>	<b>March 29, 2017</b>
<b>Scheduled Time</b>	<b>6:00 pm – 8:00 pm ET</b>
<b>Location</b>	<b>215-217 Liberty Street, Little Ferry, NJ 07643</b>
<b>Attendees</b>	<b>Attendee list available; <i>for internal use only</i></b>

- The PowerPoint slide presentation utilized at the meeting is attached to the meeting minutes (see **Attachment 1**).
- A CAG meeting packet was provided to all attendees and is also attached to the meeting minutes (see **Attachment 2**).
- Linda Fisher, New Jersey Department of Environmental Protection (NJDEP) Rebuild by Design Meadowlands (RBDM) Project Team Manager, started the meeting and provided a brief overview of the meeting agenda, which included: (1) an update on the Alternative 1 (Structural Flood Reduction Alternative) concept development process; and (2) an introduction of Alternative 3 (Hybrid Alternative). Although Alternative 2 (Stormwater Drainage Improvement Alternative) was not discussed at the meeting, it remains under consideration and ongoing analysis.
- Chris Benosky, AECOM's Rebuild by Design (RBD) Program Manager, provided a brief project status update and an overview of the meeting's agenda. The RBDM Project Team continues to refine the Draft Concept Screening Criteria Matrix, originally presented at the CAG #3 meeting. The Meeting Summary for CAG Meeting #7 and the February 2017 Newsletter are available on the Project website at [www.rbd-meadowlands.nj.gov](http://www.rbd-meadowlands.nj.gov). The RBDM Project Team is in the process of developing costs for the Alternative 1 and Alternative 2 concepts, and moving toward the development of Alternative 3 (Hybrid Alternative). The field teams are continuing to conduct biological resources surveys, topographical and drainage surveys, and geotechnical investigations. Finally, NJDEP is currently preparing an Action Plan Amendment (APA) for the Proposed Project. The APA is not tied to the design of the Proposed Project; however, the APA is required for all RBD projects by the US Department of Housing and Urban Development (HUD) in support of project funding.
- Before moving further into the presentation, Mr. Benosky noted that the RBDM Project Team brought scale models to the meeting, depicting three of the Alternative 1 concepts being considered, to allow CAG Members an opportunity to see them three-dimensionally. He invited the CAG Members to take a closer look at the models displayed on the front table after the presentation, and to ask questions.
- The RBDM Project Team is currently in the screening process for Alternatives 1 and 2, and continues to gather input from stakeholders, NJDEP, and the CAG. Once this process is



complete, the final concepts for each Alternative will be identified that best meet the “Protect, Cultivate, and Energize” goal, which considers flood resiliency, ecology, and community opportunities. These concepts will be carried forward into the Feasibility Study. This same process will be applied to Alternative 3 development.

- During CAG Meeting #7 in December 2016, the RBDM Project Team presented 11 alignment options for Alternative 1. The alignment options included a central line of protection referred to as Central Hackensack, along with options in three distinct areas of the Project Area: Northeast (Options 1-5), Southeast (Options 1-3), and Berry’s Creek (Options 1-3).
- Of the five original Northeast concepts, Options 1, 4, and 5 have been eliminated as a result of the screening process due to evacuation route concerns. Options 2 and 3 are still under analysis and going through the screening process. Option 2 ties into high ground in the City of Hackensack (north of the Project Area boundary). Option 3 also ties into high ground in the City of Hackensack, but extends 700 feet further north to tie to the existing Hackensack Riverwalk.
- Of the three original Southeast concepts, Option 1 has been eliminated as a result of the screening process because it would require a substantial amount of private land to be acquired. Options 2 and 3 are still under analysis and going through the screening process. Option 2 ties into high ground on the south side of Commerce Boulevard and is located primarily within the Borough of Carlstadt’s right-of-way (between the curb and the wetland). Option 3 extends the line of protection and ties into high ground on the south side of the Barella Riverwalk. Option 3 would include the use of sheet pile or a berm with a new tide gate at Moonachie Creek; it extends along the Kane Mitigation Bank berm on the freshwater side.
- Of the three original Berry’s Creek concepts, none of them have been eliminated as result of the screening process. All three options are all still under analysis and going through the screening process. Option 1 includes a surge barrier at Berry’s Creek. Option 2 includes the construction of flood protection measures along the eastern edge of the wetlands adjacent to Berry’s Creek, similar to those being considered along the Hackensack River (e.g., sheet walls, berms, tide gates, and pump stations). Option 3 includes the construction of similar flood protection measures along both the eastern and western edges of the Berry’s Creek wetlands.
- Garrett Avery, AECOM’s RBDM Project Manager, and Lulu Loquidis, AECOM’s Landscape Designer, provided a more detailed description of the currently retained alignment concepts and how the RBDM Project Team is refining them to meet the “Protect, Cultivate, and Energize” goal. Mr. Avery explained the three components of the “Protect, Cultivate, and Energize” goal. The “Protect” component includes connecting the existing topographical high points within the Project Area to reduce construction costs and minimize additional re-grading of the Hackensack River edge, while providing a complete line of protection to the maximum amount of the Project Area. The “Cultivate” component includes implementing flood risk intervention measures along



the edge between social activity and ecology to allow for maximum engagement of place-making activities and increased protection. The “Energize” component includes leveraging existing and enhanced public land; the Proposed Project seeks to connect existing public parks as well as provide new park space on existing public land.

- Mr. Avery presented the two retained Northeast options. Within the Northeast area, the RBDM Project Team is seeking opportunities to provide waterfront connections and new open space due to the proximity of existing open space, the Hackensack Riverwalk, Main Street, and residential communities. To enhance waterfront connections, the Team is seeking the best way to apply the “kit of parts” (e.g., modular walls, benches, and planters) along the Option 2 and 3 alignments. An example illustration of the multi-functional flood structure proposed for this Northeast area was provided during the presentation, and displayed as one of the models in the front of the room; development of these models provided the Team with a better understanding of how these concepts would be constructed and affected by the existing terrain. Based on some of the lessons learned during this process, the Team made modifications to the design.
- Lulu Loquidis presented the Central Hackensack-North concepts and how the “kit of parts” could be applied within this portion of the line of protection. Similar to the Northeast area, the RBDM Project Team is seeking opportunities to provide waterfront connections and new open space due to the proximity of existing open space and residential communities. For example, the Team is seeking to activate green spaces and use currently under-used and under-developed areas to develop new public space and waterfront access opportunities. In addition, future use or development connections in these areas are being considered.
- Concerning the Central Hackensack-North concepts, Ms. Loquidis provided an overview of three potential options under consideration that would provide new public access along the waterfront, which included the Fluvial Wetland Park, K-Town Park & Riverwalk, and Riverside Park & Riverwalk. The Fluvial Wetland Park would be sited under the US Route 46 bridge; it would include a berm system that allows inundation on the river’s edge during flood events and public space during normal conditions. The K-Town Park & Riverwalk would include the development of an active recreational field along the river’s edge with a cantilevered walkway designed to serve a dual function as a floodwall and a waterfront access destination. The Riverside Park & Riverwalk would terminate with its connection to Riverside Park. The Team is examining a combination of active and passive recreation opportunities within this portion of the line of protection. During the presentation, the current and proposed conditions were illustrated for each of the three concepts within Central Hackensack-North. In addition, the Fluvial Wetland Park and Riverside Park & Riverwalk were displayed as models in the front of the room.



