REBUILDBYDESIGN

MEADOWLANDS

PUBLIC MEETING

MARCH 11, 2020

WELCOME / INTRODUCTIONS

Linda Fisher, NJDEP

Project Team Manager, Bureau of Climate Resilience Design & Engineering

WELCOME / INTRODUCTIONS

Chris Benosky, AECOM

- Welcome + Introduction
- Project History and Build Plan
- From Feasibility to Design
- Design Phase Infrastructure
- Design Phase Landscape + Public Realm
- Open House Breakout Session

INTRODUCTIONS

Chris Benosky, AECOM

Presenter

CHRISTOPHER BENOSKY,
Project Executive, AECOM

Presenter

DAVE BLAIR
Project Manager, AECOM

Presenter

ANNA HOCHHALTER
Landscape Architect, AECOM

Presenter

MICHAEL MURPHY
HDR Manager, HDR

STEVE BIUSO
Design Manager,
AECOM

SUSAN BEMIS
Associate Principal,
Landscape Architecture
and Urban Design,
AECOM

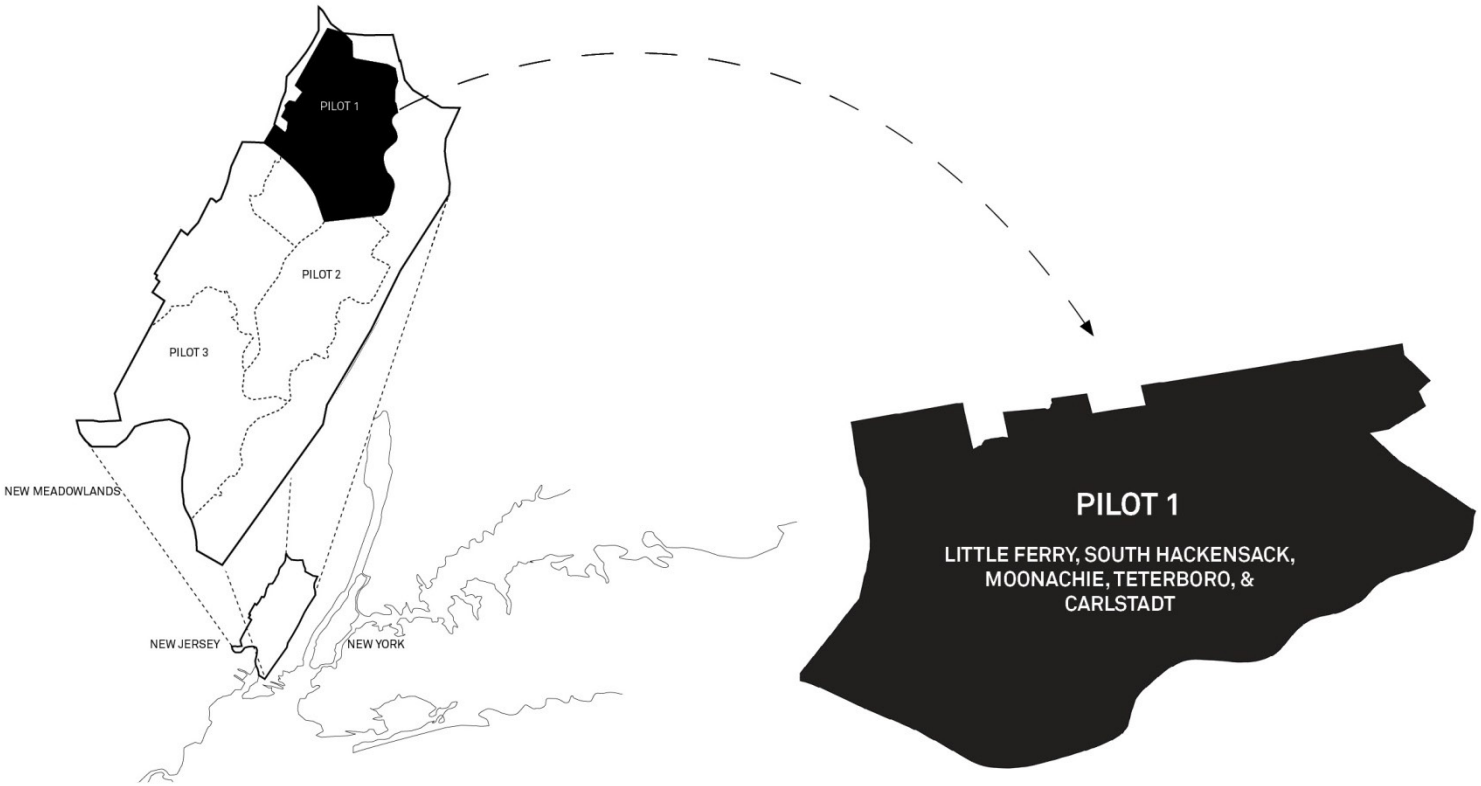
HOGAN EDELBERG
Landscape Architect,
AECOM

CAITLIN CAVANAGH
Water Resources Engineer,
AECOM

PROJECT HISTORY + BUILD PLAN

CHRIS BENOSKY, AECOM

REBUILD BY DESIGN COMPETITION & AWARD



- HUD awarded State of New Jersey **$150M for Phase 1 Pilot Area only**
- Project must be functional and **completed by September 2022**

RBD MEADOWLANDS PURPOSE

Address flood risk

Increase resiliency of the communities and ecosystems

Reduce impacts to critical infrastructure, residences, businesses, and ecological resources

RBD MEADOWLANDS NEED

Protect life, public health, and property

Increase **community resiliency**

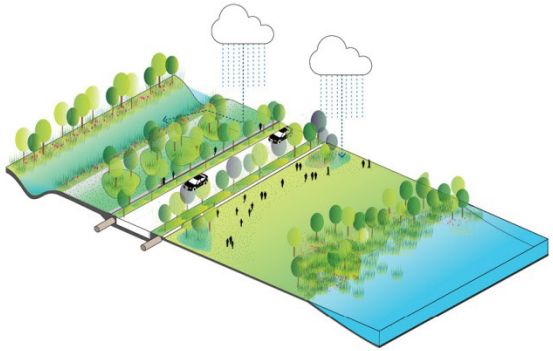
Enhance water quality and protect ecological resources

Address systemic **inland flooding** & **coastal flooding** from storm surges

Integrate flood hazard risk reduction strategies with **civic, cultural, & recreational benefits**

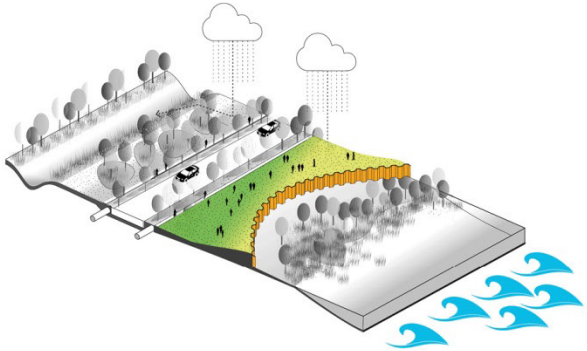
ALTERNATIVE 3 HYBRID - THE BUILD & FUTURE PLAN

PREFERRED ALTERNATIVE



Build Plan

The *Build Plan* represents a feasible project that can be **constructed by 2022.** Components include flood reduction strategies to address frequent rain flooding



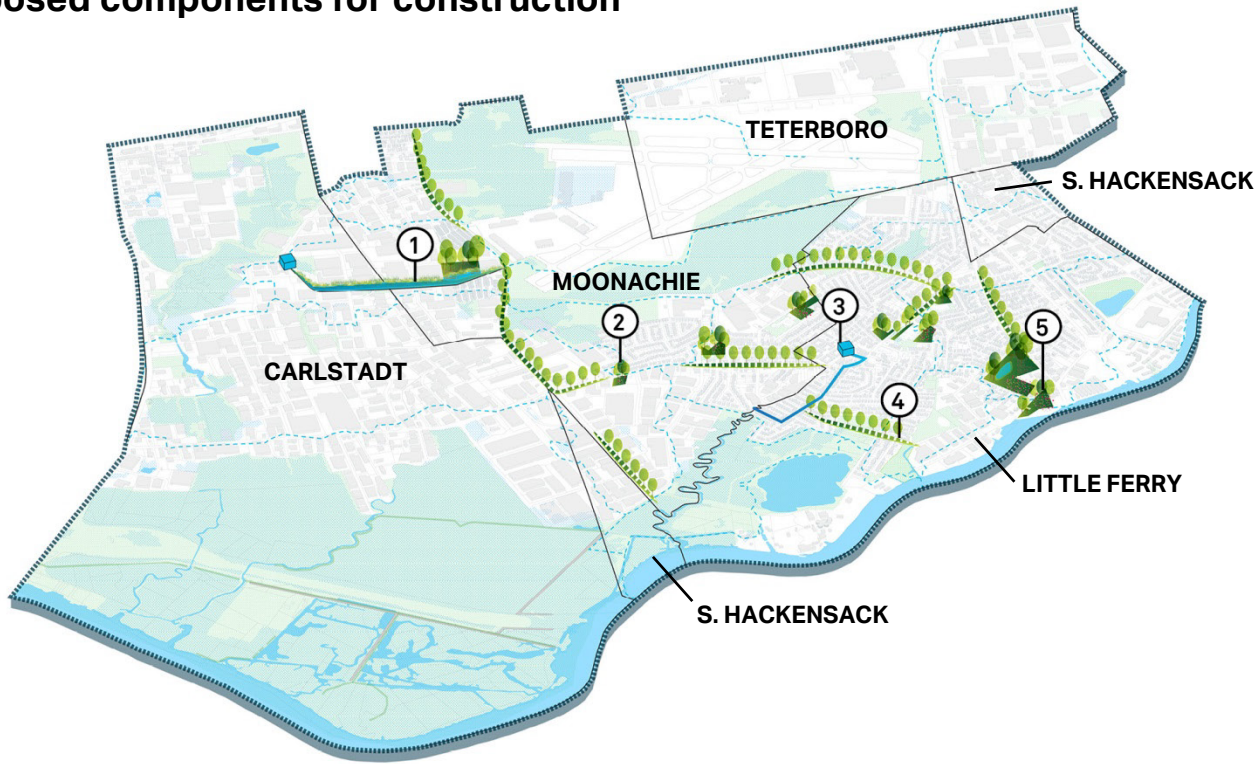
Future Plan

Components that were not selected for the *Build Plan* became elements of a *Future Plan*. These elements could **be implemented** by others **over time** as new funding sources become available

SELECTED ALTERNATIVE - BUILD PLAN

DOCUMENTED IN RECORD OF DECISION

Proposed components for construction



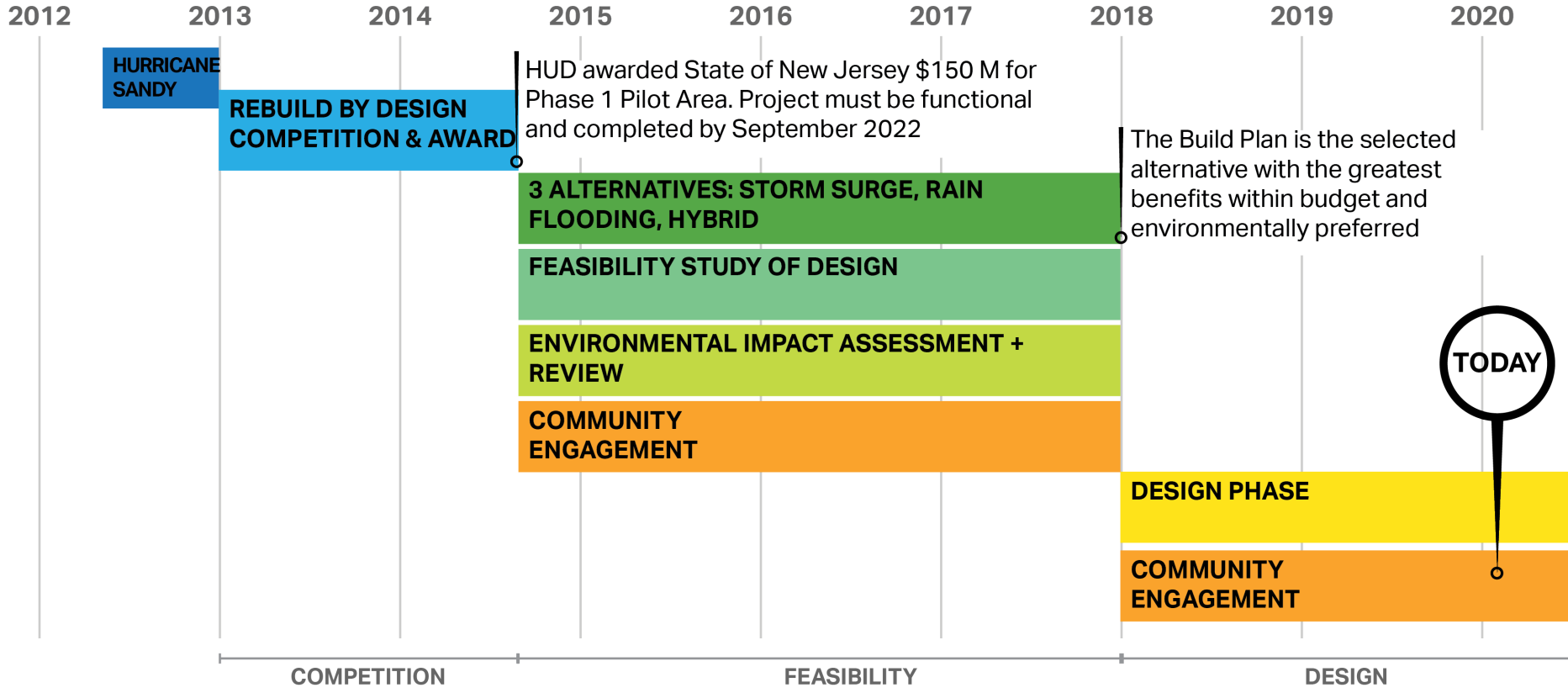
1. Pump station +Channel Improvements + New Park
2. Green Infrastructure + New Park
3. Pump Station + Force Main + Public Facility Improvements
4. Green Infrastructure
5. Park Improvements + 1 New Park + Green Infrastructure

Stormwater Management Features

1. East Riser: Channel Improvements + Enhanced Wetland Open Space
2. Avanti Park: Street Green Infrastructure + Enhanced Open Space
3. Losen Slote: Force Main + Public Facility Improvements
4. Green Infrastructure + Enhanced Wetland Open Space
5. GI Improvements to Willow Lake Park + 1 New Wetland / Open Space along Hackensack River

THE FEASIBILITY + NEPA PROCESS

EXTENSIVE ALTERNATIVE ANALYSIS FOR IMPROVED RESILIENCE

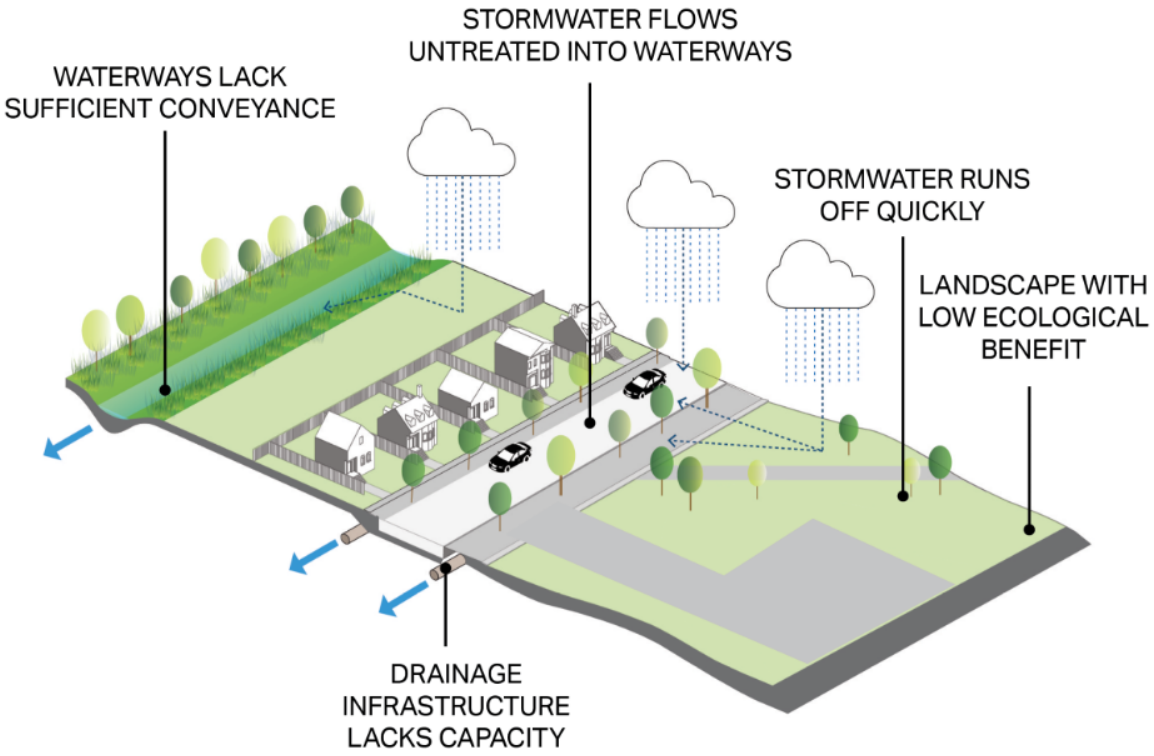


FROM FEASIBILITY TO DESIGN

ANNA HOCHHALTER, AECOM

DESIGNING FOR FREQUENT RAIN FLOODING

FLOOD RISK + EXISTING CONDITIONS CHALLENGES



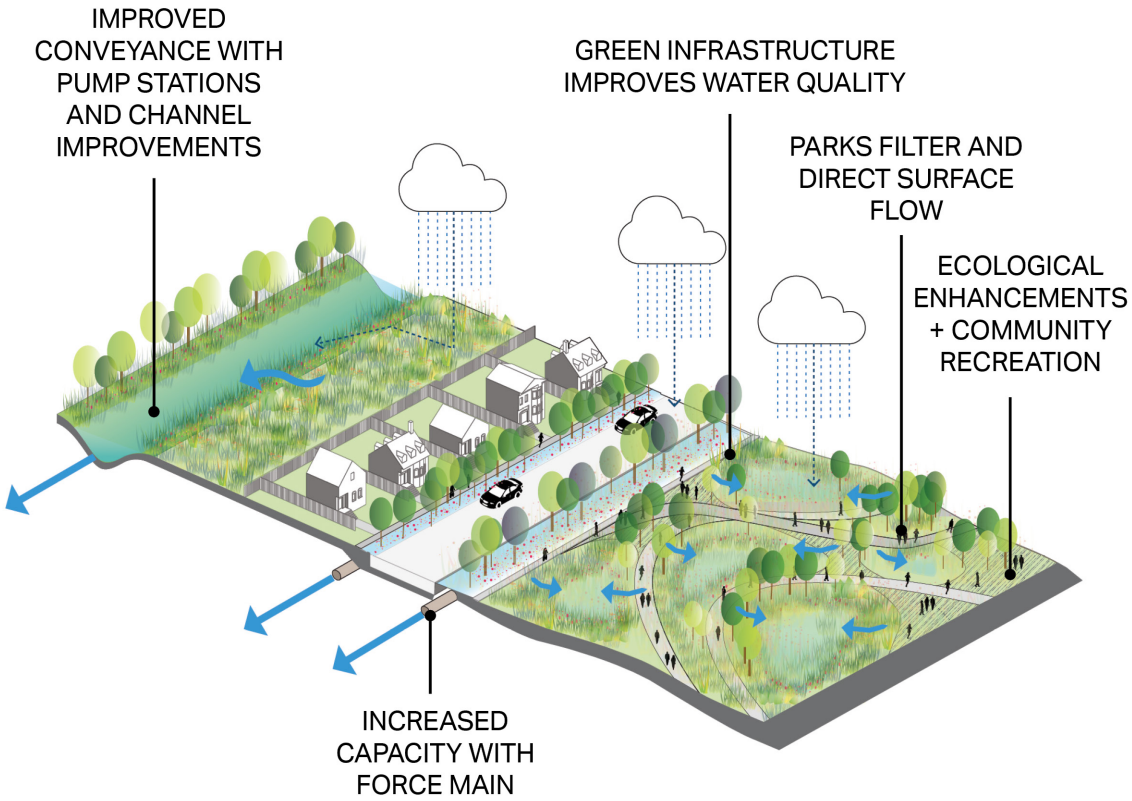
Major Challenges

- Over-burdened infrastructure
- Lack of drainage capacity
- Low-lying elevations with minimal grade changes
- Densely developed area
- Stormwater runoff carries pollutants into waterways

DIAGRAMS NOT TO SCALE

PROJECT DESIGN APPROACH + GOALS

FLOOD RISK REDUCTION + CO-BENEFITS



+ INFRASTRUCTURE

Primary flood risk reduction achieved through grey infrastructure

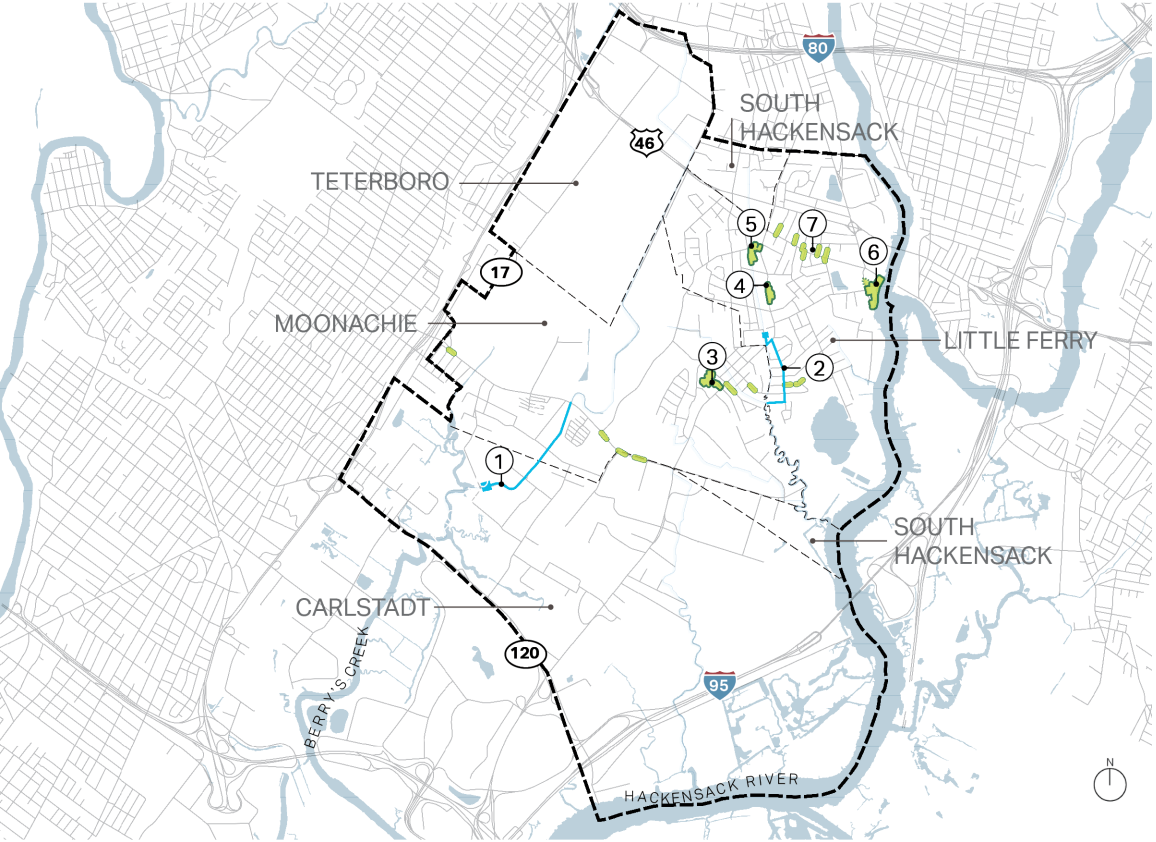
+ LANDSCAPE + PUBLIC REALM IMPROVEMENTS

Landscape improvements to provide additional water quality + parks + open space improvements