- Mr. Avery presented the Central Hackensack-South concepts and how the “kit of parts” could be applied within this portion of the line of protection. Within this portion of the Project Area, industrial land uses are more prevalent and public access is more challenging. Because of funding constraints, the RBDM Project Team is carefully considering land use and public access when applying the “kit of parts.” As such, the Team is looking to construct simpler flood protection measures in this area, such as walls, single- or double-sheet pile walls, and/or berms. During the presentation, the current and proposed conditions (i.e., berm and flood wall) were illustrated for Central Hackensack-South.
- Ms. Loquidis presented the two retained Southeast options and how the “kit of parts” could be applied within this portion of the line of protection. Similar to the Central Hackensack-South area, the Southeast area of the line of protection consists of industrial land uses and limited opportunities for public access. The RBDM Team is looking at using single- or double-sheet walls to maintain visual access to the wetland mitigation areas and to minimize impacts to adjacent wetlands. Double-sheet walls are being considered, in particular, along the Kane Mitigation Bank berm to provide additional structural integrity. During the presentation, the current and proposed conditions within Southeast area were illustrated.
- Mr. Avery presented the three Berry’s Creek options and how the “kit of parts” could be applied within this portion of the line of protection. This portion of the Project Area is also dominated by industrial land uses and limited public access. Option 1 includes the construction of a surge barrier on Berry’s Creek with a gate and berms to prevent water flowing around the surge barrier. The gate would be open under normal conditions. This gate would preserve low-clearance navigation through the channel. The RBDM Project Team is examining the use of walls, single- or double-sheet pile walls, and berms associated with Options 2 and 3 along the Berry’s Creek wetlands. Both options have potential operations and maintenance (O&M) access and private property acquisition concerns. In comparison to Option 2, Option 3 provides a higher degree of flood protection for the Project Area, but has greater O&M access and property acquisition concerns.
- Mr. Avery presented a brief overview of the Alternative 3 (Hybrid Alternative) development process, which includes a combination of Alternative 1 and Alternative 2 components. The “Protect, Cultivate, and Energize” goal for Alternative 3 would be met through both structural and stormwater strategies for flood protection, including integration of ecological enhancements and public realm improvements. The development of the Hybrid Alternative involves understanding cost implications, analyzing community feedback, and identifying the appropriate level of protection. The RBDM Project Team will utilize the benefit-cost analysis to identify the best approach toward achieving overall benefits within available funding.



- The RBDM Team is currently considering a variety of hybrid options and is examining the tradeoffs associated with each option. Two potential Alternative 3 examples (Hybrid A and B) were presented. Hybrid A would combine the interior drainage improvements and open space opportunities from the Alternative 2 East Riser + Main Street concept with the Alternative 1 Surge Barrier at Berry's Creek concept (Option 1). Hybrid B would combine Alternative 1's Northeast Option 3, the Central Hackensack alignment, and Southeast Option 2 with some of the proposed parks under Alternative 2. These were provided as examples to reinforce the overall Alternative 3 development process.
- Mr. Benosky provided an overview of the next steps. The RBDM Project Team will continue to develop and refine the concepts, alternatives, and costs. The next CAG meeting will be in **late May 2017** and will focus on Alternative 3 (Hybrid Alternative) and include a biological resources update. CAG members were encouraged to continue to build interest in the Proposed Project and to visit the Proposed Project website at [www.rbd-meadowlands.nj.gov](http://www.rbd-meadowlands.nj.gov) or email questions to [rbd-meadowlands@dep.nj.gov](mailto:rbd-meadowlands@dep.nj.gov) for more information. Mr. Benosky informed the CAG Members that the RBDM Project Team is interested in obtaining feedback from the CAG Members as the Proposed Project continues to move forward. Please provide all comments and input to NJDEP concerning CAG Meeting #8 by **April 5, 2017**.
- Before opening the meeting up for questions, Mr. Benosky provided additional information on the APA. Per HUD requirements, all RBD projects are required to prepare an APA that documents the proposed use of the Community Development Block Grant - Disaster Recovery (CDBG-DR) funds. NJDEP is required to solicit public comment on the APA through a 30-day public review period and public hearing. A public notice for the APA will be published in the local newspapers and on the NJDEP and New Jersey Department of Community Affairs (NJDCA) websites. The public hearing for the APA will be held on **May 3, 2017** from 5pm to 8pm ET. NJDEP must submit the final APA to HUD before June 1, 2017.
- Following the completion of the presentation, the CAG Members posed the following questions and comments:
  1. In reference to Southeast Option 3 along Commerce Boulevard, it would be great to see this extended to follow the Kane Mitigation dike to the turnpike. This would strengthen the dike, provide an opportunity to improve freshwater forested wetlands in this area, provide additional wetlands mitigation credit opportunities for local projects (e.g., the Teterboro Airport projects), and minimize the chance of a *Phragmites* fire. Fuel loads within these *Phragmites* stands have a tendency to build up (e.g., 5 years ago they caught fire and the nearby buildings almost burned down). Also, please note that for Southeast Option 2, there are large boulders along the road due to construction that occurred 20 to 30 years ago.

*Response: The RBDM Project Team will take this into consideration.*



2. I noticed that you are protecting the Bergen County Utilities Authority (BCUA), but they have their own flood protection plans. Have you coordinated with the BCUA? Can BCUA combine their flood protection plans with the Proposed Project?

*Response:* We have had meetings with the BCUA, and have one planned in the near future, to coordinate our flood protection efforts.

3. How much would the Proposed Project (Alternative 1) protect against another storm like Hurricane Sandy?

*Response:* The proposed line of protection would be built to an elevation of 7 feet (NAVD 88). Hurricane Sandy reached an elevation of approximately 12 to 14 feet (NAVD 88). As such, a storm like Hurricane Sandy would overtop the line of protection currently proposed. However, the benefit of the 7-foot line of protection is that water would be able to be pumped out of the Project Area more quickly and efficiently.

4. A key component is that drainage systems still need improvement. What plans are there for improving drainage in the Project Area (e.g., along Merhoff Road, Main Street)? I would like to see the plans for this.

*Response:* Stormwater drainage improvement opportunities are addressed under Alternative 2. This aspect will also be addressed under Alternative 3 (Hybrid) to some degree.

5. What effect does the pending classification of the Hackensack River as a Superfund site have on the Proposed Project? Would this increase the money available for the Proposed Project?

*Response:* The RBDM Project Team regularly meets with the US Environmental Protection Agency (USEPA) concerning the Berry's Creek Superfund site. No decision has been made to date on designating the Hackensack River as a Superfund site, but this is being closely monitored.

6. After construction of the Proposed Project is complete, what about O&M?

*Response:* O&M will be taken into consideration as a part of the alternatives evaluation. While the Proposed Project cannot fund O&M costs, the NJDEP Project Team is required to develop an O&M Plan for the Proposed Project. The O&M Plan has to be agreed upon by the parties involved in its implementation.

7. You mentioned meeting with the USEPA concerning the remediation of Berry's Creek. Are the remediation of Berry's Creek and this Proposed Project being integrated, or are they separate projects?





*Response:* The RBDM Project Team meets monthly with the USEPA Berry's Creek team. While they are separate projects and the USEPA does not yet have a remediation plan, we will continue to coordinate with them.

8. Were any other options looked at beyond a 7-foot line of protection? For example, have you analyzed the cost of a 10-foot line of protection?

*Response:* Yes, the RBDM Project Team considered lines of protection at higher elevations (e.g., a 12.6-foot line of protection), but these alignment options were eliminated due to the limited funding available and/or public safety concerns. The alignment elevation will be refined further during the Feasibility Study.

9. The Bergen County Mosquito Commission and Drainage Commission used to provide O&M for flood protection infrastructure in the Project Area, and may be willing to re-assume this responsibility as a new commission. We really need one authority for O&M for this Proposed Project because management by multiple municipalities can be complicated.

*Response:* This is a potential option for O&M. Other RBD projects are coming to this conclusion as well; they are trying to find ways to use established groups to serve in this role.

10. Who maintains the Barge Club Park? They do a great job maintaining it. We need a group like this to manage O&M for the Proposed Project. The municipalities cannot have control of O&M responsibilities.

*Response:* The New Jersey Sports and Exposition Authority (NJSEA) maintains the River Barge Park/Barge Club Park.

11. A greenhouse is being opened in the Project Area with an emphasis on growing native plants. This could be a source for native plants during project development and O&M.

*Response:* The RBDM Project Team is considering native plants in the design of the Proposed Project as they often require less maintenance.

12. Have you figured out how much of the alignment will traverse private property and require property takes or easements?

*Response:* Real estate is something that is being considered very carefully. All efforts are being made for the Proposed Project to stay within public property to the maximum extent possible and to avoid private property due to time and cost.

The formal presentation and question and answer period adjourned at 7:15 pm ET. CAG Members remained after the meeting to view the three-dimensional models and associated posters developed by the RBDM Project Team until 8:00 pm ET.