DIAGRAMS NOT TO SCALE

PROJECT FEATURE TYPES

INFRASTRUCTURE + LANDSCAPE / PUBLIC REALM



+ INFRASTRUCTURE

1. East Riser Channel Improvements + Pump Station
2. Losen Slote Force Main + Pump Station

+ LANDSCAPE / PUBLIC REALM

3. Joseph St. Park
4. Memorial Middle School
5. Little Ferry Library + Municipal Bldg
6. New Riverfront Park
7. Streetside Green Infrastructure -Type Improvements

DIAGRAMS NOT TO SCALE

PROPOSED PROJECT FEATURES

PUMP STATIONS + STORMWATER FORCE MAIN + CHANNEL IMPROVEMENTS

Pump Stations
Provide additional force to stormwater conveyance

Stormwater Force Main
Increases capacity for conveyance

Channel Improvements
Dredging + widening to improve conveyance

PROPOSED PROJECT FEATURES
LANDSCAPE + PUBLIC REALM IMPROVEMENTS

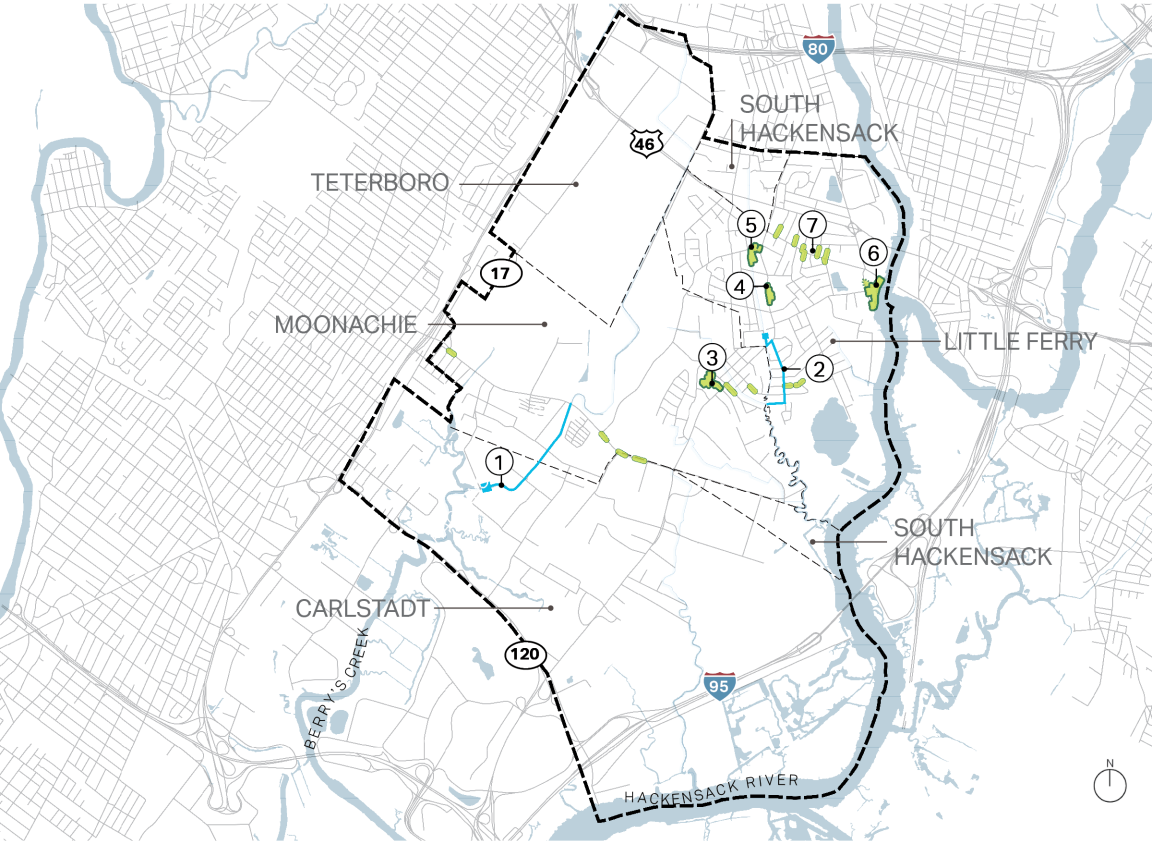
Native Planting
Planting native species improves ecological biodiversity and improves rain water uptake

Green Infrastructure
Methods of filtering and slowing stormwater to improve water quality + reduce burden on drainage system

Improved or New Parks
Designing ecological, community + recreational benefits

PROJECT IMPROVEMENTS

DESIGN PHASE PROJECT FEATURES



+ INFRASTRUCTURE

1. East Riser Channel Improvements + Pump Station
2. Losen Slote Force Main + Pump Station

+ LANDSCAPE / PUBLIC REALM

3. Joseph St. Park
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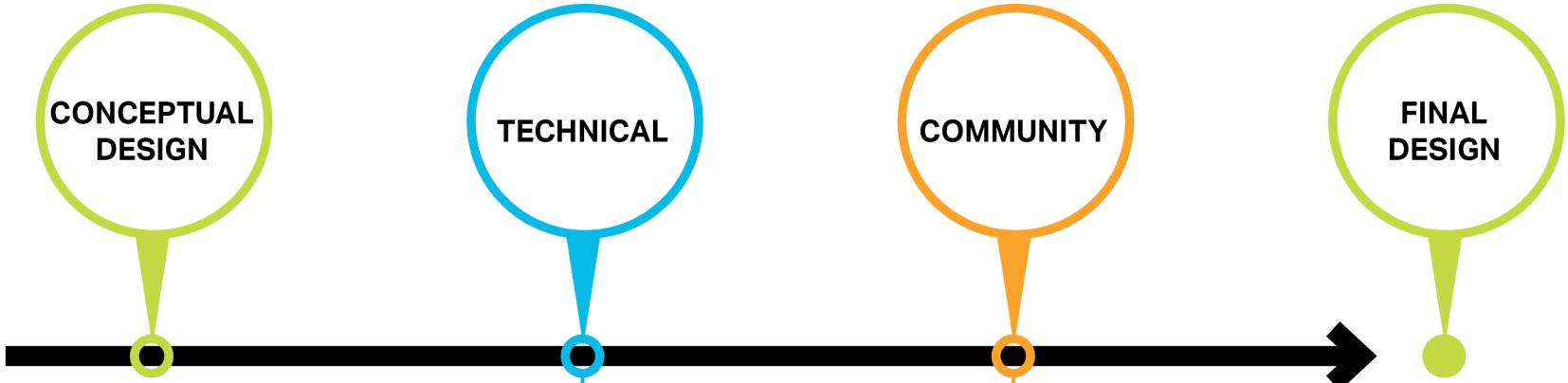
DIAGRAMS NOT TO SCALE

DESIGN DRIVERS

DESIGN PROCESS OVERVIEW



TECHNICAL

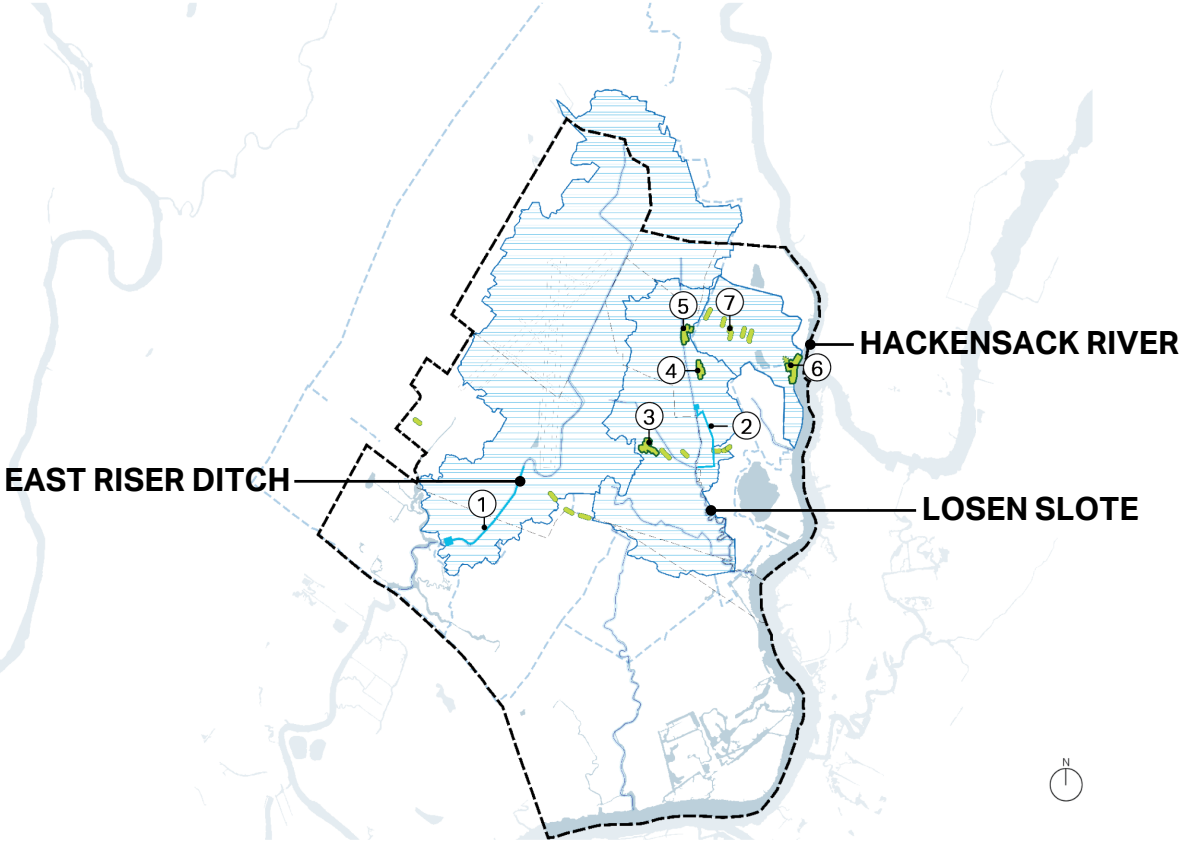
- Soil + Groundwater Data
- Geotechnical Data
- Existing Topography
- Existing Utilities
- Stormwater Regulations
- Existing + Future O&M
- Budget
- Timeline

COMMUNITY

- Stakeholder Coordination
- Community Priorities
- Ecological Goals

DESIGN PHASE PROJECT IMPROVEMENTS

SHOWN WITHIN DRAINAGE AREAS



East Riser Ditch

① Channel Improvements + Pump Station

Losen Slote

② Force Main + Pump Station

③ Joseph St. Park

④ Memorial Middle School

⑤ Little Ferry Library+ Municipal Building

Hackensack River

⑥ Riverfront Park

Multiple Drainage Areas

⑦ Streetside Green Infrastructure-Type Improvements

Project Features

Focus Drainage Area

Project Area

Sub-basin boundaries

Municipal boundaries

Channels and Waterways

DIAGRAMS NOT TO SCALE

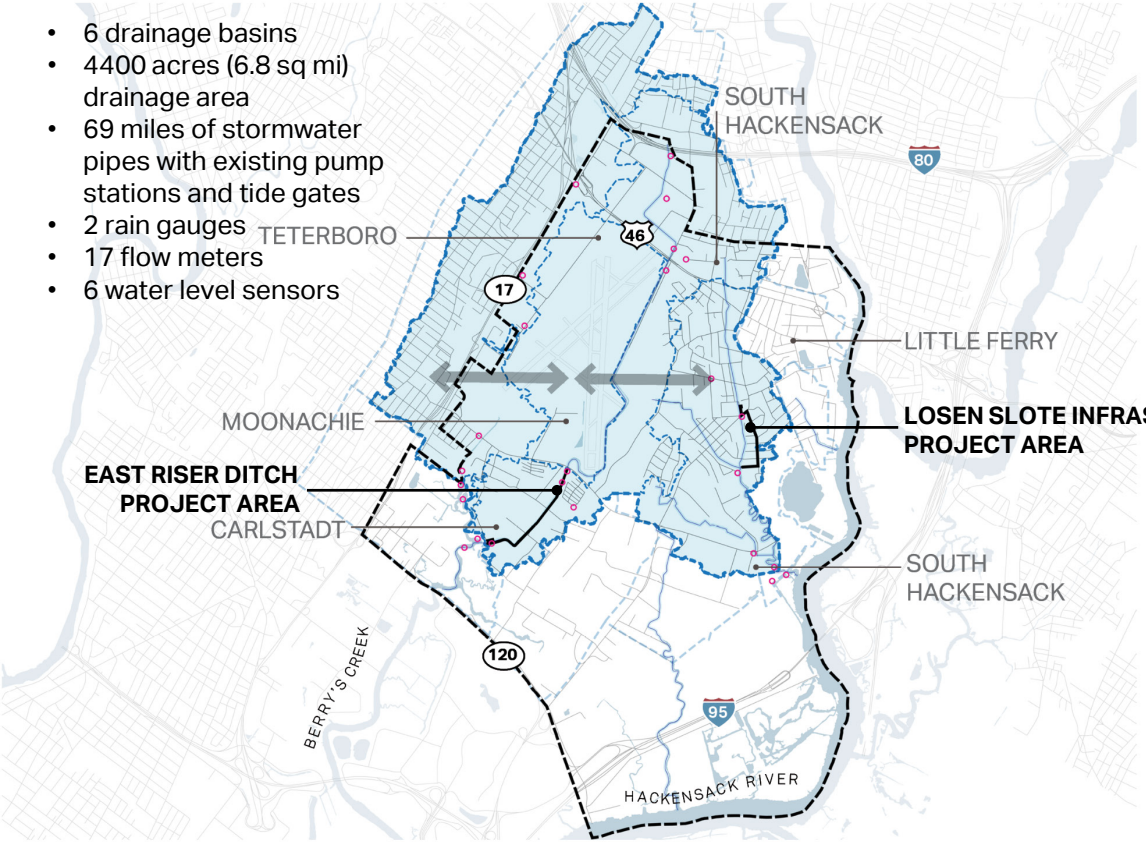
DESIGN PHASE INFRASTRUCTURE

MIKE MURPHY, HDR
DAVID BLAIR, AECOM

INFOWORKS ICM MODEL DESIGN

BUILDING + REFINING THE MODEL FOR PROJECT DESIGN

- 6 drainage basins
- 4400 acres (6.8 sq mi) drainage area
- 69 miles of stormwater pipes with existing pump stations and tide gates
- 2 rain gauges
- 17 flow meters
- 6 water level sensors



Purpose

- Comparing existing and proposed conditions WSEL for rainfall events of varying sizes (2-yr to 100-yr)
- Extensive network of stormwater drainage infrastructure
- Cross-basin flow during large flooding events

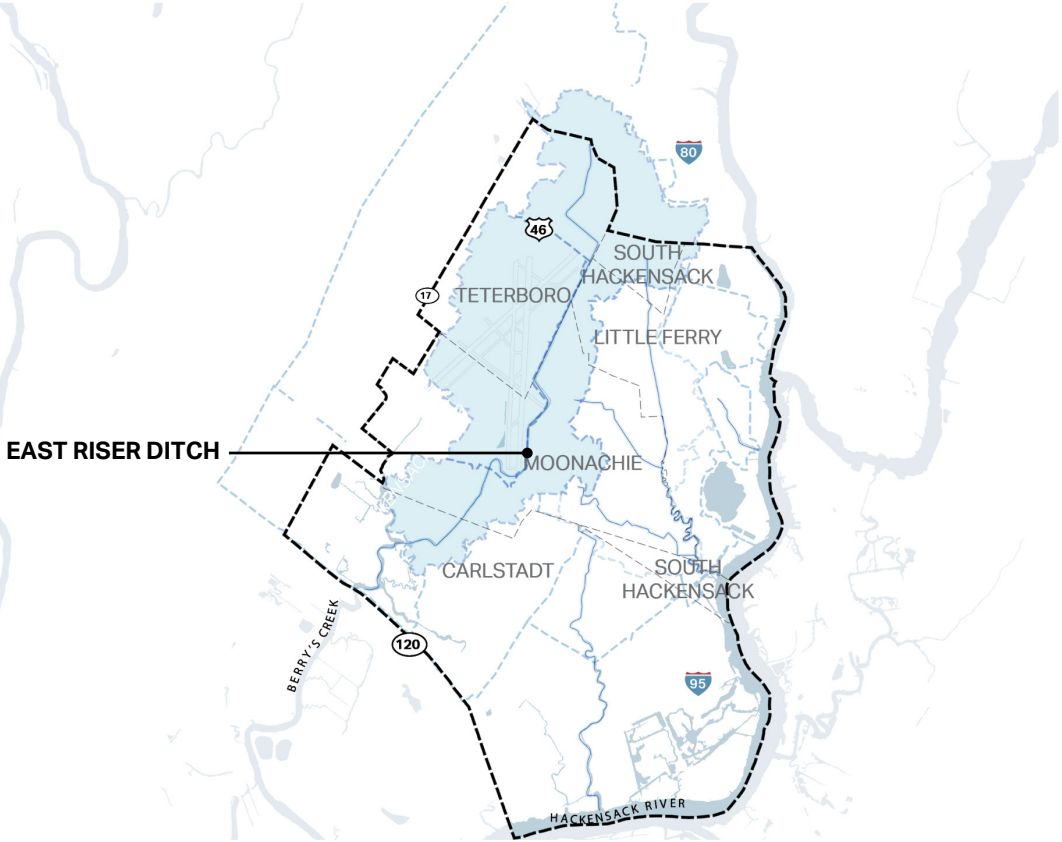
Project Area
Sub-basin boundaries
Sub-basin Boundaries within Modeling Extents
Modeling Extents
Channels and Waterways
Roads
Rain Gauges, Flow Meters, Water Level Sensors
Cross-basin Flow

EAST RISER DITCH FLOOD RISK REDUCTION

PUMP STATION + CHANNEL IMPROVEMENTS

EAST RISER DITCH

EAST RISER DITCH IMPROVEMENTS



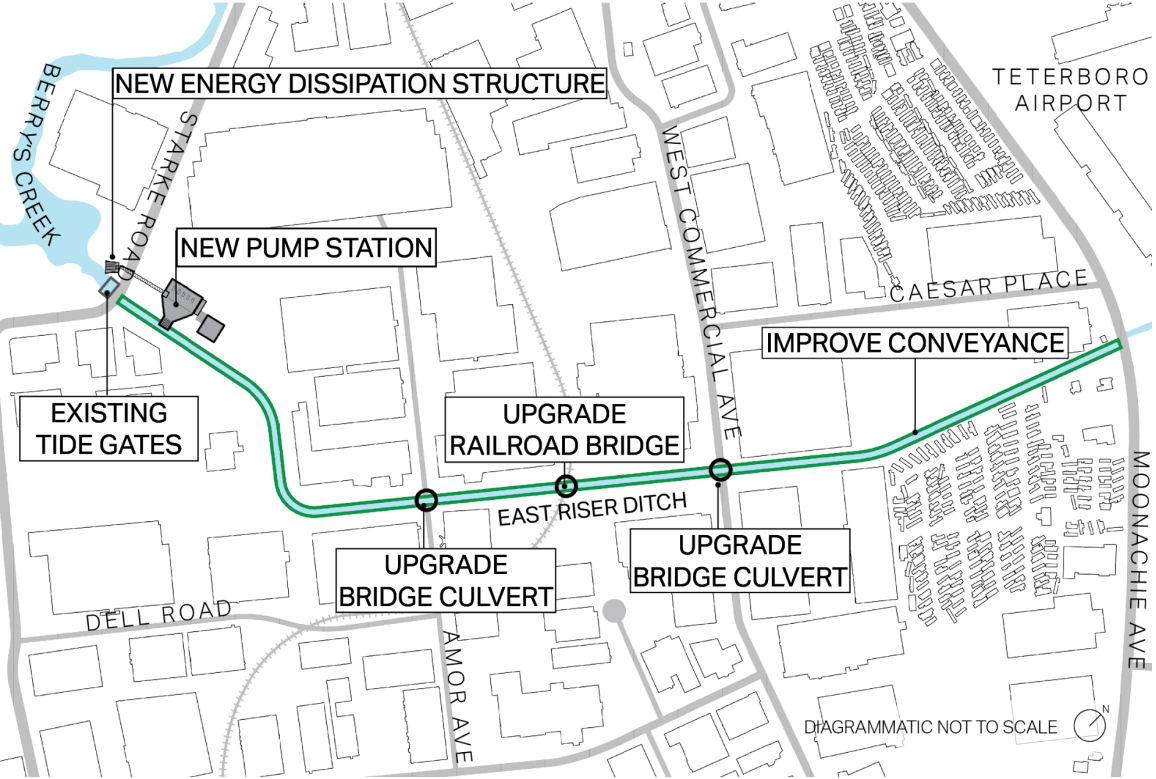
Major Challenges

- Over-burdened infrastructure
- Lack of channel capacity
- Water flow regulated by tide gate
- Low-lying elevations with minimal grade changes
- Densely developed project area
- Flooding occurs frequently

Focus Drainage Area
Project Area
Sub-basin boundaries
Municipal boundaries
Channels and Waterways

EAST RISER DITCH FLOOD RISK REDUCTION

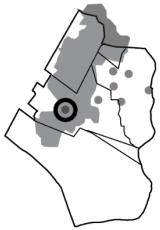
AREA OF IMPROVEMENTS



Proposed Flood Reduction

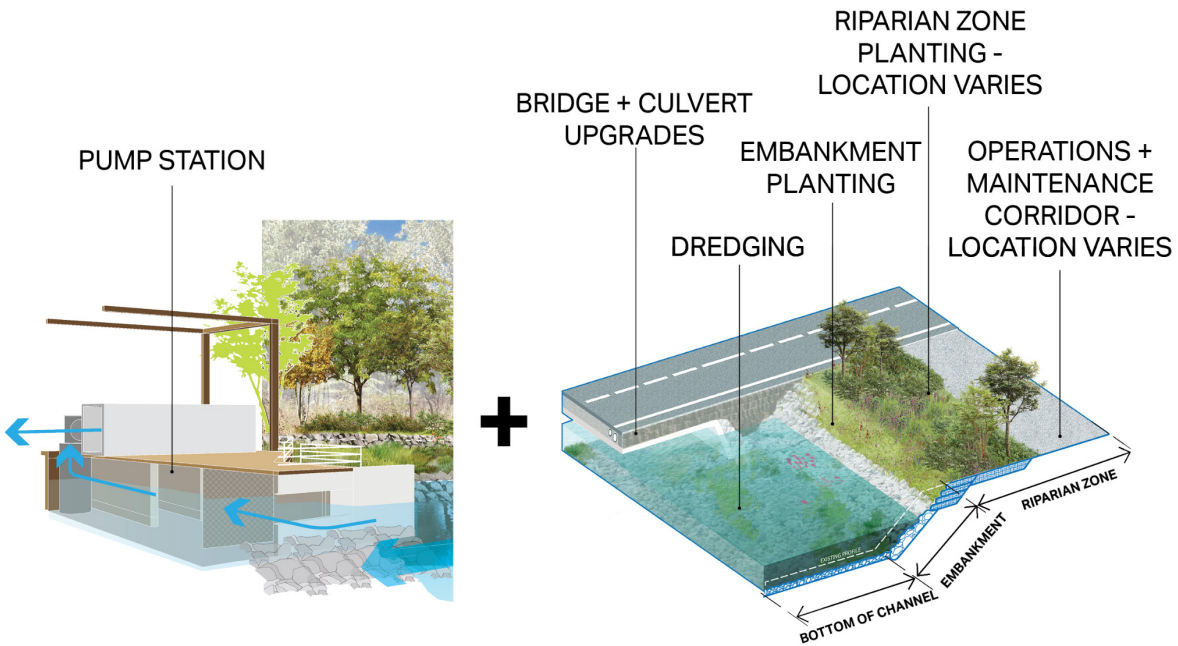
- Channel design improves conveyance and reduces flood risk
- Located between Moonachie Ave and Starke Road