**Attachment 1.**

**Power Point Slide Presentation (as delivered)**



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## CITIZEN ADVISORY GROUP (CAG) MEETING #8

### ALTERNATIVE 1: STRUCTURAL FLOOD REDUCTION CONCEPT DEVELOPMENT

#### AGENDA

Christopher Benosky, AECOM

2



- Project Status Update and Schedule
- Alternative 1
  - Screening Process
  - Concept Development

#### Alternative 2

Reviewed during CAG #7 in January

Will be revisited in future CAG meetings

- Alternative 3
  - Hybrid Concept Development
- Next Steps
- Question & Answer
- Physical Model Stations



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## PROJECT STATUS UPDATE

Christopher Benosky, AECOM

3



- Refined working draft Concept Screening Criteria
- Completed and published to Project Website:
  - Meeting Minutes from CAG Meeting #7
  - February 2017 Newsletter
- Developing cost and moving toward a hybrid
- Fieldwork remains ongoing
  - Biological Resource Surveys
  - Topographical and Drainage Surveys
  - Geotechnical Investigations
- Action Plan Amendment



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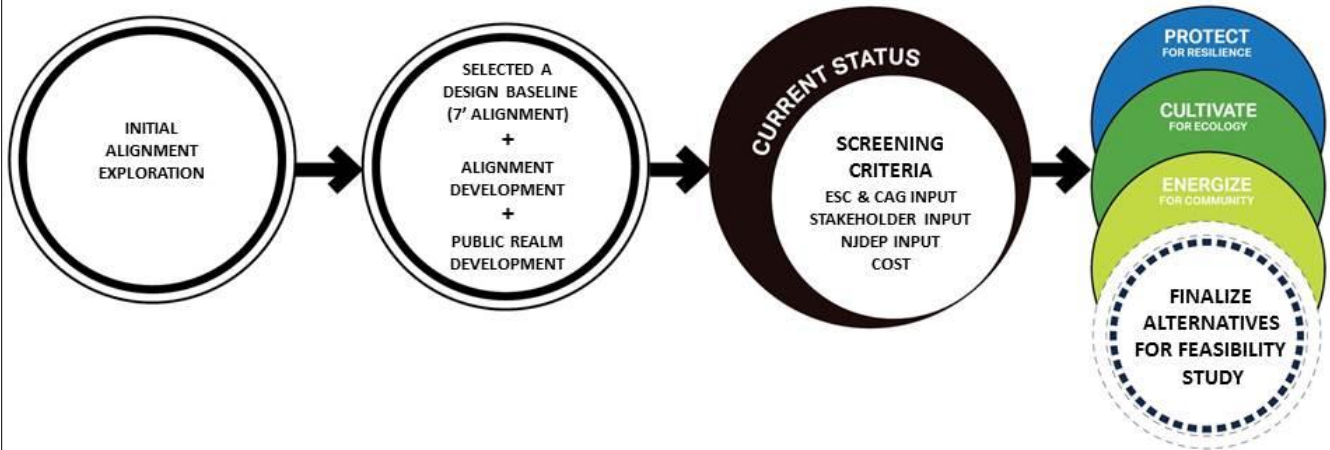
## ALTERNATIVE 1: ALIGNMENT

### SCREENING PROCESS CHRISTOPHER BENOSKY, AECOM

# SCREENING PROCESS

## CONCEPT DEVELOPMENT & SCREENING PROCESS

5



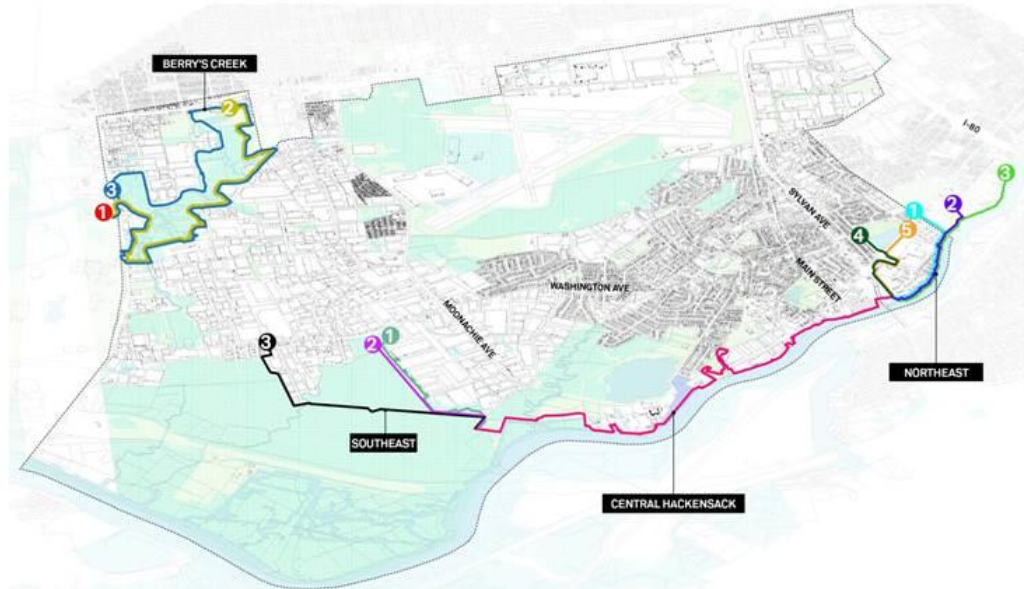
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# ALIGNMENT OPTIONS: 11 PRESENTED IN DECEMBER

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## ALIGNMENT OPTIONS: SCREENING PROCESS

### 3 DISTINCT AREAS OF FOCUS

7

- 5 tie-in options were evaluated in the northeast, 3 in the southeast, and 3 at Berry's Creek



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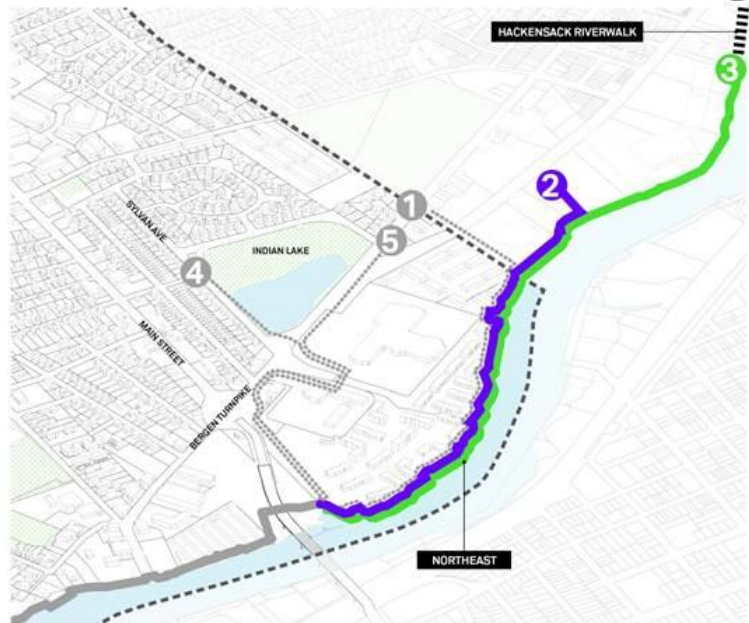
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## INITIAL SCREENING OF THE NORTHEAST OPTIONS

8



- 1** • Screened out – passive deployable (gate closure) required in evacuation route
- 2** • No road crossing or regrading required  
• Tie-in north of project boundary in City of Hackensack
- 3** • Extends Option 2 north 700ft to connect project to an existing 1500ft segment of high ground protection  
• Creates connection to existing Hackensack Riverwalk
- 4** • Screened out – passive deployable (gate closure) required in evacuation route  
• Provides less protection than 2 & 3
- 5** • Screened out – passive deployable (gate closure) required in evacuation route  
• Provides less protection than 2 & 3



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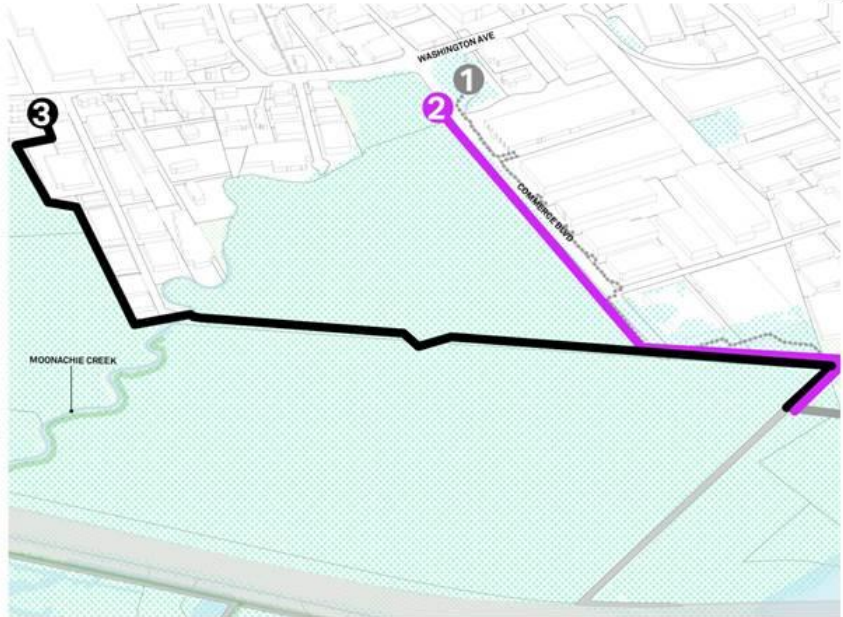
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## SCREENING THE SOUTHEAST OPTIONS