DIAGRAMS NOT TO SCALE



EAST RISER DITCH FLOOD RISK REDUCTION

PUMP STATION + CHANNEL IMPROVEMENTS



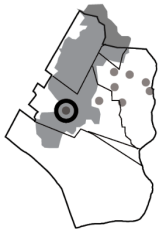
Pump Station

- Mostly underground station with submersible pumps
- Activates and pumps water beyond tide gates

Channel Improvements

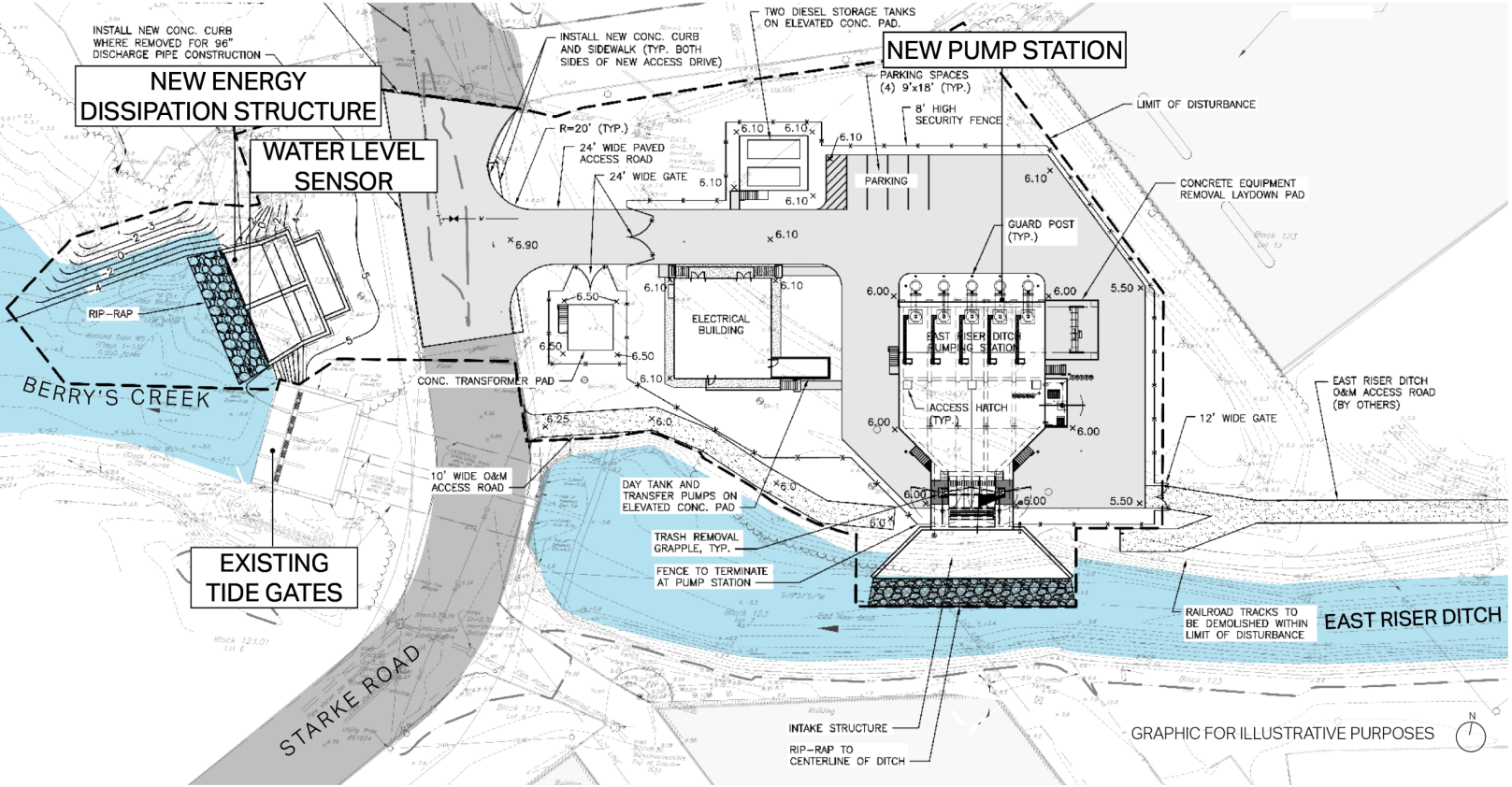
- Dredging and embankment stabilization
- Bridge culvert and railroad bridge upgrades
- O&M corridor
- Native planting

DIAGRAMS NOT TO SCALE



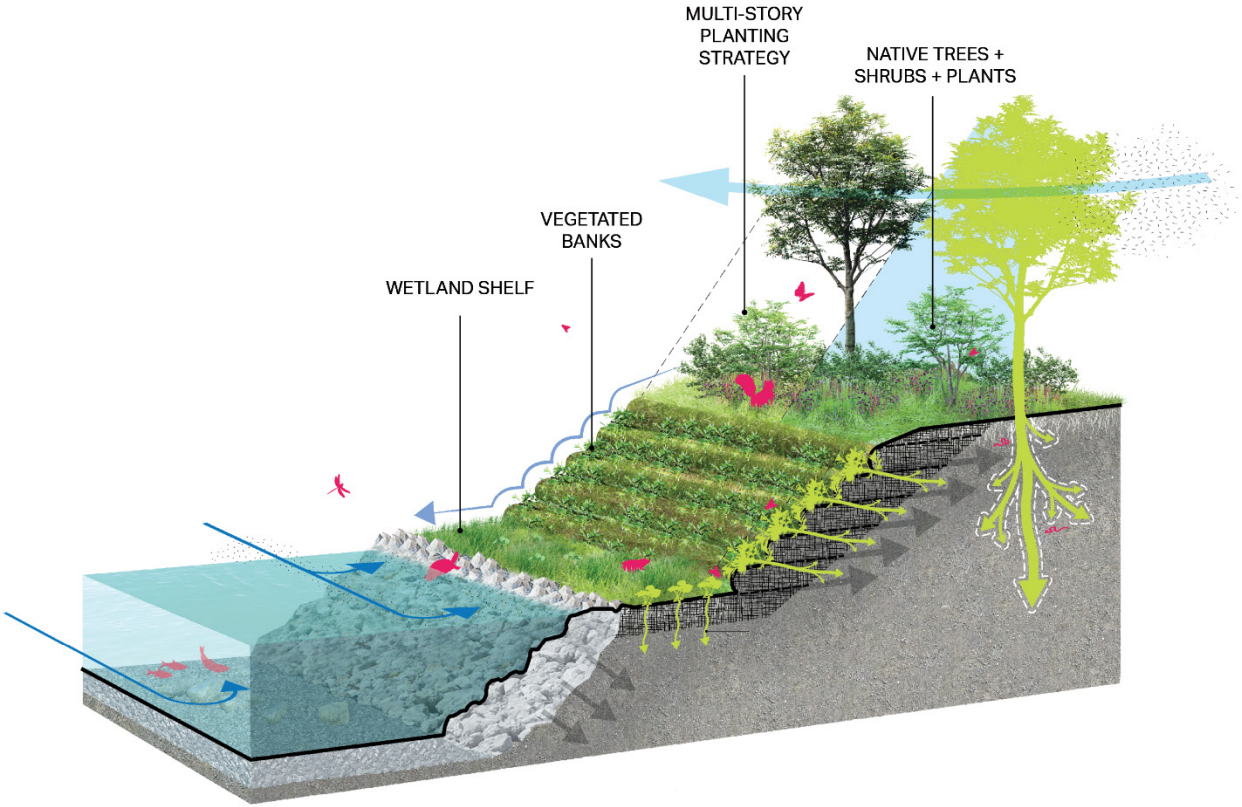
EAST RISER DITCH FLOOD RISK REDUCTION

PUMP STATION SITE PLAN



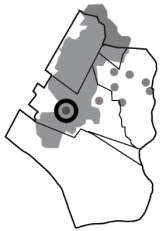
EAST RISER DITCH ECOLOGICAL BENEFITS

DESIGNED FOR ECOLOGICAL ENHANCEMENT



Integrated Channel Ecology

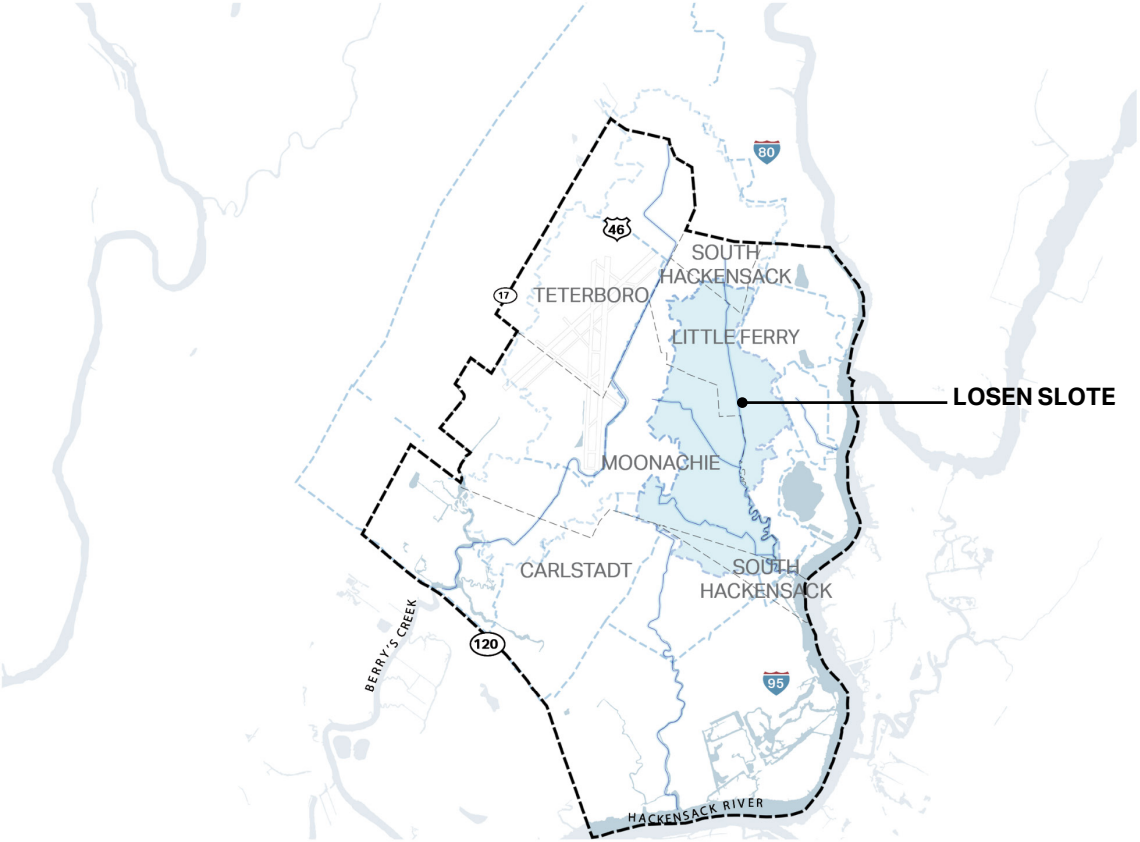
- Native planting
- Biodiversity and improved air quality
- Cooler micro-climate
- Stormwater filtration reduces sediment loads
- Riparian and wetland plantings



LOSEN SLOTE
FORCE MAIN + PUMP STATION

LOSEN SLOTE FLOOD RISK REDUCTION + BENEFITS

INFRASTRUCTURE IMPROVEMENTS



Major Challenges

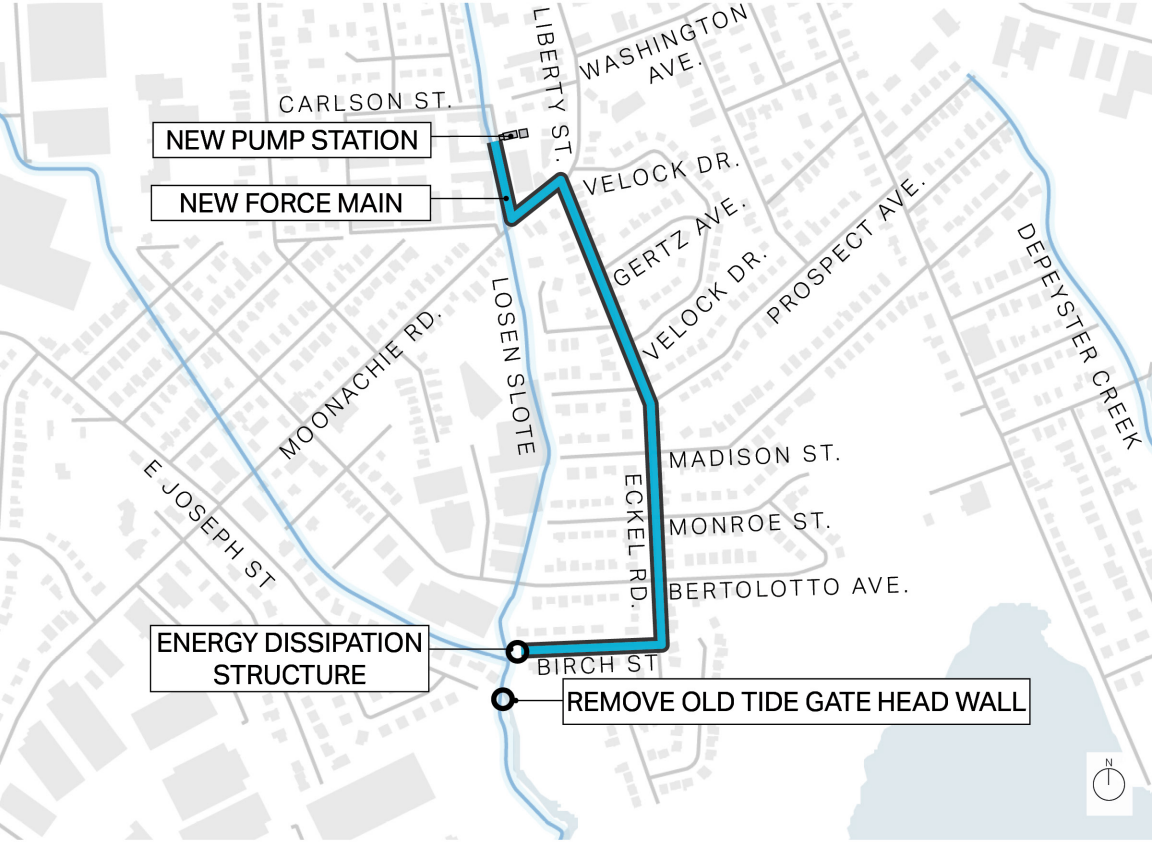
- Losen Slote drainage bottleneck results in frequent flooding
- Limited capacity in existing channel + pipe network
- Densely developed area

Focus Drainage Area
Project Area
Sub-basin boundaries
Municipal boundaries
Channels and Waterways

DIAGRAMS NOT TO SCALE

LOSEN SLOTE FLOOD RISK REDUCTION

AREA OF FORCE MAIN + PUMP STATION



Northern Pump Station

- Located near Lorena St. and Liberty St.

Force Main to improve flow capacity

- The Force Main runs ~2,900 feet
- Located within Liberty St., Eckel Rd. and Birch St.

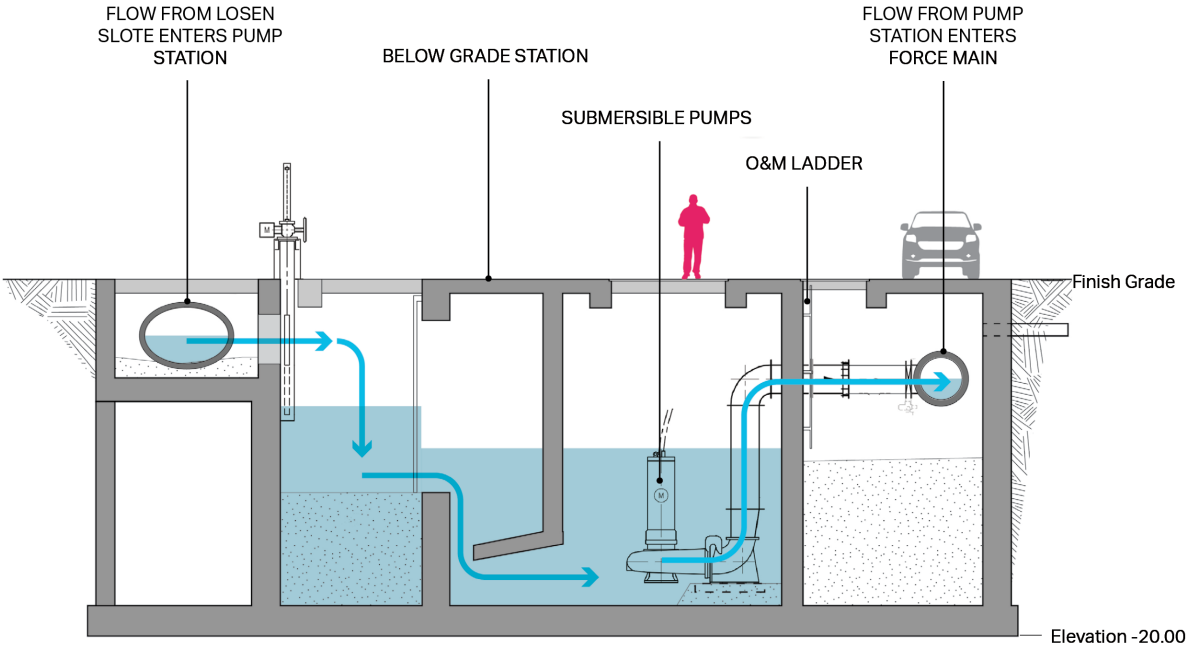
Existing Abandoned Tide Gate

- Existing Abandoned Tide Gate to be removed
- Channel restored

DIAGRAMS NOT TO SCALE

LOSEN SLOTE PUMP STATION FLOOD RISK REDUCTION

REDIRECTS FLOW OUT OF UNDERGROUND LOSEN SLOTE CONDUIT



CROSS SECTION

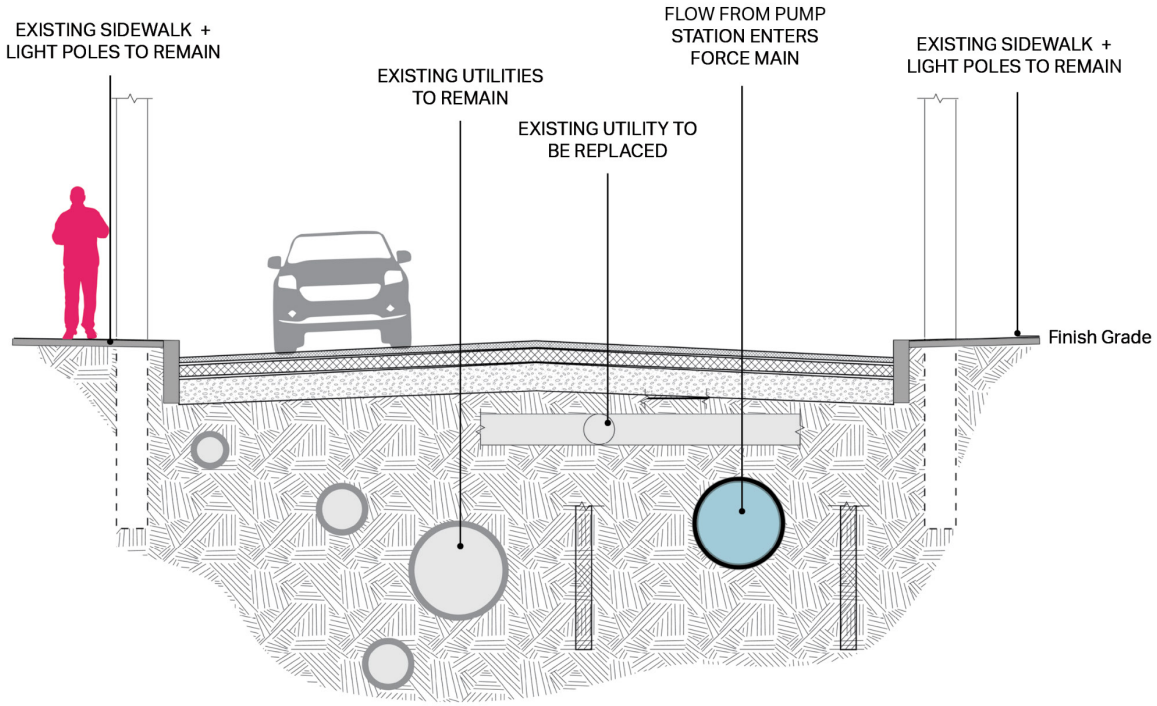
Proposed Flood Reduction

- Pump Station capacity is 50 cfs
- Activates and pump into force main when water elevation in existing conduit pipe is ~75% of pipe diameter