9



- 1**
  - Screened out – many deployables (gate closure) needed to cross private driveways
  - Requires substantial acquisition of private property
- 2**
  - Tie-in on south side of Commerce Blvd
  - Located primarily within Carlstadt R.O.W. (between curb and marsh)
- 3**
  - Sheet pile or berm with new tide gate at Moonachie Creek
  - Located on the Kane mitigation bank/berm on the freshwater side
  - Tie-in on south side of Barella Riverwalk



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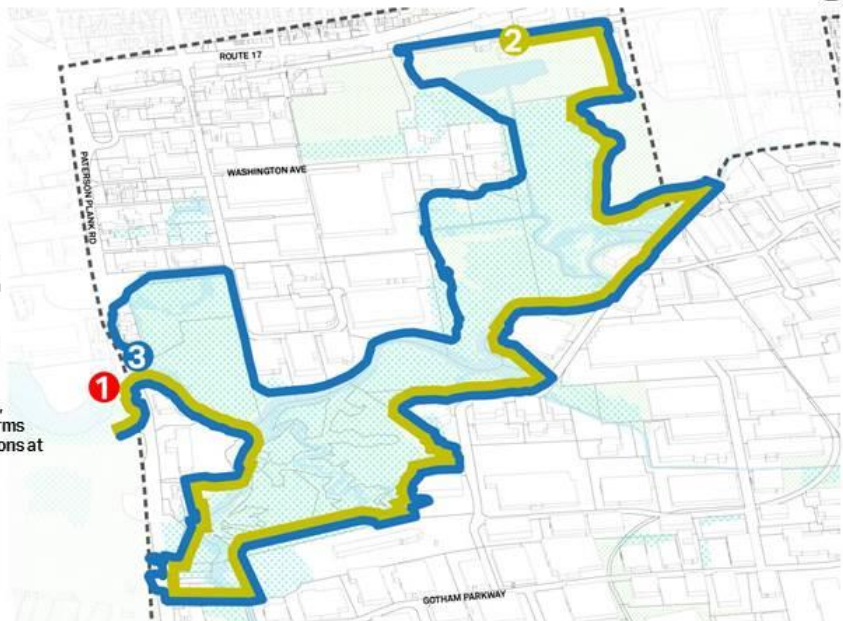
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## SCREENING THE BERRY'S CREEK OPTIONS

10



- 1**
  - Surge barrier at Berry's Creek
- 2**
  - Combined single sheet pile with concrete cap and reinforced double sheet pile and earthen berms
  - Two new tide gates near Peach Island Creek
  - Two new pump stations at the West Riser and East Riser tide gates
- 3**
  - Combined single sheet pile with concrete cap, reinforced double sheet pile, and earthen berms
  - Five new tide gates and three new pump stations at the West Riser and East Riser tide gates

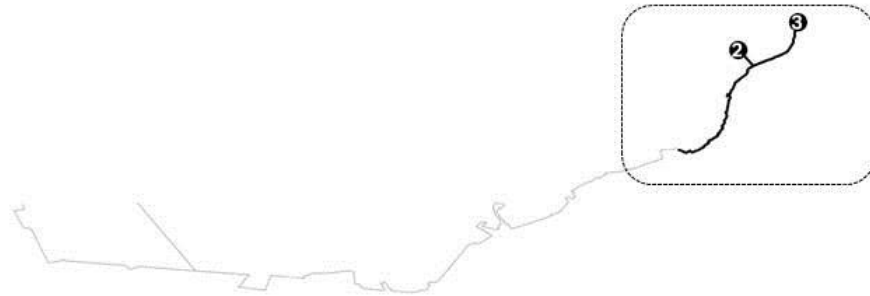


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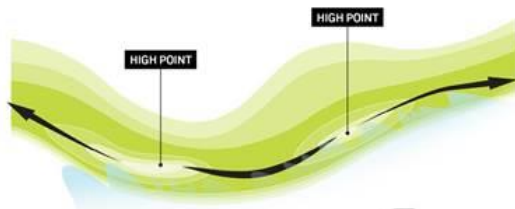


## ALTERNATIVE 1: ALIGNMENT

**NORTHEAST**  
**GARRETT AVERY, AECOM**  
**&**  
**LULU LOQUIDIS, AECOM**

### REFINING ALIGNMENT CONCEPTS

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#### FILL THE GAPS

By connecting the existing topographical high points, the project can reduce construction costs and minimize additional regrading of the Hackensack River edge.



#### STICK TO THE EDGE/MAXIMIZE PROTECTION

Where possible, the flood risk intervention runs along the edge between social activity and ecology. This allows maximum engagement for place-making activities and increases the protection area.



#### LEVERAGE PUBLIC LAND

With numerous public agencies in the project area, the project seeks to connect existing public parks as well as provide new park space on existing public land.



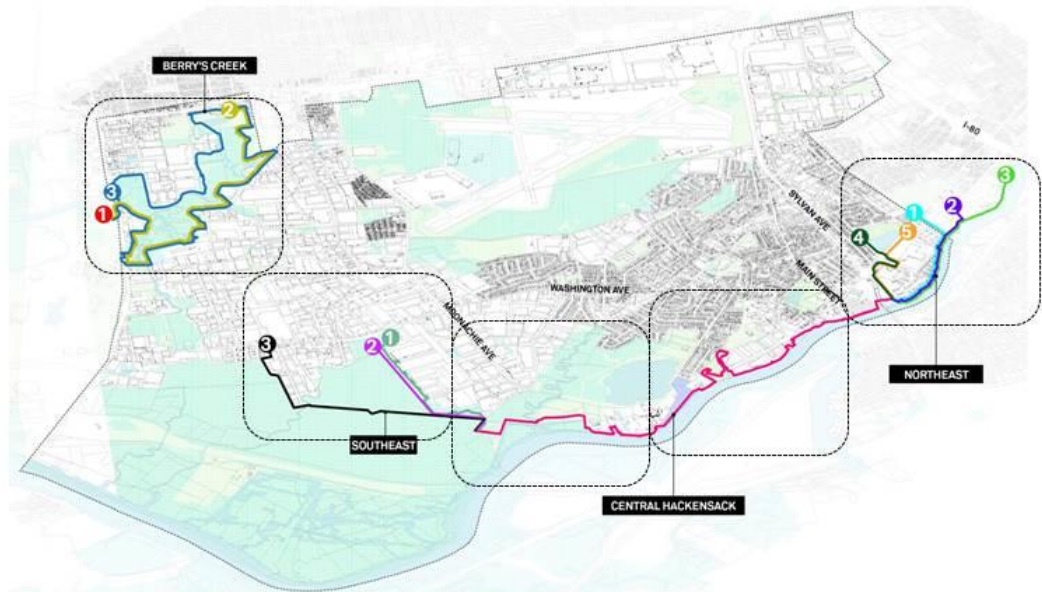
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## ALIGNMENT DEVELOPMENT – OVERVIEW

13



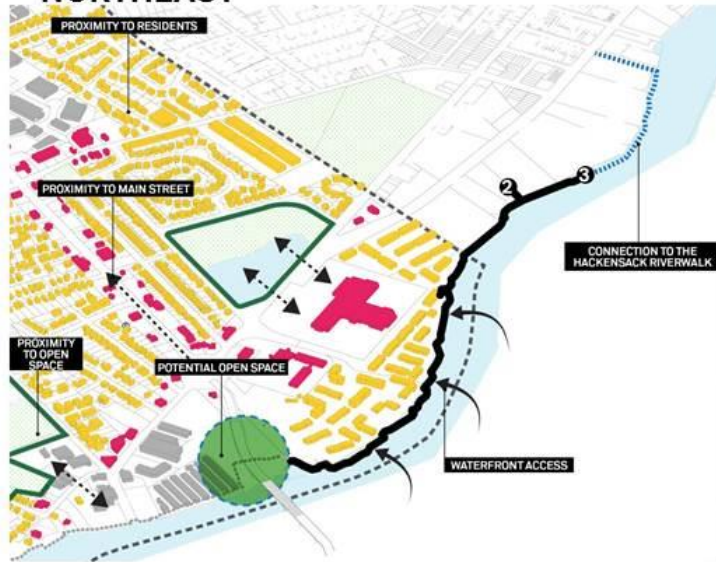
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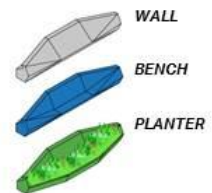
## CONSIDERATIONS – WHAT GOES WHERE

14



### APPLYING THE "KIT OF PARTS"

- Proximity to existing open space, the Hackensack Riverwalk, Main Street, and residential communities
- Opportunities for waterfront connection and new open space



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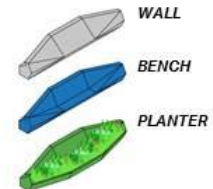
## ALIGNMENT DEVELOPMENT – 7' CONTOUR TIE-IN NORTHEAST – OPTION 2

15



### APPLYING THE "KIT OF PARTS"

- No road crossing or regrading required
- Tie-in north of project boundary in the City of Hackensack



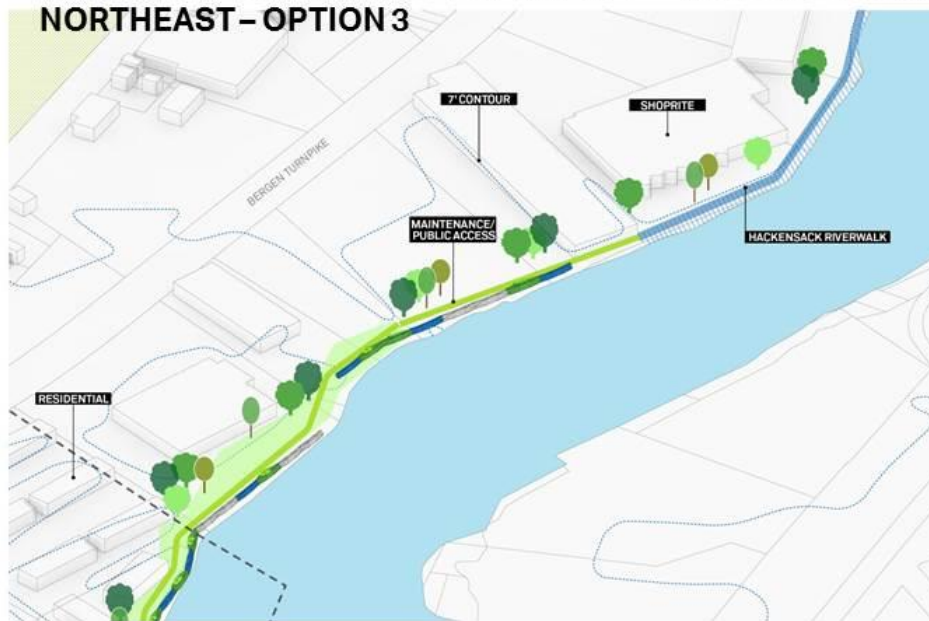
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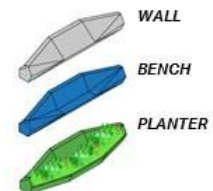
## ALIGNMENT DEVELOPMENT – HACKENSACK TIE-IN NORTHEAST – OPTION 3

16



### APPLYING THE "KIT OF PARTS"

- Creates connection to existing segment of the Hackensack Riverwalk
- Further extends protection and modular system



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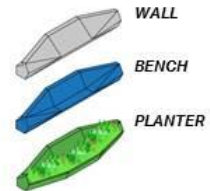
## ALIGNMENT DEVELOPMENT –TYPICAL NORTHEAST

17



### APPLYING THE "KIT OF PARTS"

- Infrastructure improvements continue as the alignment moves south



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## ALIGNMENT DEVELOPMENT – MULTI-FUNCTIONAL SYSTEM NORTHEAST

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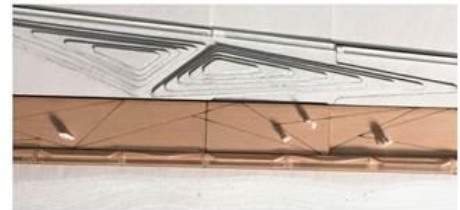
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## ALIGNMENT DEVELOPMENT – MULTI-FUNCTIONAL SYSTEM PROCESS MODEL

19

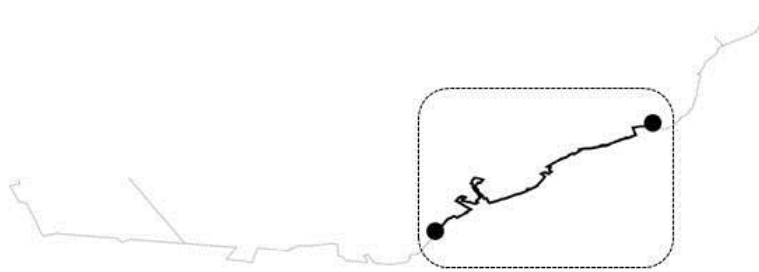
- Model making is used to explore concept ideas
- This study examines site constraints and adjacencies



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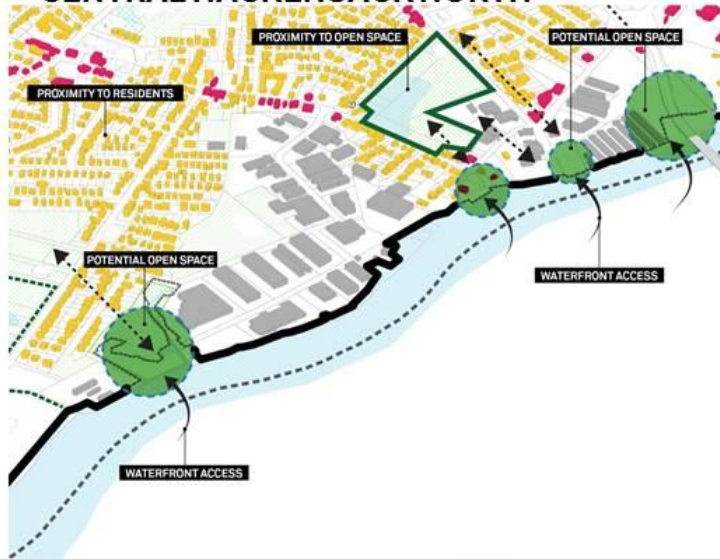


### ALTERNATIVE 1: ALIGNMENT CENTRAL HACKENSACK NORTH



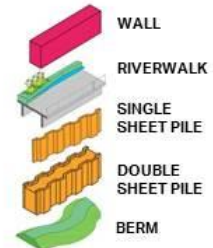
## CONSIDERATIONS – WHAT GOES WHERE CENTRAL HACKENSACK NORTH

21



### APPLYING THE "KIT OF PARTS"

- Proximity to existing open space and residential communities
- Opportunities for waterfront connection and new open space



Wetlands  
Open Space  
Water  
Residential  
Commercial  
Industrial



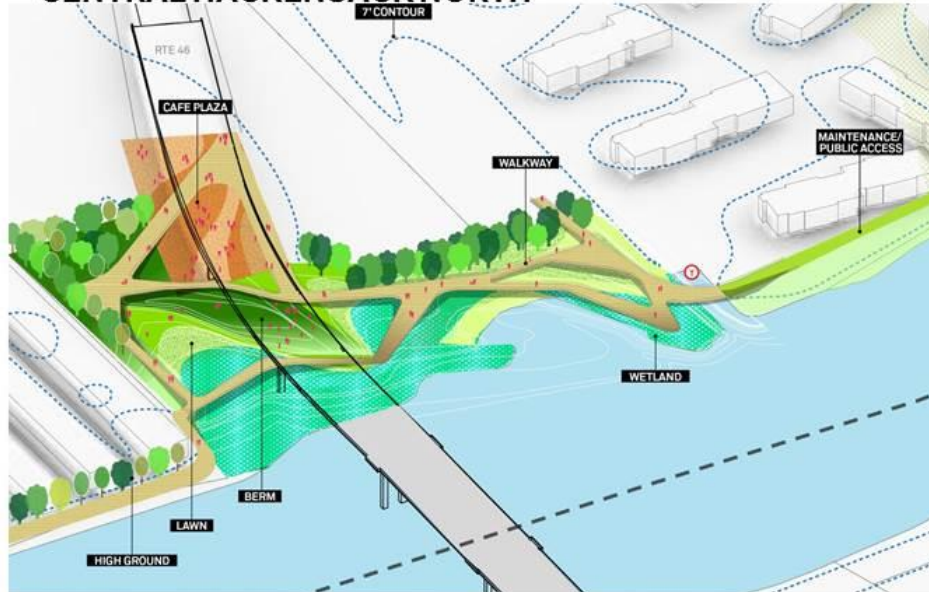
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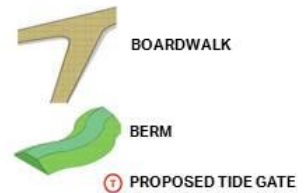
## ALIGNMENT DEVELOPMENT – FLUVIAL PARK CENTRAL HACKENSACK NORTH