DIAGRAMS NOT TO SCALE

LOSEN SLOTE FORCE MAIN FLOOD RISK REDUCTION

INCREASE STORMWATER CONVEYANCE



CROSS SECTION

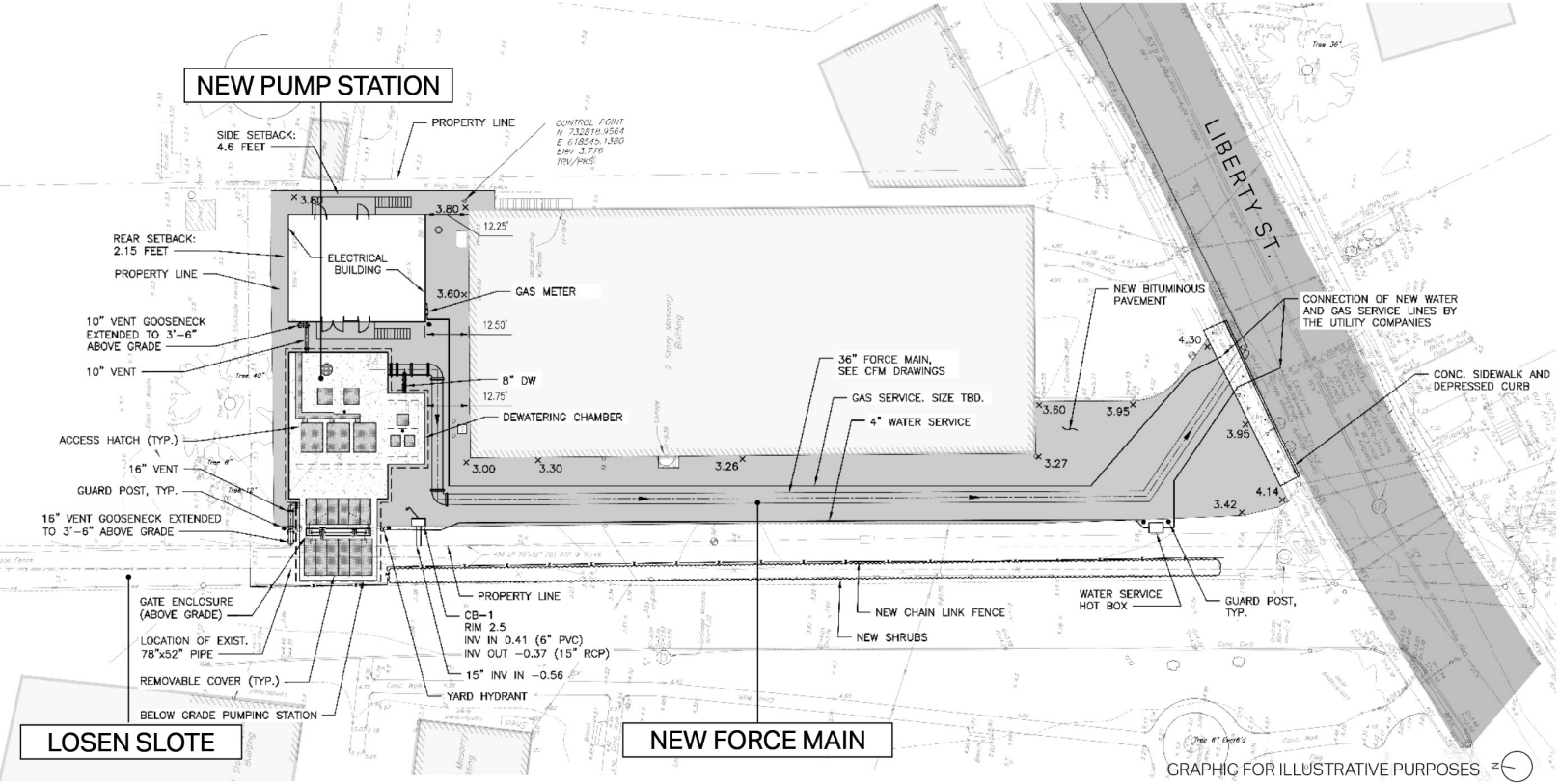
Proposed Flood Reduction

- Force main inlet connected to pump station
- Large 36-in diameter pipeline
- Energy dissipation at outflow into Losen Slote

DIAGRAMS NOT TO SCALE

LOSEN SLOTE FORCE MAIN FLOOD RISK REDUCTION

PUMP STATION SITE PLAN

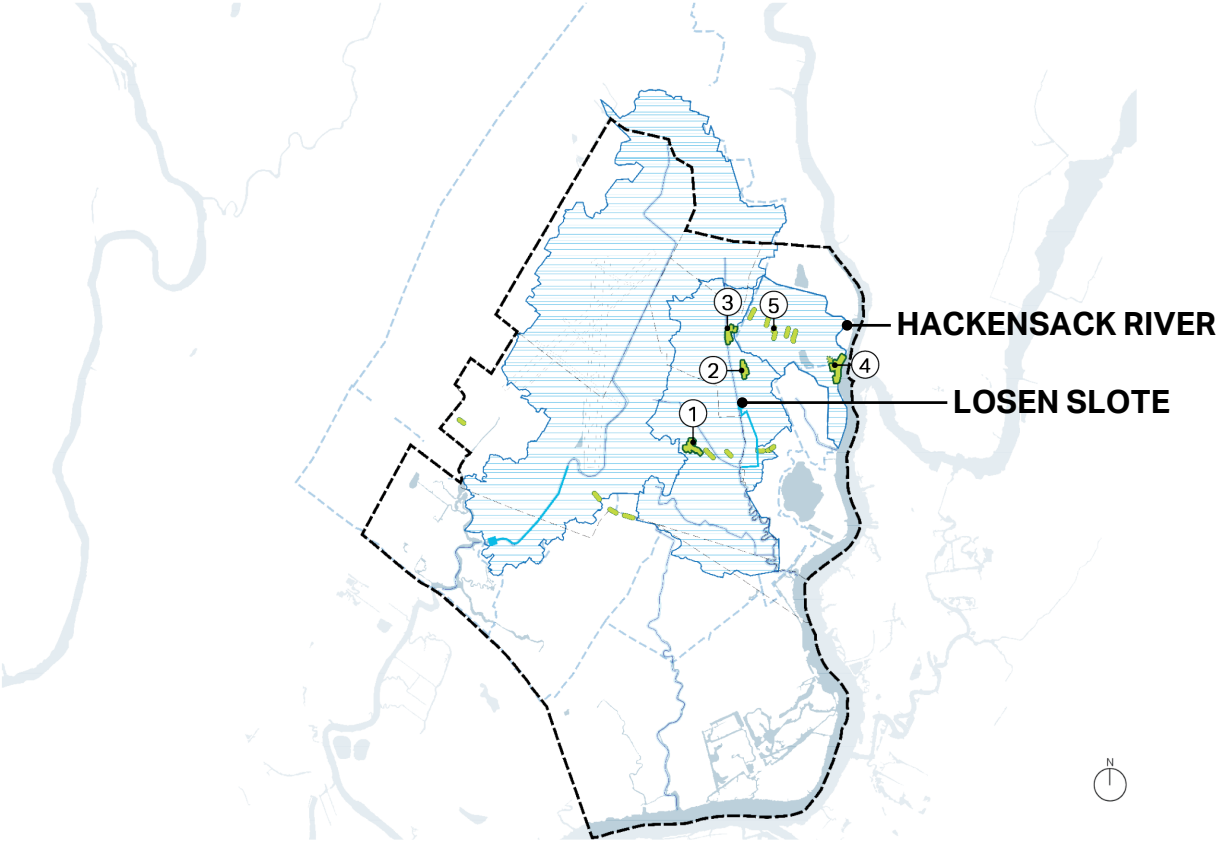


DESIGN PHASE LANDSCAPE + PUBLIC REALM

ANNA HOCHHALTER, AECOM

LANDSCAPE + PUBLIC REALM

UNDER CONSIDERATION WITH FLOOD-RISK REDUCTION FEATURES



Losen Slote

1. Joseph St. Park
2. Memorial Middle School
3. Little Ferry Library+ Municipal Building

Hackensack River

4. Riverfront Park

Multiple Drainage Areas

5. Streetside Green Infrastructure-Type Improvements

Project Features
Focus Drainage Area
Project Area
Sub-basin boundaries
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DIAGRAMS NOT TO SCALE

LOSEN SLOTE COMMUNITY + ECOLOGICAL BENEFITS

MEMORIAL MIDDLE SCHOOL

LOSEN SLOTE COMMUNITY + ECOLOGICAL BENEFITS

MEMORIAL MIDDLE SCHOOL CONCEPT

Existing Conditions

- School yard
- Memorial
- Existing trees
- Lawn

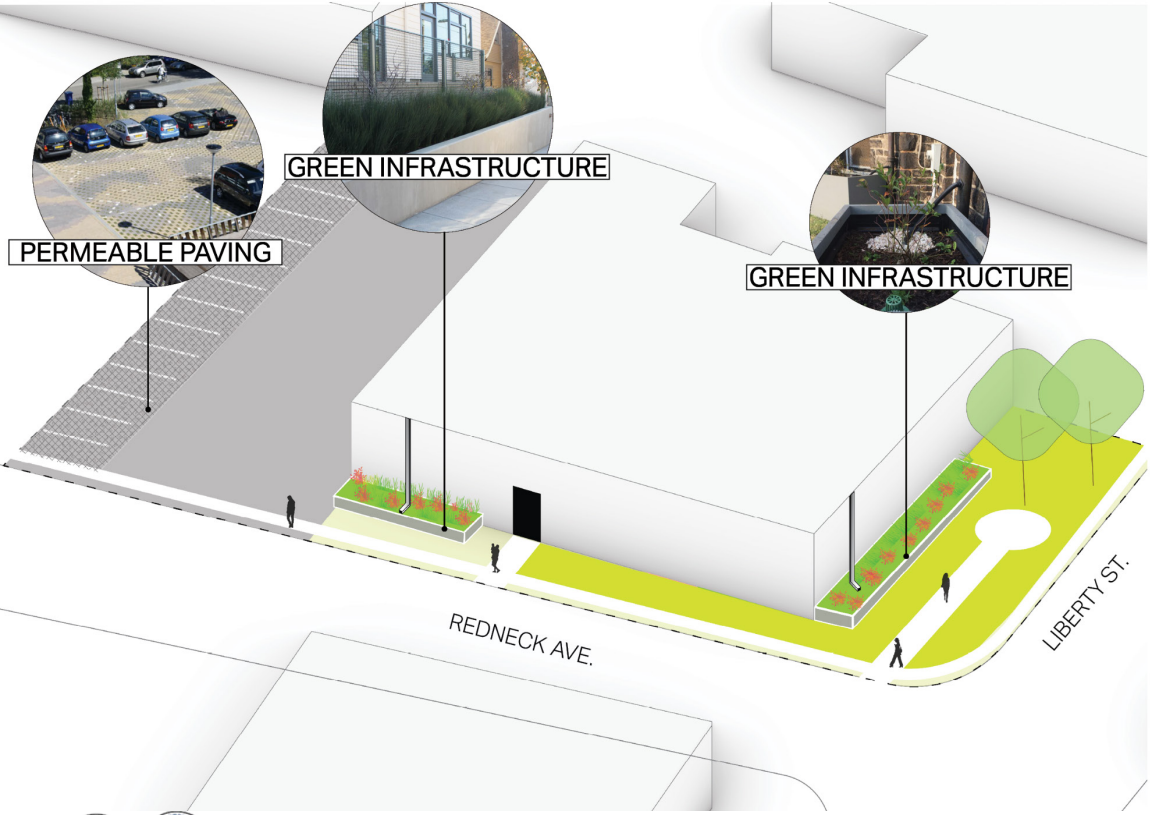
Proposed Project Improvements

- Existing trees and memorial to remain
- Native planting
- Learning gardens
- Green infrastructure-type improvements