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### APPLYING THE "KIT OF PARTS"

- A berm system turns into a public space under Route 46
- The berm system allows for inundation on the river's side during a flood event



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## ALIGNMENT DEVELOPMENT – FLUVIAL PARK CONNECTION CENTRAL HACKENSACK NORTH

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## ALIGNMENT DEVELOPMENT – FLUVIAL PARK CONNECTION CENTRAL HACKENSACK NORTH

24



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## ALIGNMENT DEVELOPMENT – FLUVIAL WETLAND PARK CENTRAL HACKENSACK NORTH

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## ALIGNMENT DEVELOPMENT – FLUVIAL WETLAND PARK CENTRAL HACKENSACK NORTH

26



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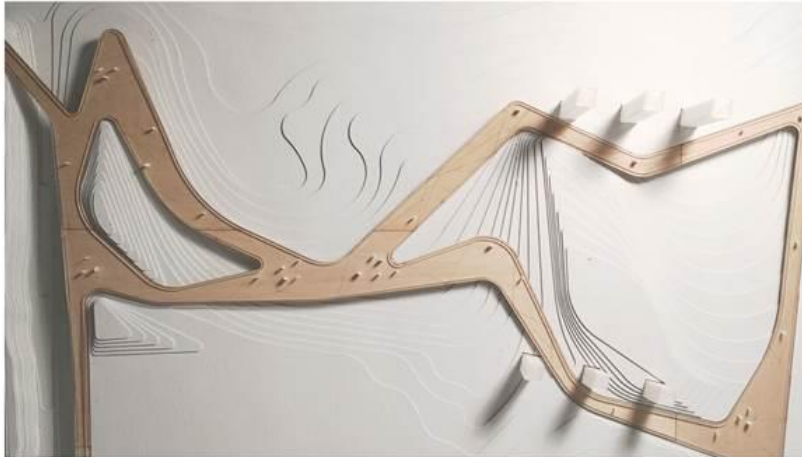
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## ALIGNMENT DEVELOPMENT – FLUVIAL WETLAND PARK PROCESS MODEL

27

- Model making is used to explore design ideas
- This study examines grading and the utilization of soft edges as the protection strategy



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## ALIGNMENT DEVELOPMENT – K-TOWN PARK & RIVERWALK CENTRAL HACKENSACK NORTH

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### APPLYING THE "KIT OF PARTS"

- Active recreation field and public realm on the river's edge
- Cantilever walkway is designed to reduce inland flooding and provide a waterfront destination
- The floodwall is built into the structure of the walkway



RIVERWALK

P EXISTING PUMP STATION



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## ALIGNMENT DEVELOPMENT – K-TOWN PARK & RIVERWALK CENTRAL HACKENSACK NORTH

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**CURRENT**



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## ALIGNMENT DEVELOPMENT – K-TOWN PARK & RIVERWALK CENTRAL HACKENSACK NORTH

30



**PROPOSED**



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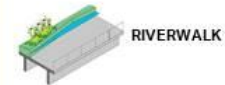
## ALIGNMENT DEVELOPMENT – RIVERSIDE PARK & RIVERWALK CENTRAL HACKENSACK NORTH

31



### APPLYING THE "KIT OF PARTS"

- The alignment terminates with a connection to Riverside Park
- The new open space is a combination of active and passive recreation



RIVERWALK



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## ALIGNMENT DEVELOPMENT – RIVERSIDE PARK & RIVERWALK CENTRAL HACKENSACK NORTH

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## ALIGNMENT DEVELOPMENT – RIVERSIDE PARK & RIVERWALK CENTRAL HACKENSACK NORTH

33



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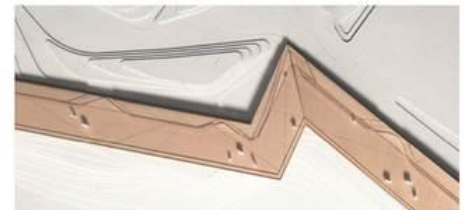
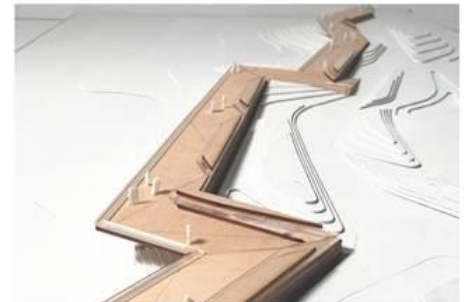
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## ALIGNMENT DEVELOPMENT – RIVERSIDE PARK & RIVERWALK PROCESS MODEL

34

- Model making is used to explore design ideas
- This study examines integrated protection strategies at a human scale



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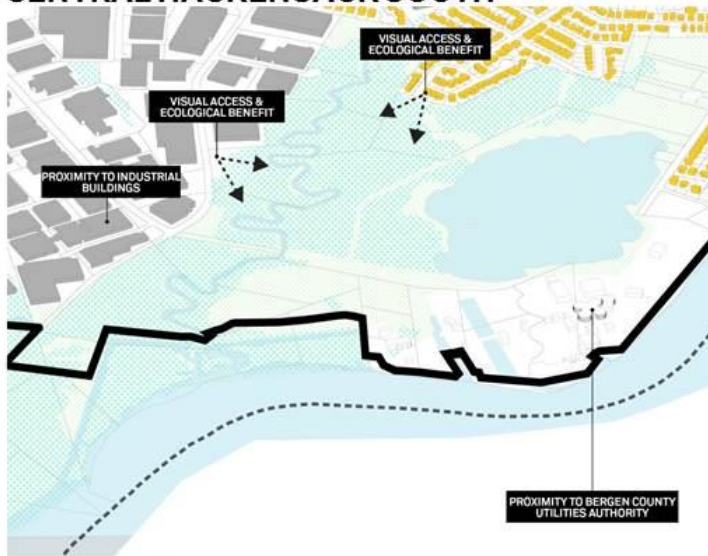
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# ALTERNATIVE 1: ALIGNMENT CENTRAL HACKENSACK SOUTH

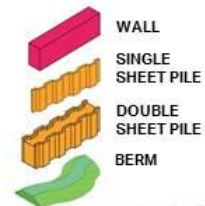
## CONSIDERATIONS – WHAT GOES WHERE CENTRAL HACKENSACK SOUTH

36



### APPLYING THE "KIT OF PARTS"

- Proximity to industrial buildings and Bergen County Utilities Authority
- Less public space opportunity
- Potential for visual access and ecological benefit to Losen Slote



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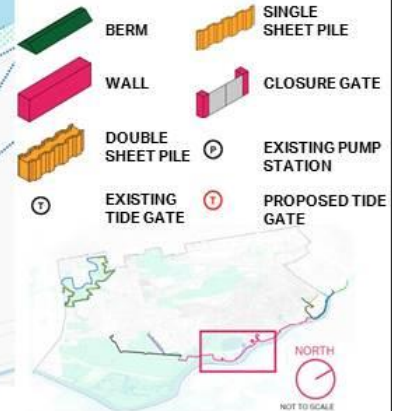
## ALIGNMENT DEVELOPMENT – TYPICAL CENTRAL HACKENSACK SOUTH

37



### APPLYING THE "KIT OF PARTS"

- The typical run is composed of floodwalls, sheet pile, and berm where space allows
- A tide gate protects existing treatment plant outfalls



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## ALIGNMENT DEVELOPMENT – BERMS AND WALLS CENTRAL HACKENSACK SOUTH

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## ALIGNMENT DEVELOPMENT – BERM CENTRAL HACKENSACK SOUTH

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## ALIGNMENT DEVELOPMENT – WALL CENTRAL HACKENSACK SOUTH

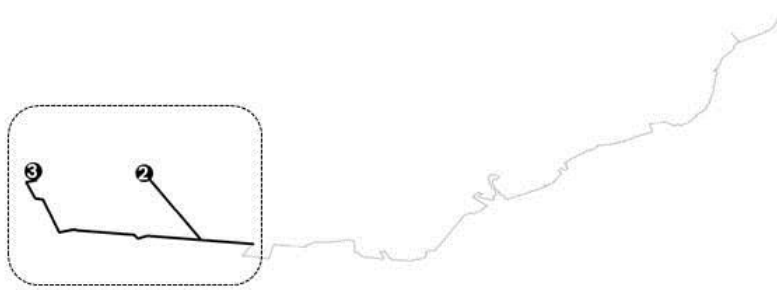
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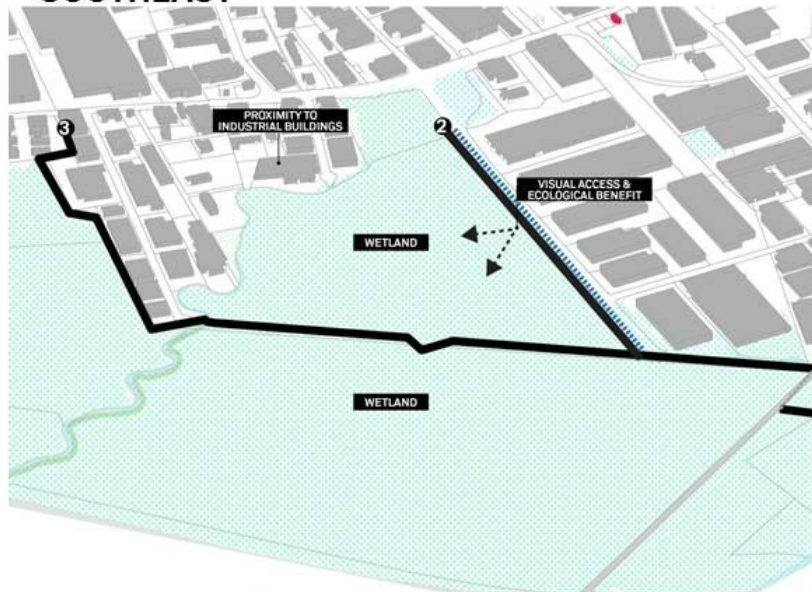
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## ALTERNATIVE 1: ALIGNMENT SOUTHEAST

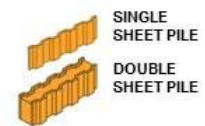
### CONSIDERATIONS – WHAT GOES WHERE SOUTHEAST

42



#### APPLYING THE "KIT OF PARTS"

- Proximity to industrial buildings
- Less public space opportunity
- Potential for visual access and ecological benefit to adjacent wetlands



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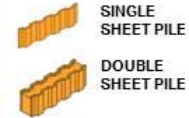
## ALIGNMENT DEVELOPMENT – ON COMMERCE BLVD SOUTHEAST – OPTION 2

43



### APPLYING THE "KIT OF PARTS"

- Single sheet pile wall between Commerce Blvd and marsh
- Double sheet pile wall for structural integrity adjacent to existing berm



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## ALIGNMENT DEVELOPMENT – ON COMMERCE BLVD SOUTHEAST – OPTION 2

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## ALIGNMENT DEVELOPMENT – ON COMMERCE BLVD SOUTHEAST – OPTION 2

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## ALIGNMENT DEVELOPMENT – SOUTHEAST OPTION 3

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### APPLYING THE "KIT OF PARTS"

- Double sheet pile for structural integrity
- Existing berm and maintenance access remain



SINGLE SHEET PILE



DOUBLE SHEET PILE



PROPOSED FLUVIAL GATE



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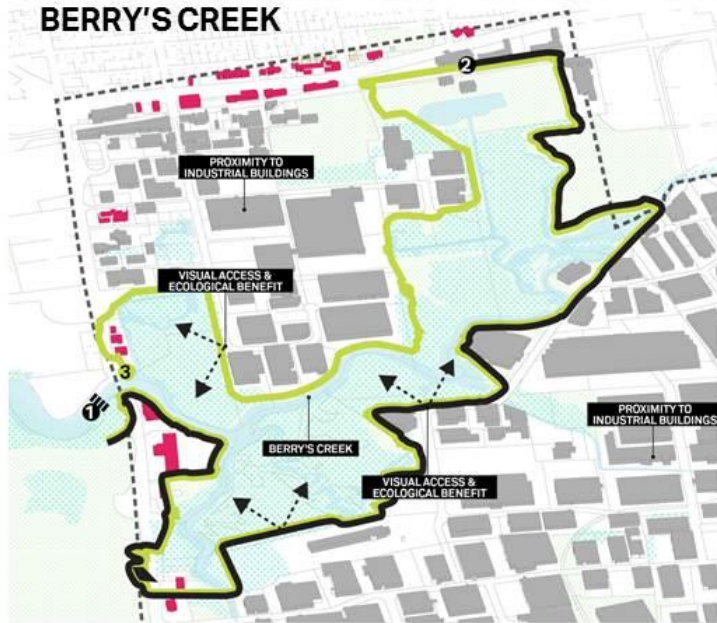


# ALTERNATIVE 1: ALIGNMENT

## BERRY'S CREEK

### CONSIDERATIONS – WHAT GOES WHERE

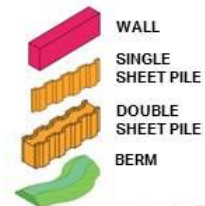
#### BERRY'S CREEK



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#### APPLYING THE "KIT OF PARTS"

- Proximity to industrial buildings and Berry's Creek
- Less public space opportunity
- Potential for visual access and ecological benefit



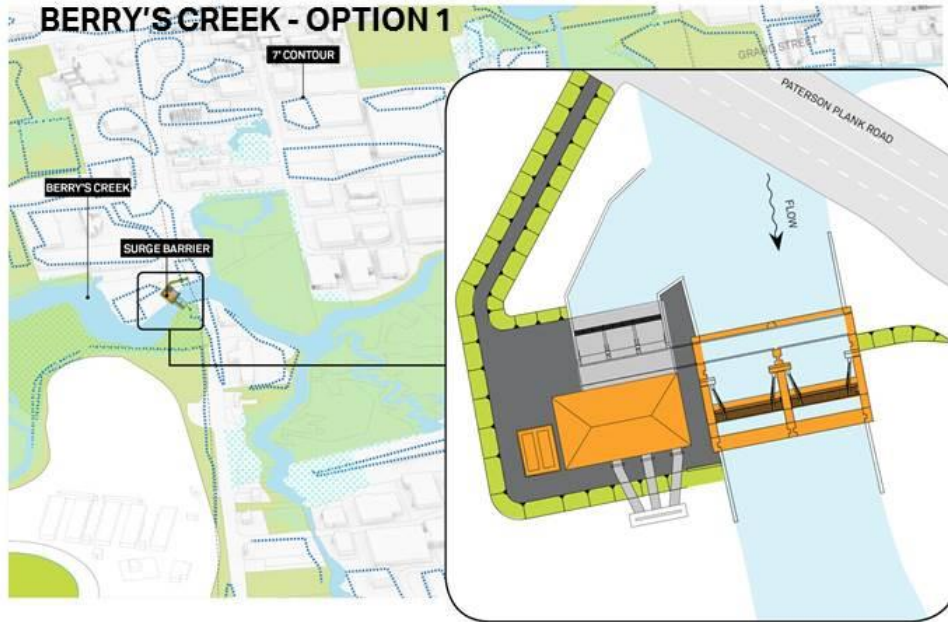
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## ALIGNMENT DEVELOPMENT – SURGE BARRIER

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### BERRY'S CREEK - OPTION 1



#### APPLYING THE "KIT OF PARTS"

- 118' wide dual-gate opening with short "t-wall" and earthen berms to prevent flanking (water flowing around surge barrier)
- Gate preserves low-clearance navigation through channel



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## ALIGNMENT DEVELOPMENT – EAST