LOSEN SLOTE COMMUNITY + ECOLOGICAL BENEFITS

LITTLE FERRY LIBRARY

LOSEN SLOTE COMMUNITY + ECOLOGICAL BENEFITS
LITTLE FERRY LIBRARY CONCEPT



Existing Site

- Public Library
- Asphalt parking
- Ornamental shrubs

Proposed Project Improvements

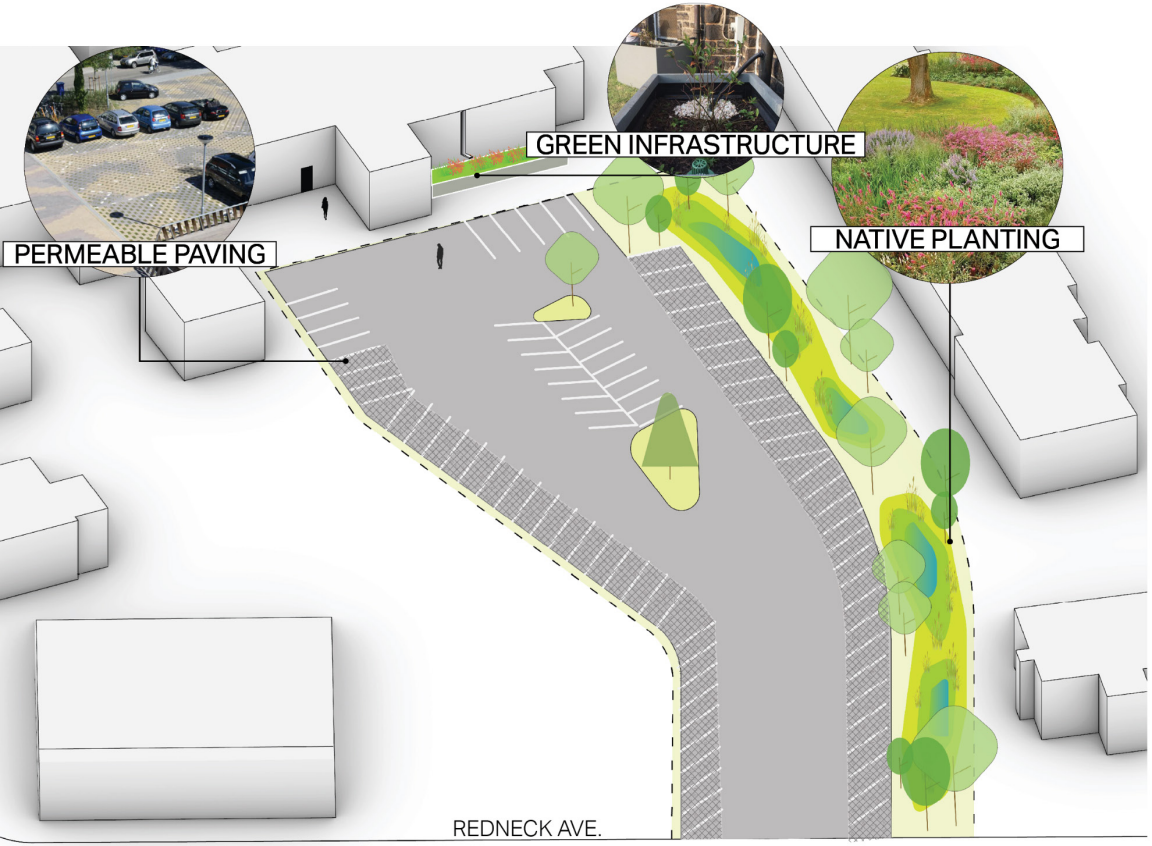
- Native planting
- Green infrastructure-type improvements
- Permeable paving

LOSEN SLOTE COMMUNITY + ECOLOGICAL BENEFITS

LITTLE FERRY MUNICIPAL BUILDING

LOSEN SLOTE COMMUNITY + ECOLOGICAL BENEFITS

LITTLE FERRY MUNICIPAL BUILDING



Existing Site

- Borough Hall and Police Department
- Asphalt parking
- Parking landscape islands

Proposed Project Improvements

- Native planting
- Green infrastructure-type improvements
- Permeable paving

LOSEN SLOTE COMMUNITY + ECOLOGICAL BENEFITS
JOSEPH ST. PARK

LOSEN SLOTE COMMUNITY + ECOLOGICAL BENEFITS

JOSEPH ST. PARK CONCEPT

Existing Site

- Civic Center + Senior Center
- Sports courts
- Playground equipment
- Pavilion

Proposed Project Improvements

- Native planting
- Green infrastructure-type improvements
- Permeable paving

HACKENSACK RIVER COMMUNITY BENEFITS

COMMUNITY + ECOLOGICAL BENEFITS

HACKENSACK RIVER COMMUNITY BENEFITS

RIVERFRONT PARK CONCEPT

Existing Site

- Private waterfront
- Private boat access + storage
- Church development in-progress

Proposed Project Improvements

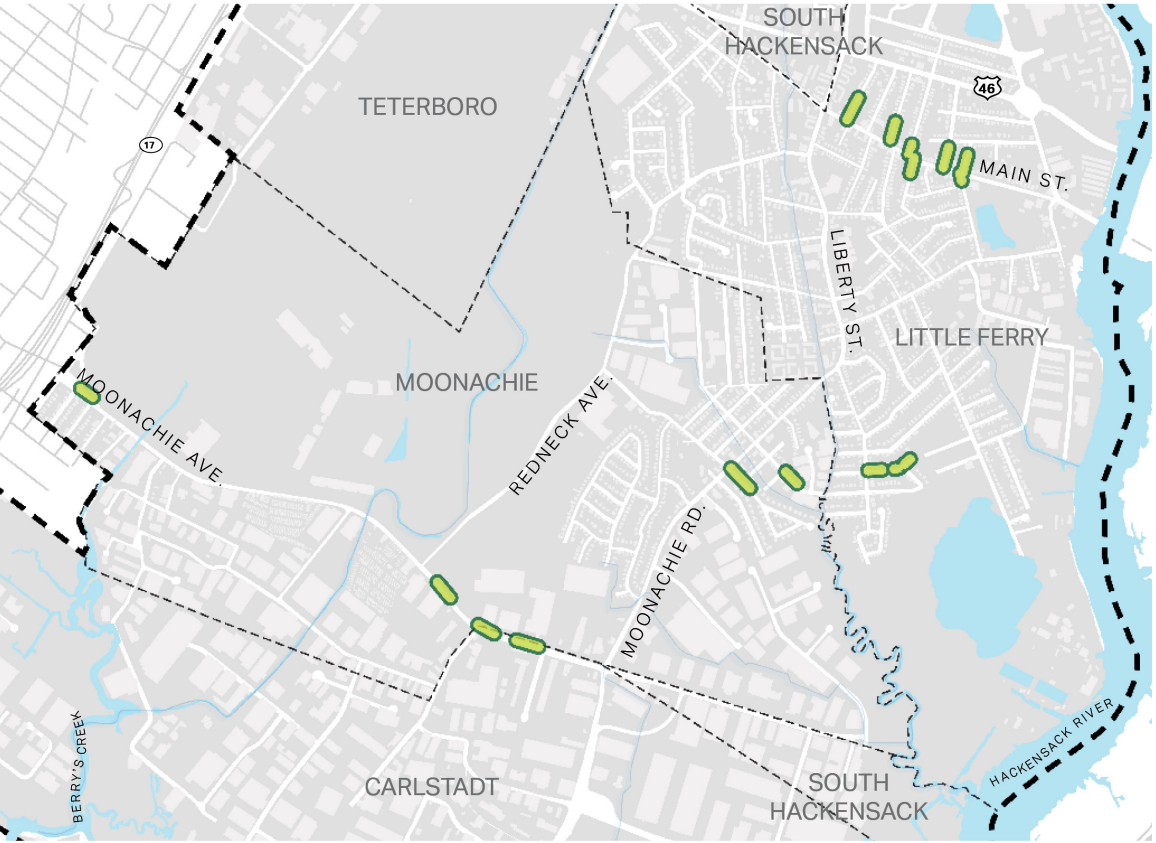
- New Park (park boundary currently under consideration)
- Ecological enhancement
- Public waterfront access

PROJECT-WIDE COMMUNITY + ECOLOGICAL BENEFITS

STREETSIDE GREEN INFRASTRUCTURE-TYPE IMPROVEMENTS

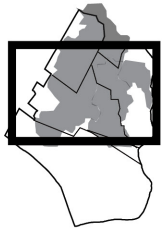
PROJECT-WIDE COMMUNITY + ECOLOGICAL BENEFITS

AREAS OF STREETSIDE GREEN INFRASTRUCTURE-TYPE IMPROVEMENTS



Improvements being considered

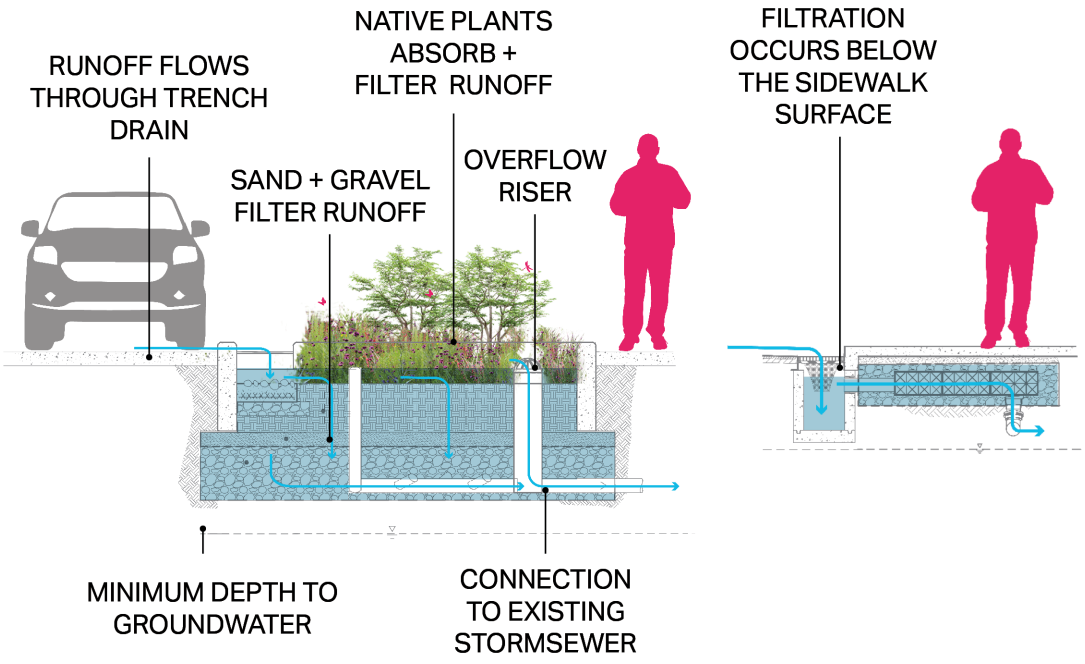
- ~20 systems being assessed
- Filtering nearly roadway runoff
- Designed to capture stormwater and then slowly release into grey infrastructure, reducing peak flow in the storm sewer mains
- Located within public right-of-way
- Native soils have poor infiltration capacity and high groundwater limits application in some areas



DIAGRAMS NOT TO SCALE

PROJECT-WIDE COMMUNITY + ECOLOGICAL BENEFITS

STREETSIDE GREEN INFRASTRUCTURE-TYPE IMPROVEMENTS FEATURES



TYPICAL SECTIONS

Improvements being considered

- Treats smaller, more frequent storms
- 4 primary types:
  - Bioretention basins*
  - Bioretention planters*
  - Storage Trenches
  - Tree Trenches
- Some types include vegetation or trees, while others are below the surface.

*Alternative designs being considered where shallow groundwater is present. Final designs are not yet confirmed.

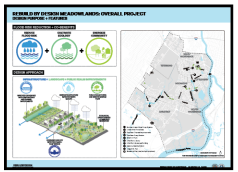
DIAGRAMS NOT TO SCALE

OPEN HOUSE BREAKOUT SESSION

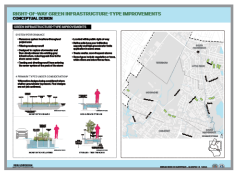
ANNA HOCHHALTER, AECOM

OPEN HOUSE SESSION OVERVIEW

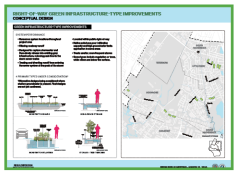
OVERALL PROJECT INFO



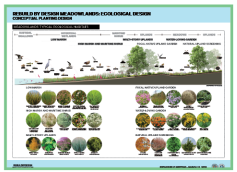
GREY INFRASTRUCTURE



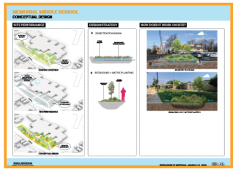
RIGHT-OF-WAY GREEN INFRASTRUCTURE

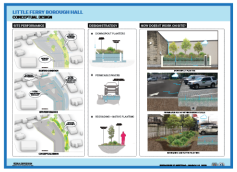


OVERALL ECOLOGICAL DESIGN STRATEGY

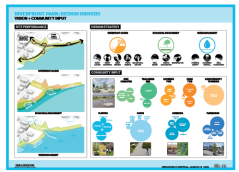


MUNICIPAL SITES





RIVERFRONT PARK



NEXT STEPS

CHRIS BENOSKY, AECOM

NEXT STEPS

- Detailed Design Development + Permitting
- On-going Engagement
- Citizen Advisory Group Meeting (Spring)
- Community Meeting (Summer)

CRITICAL PROJECT INFORMATION

M

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Question & Answer