50

### BERRY'S CREEK - OPTION 2



#### APPLYING THE "KIT OF PARTS"

- Combined single sheet pile with concrete cap + reinforced double sheet pile + earthen berms
- Two new tide gates near Peach Island Creek and two new pump stations at the West Riser and East Riser tide gates

- BERM
- WALL
- EXISTING TIDE GATE
- PROPOSED PUMP STATION
- PROPOSED TIDE GATE



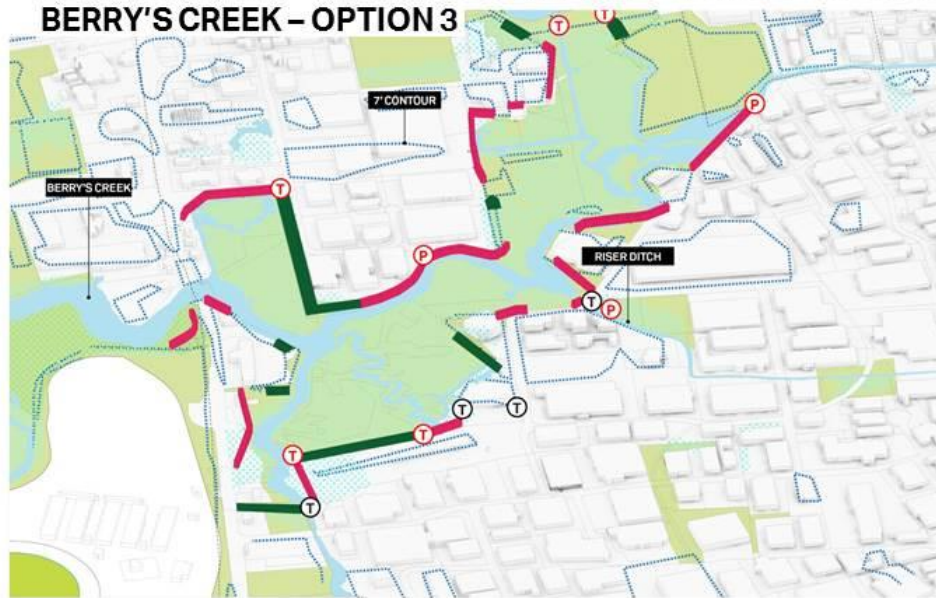
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## ALIGNMENT DEVELOPMENT – EAST & WEST BERRY'S CREEK – OPTION 3

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### APPLYING THE "KIT OF PARTS"

- Combined single sheet pile with concrete cap + reinforced double sheet pile + earthen berms
- Five new tide gates
- Three new pump stations at the West Riser and East Riser tide gates

 BERM

 WALL

 EXISTING TIDE GATE

 PROPOSED PUMP STATION

 PROPOSED TIDE GATE



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## ALTERNATIVE 3: HYBRID ALIGNMENT



## ALTERNATIVE 3 – DEVELOPING THE HYBRID COMBINING ALTERNATIVES 1 & 2

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### PROTECT FOR RESILIENCE

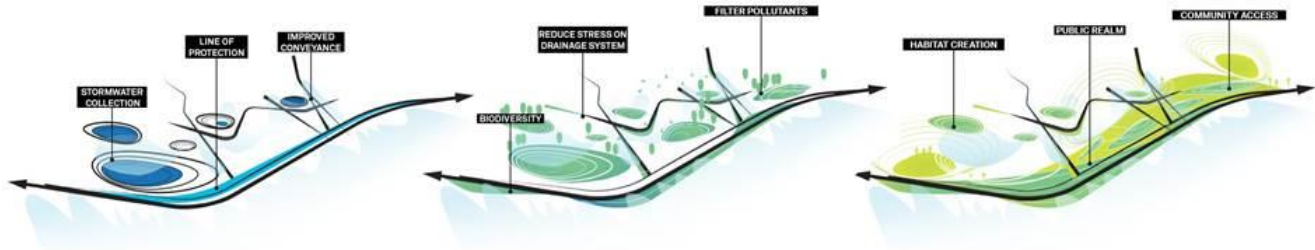
Establish effective combination of structural and stormwater strategies.

### CULTIVATE FOR ECOLOGY

Ecologically enhance both strategies to maximize variety of habitat and program.

### ENERGIZE FOR COMMUNITY

Public realm improvements integrated into the strategies energize communities.



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## ALTERNATIVE 3 – DEVELOPING THE HYBRID HYBRID APPROACH

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- Understand cost implications, analyze community feedback, and identify level of protection
- The benefit cost analysis will assist in determining best approach to achieve maximum benefits for the community overall

### ALTERNATIVE 1

COST ESTIMATE  
COMMUNITY INPUT  
LEVEL OF PROTECTION  
CONSIDERATION OF BENEFIT COST

### ALTERNATIVE 2

COST ESTIMATE  
COMMUNITY INPUT  
LEVEL OF PROTECTION  
CONSIDERATION OF BENEFIT COST

ALTERNATIVE 3  
HYBRID



NETWORK MAP



MAXIMIZE PROTECTION



INTEGRATE STORMWATER STRATEGIES



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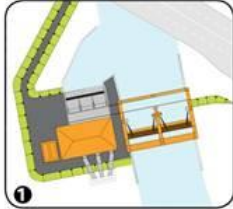
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## ALTERNATIVE 3 – HYBRID EXAMPLE A

### POTENTIAL COMBINATIONS

55

#### ALT 1: SURGE BARRIER @ BERRY'S CREEK



+

#### ALT 2: EAST RISER + MAIN STREET DRAINAGE IMPROVEMENTS + OPEN SPACE



=



- Hybrid options are currently under consideration
- This option combines interior drainage improvements and a surge barrier at Berry's Creek



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## ALTERNATIVE 3 – HYBRID EXAMPLE B

### POTENTIAL COMBINATIONS

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#### ALT 1: NE 3 + CENTRAL + SE 2 PARKS



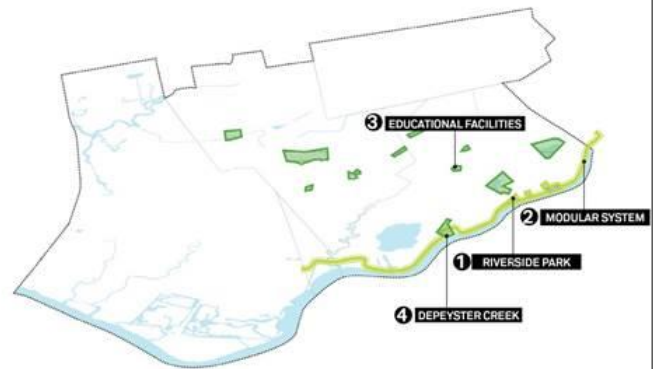
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- Hybrid options are currently under consideration
- This option combines interior drainage improvements and Hackensack alignment options



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## NEXT STEPS

CHRISTOPHER BENOSKY, AECOM

### NEXT STEPS

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#### NJDEP / AECOM UPCOMING ACTIVITIES

- Prepare Meeting Summary for CAG #8
- Continue developing:
  - Concepts, Alternatives, & Costs
- CAG #9 in Late May
  - Alternative 3 – Hybrid & Biological Resource Update
- Hold Public Hearing on Action Plan Amendment



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## PUBLIC HEARING – ACTION PLAN AMENDMENT

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- HUD requires that all RBD projects create an Action Plan Amendment that documents the proposed use of funds, and publish it for public input.
- The Action Plan Amendments for all RBD projects are required to be submitted to HUD before June 1st of this year.
- This Action Plan Amendment will be publicly noticed in local newspapers and on our DCA and DEP project website.
- The Action Plan Amendment will also be open to public comment and the State will hold a public hearing on [May 3, 2017 from 5pm to 8pm](#)



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## NEXT STEPS CAG: CALL TO ACTION

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- Submit comments from CAG #8 meeting by [April 5, 2017](#)
- Share information from this meeting with friends and neighbors
- Continue to build interest in the Project
- Ensure the public knows about upcoming information (to be posted on Project website)



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## NEXT STEPS CRITICAL INFORMATION

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**May 3, 2017**

**Public Hearing: Action Plan Amendment**

**Project Website**

**[www.rbd-meadowlands.nj.gov](http://www.rbd-meadowlands.nj.gov)**

**Project Email**

**[rbd-meadowlands@dep.nj.gov](mailto:rbd-meadowlands@dep.nj.gov)**

**Question & Answer**



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**THANK YOU!**



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**Attachment 2.**

**CAG Meeting Packet #8 (provided as handout at meeting)**