REBUILD BY DESIGN
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

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<th>Presenter</th>
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<tr>
<td>CHRISTOPHER BENOSKY, Project Executive, AECOM</td>
<td>DAVE BLAIR, Project Manager, AECOM</td>
<td>ANNA HOCHHALTER, Landscape Architect, AECOM</td>
<td>MICHAEL MURPHY, HDR Manager, HDR</td>
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<tr>
<td>STEVE BIUSO, Design Manager, AECOM</td>
<td>SUSAN BEMIS, Associate Principal, Landscape Architecture and Urban Design, AECOM</td>
<td>HOGAN EDELBURG, Landscape Architect, AECOM</td>
<td>CAITLIN CAVANAGH, Water Resources Engineer, AECOM</td>
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PROJECT HISTORY + BUILD PLAN

CHRIS BENOSKY, AECOM
• HUD awarded State of New Jersey $150M for Phase 1 Pilot Area only

• Project must be functional and completed by September 2022
Address flood risk

Increase resiliency of the communities and ecosystems

Reduce impacts to critical infrastructure, residences, businesses, and ecological resources
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
The Build Plan represents a feasible project that can be **constructed by 2022**. Components include flood reduction strategies to address frequent rain flooding.

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


HURRICANE SANDY
REBUILD BY DESIGN COMPETITION & AWARD

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

3 ALTERNATIVES: STORM SURGE, RAIN FLOODING, HYBRID
FEASIBILITY STUDY OF DESIGN
ENVIRONMENTAL IMPACT ASSESSMENT + REVIEW
COMMUNITY ENGAGEMENT

The Build Plan is the selected alternative with the greatest benefits within budget and environmentally preferred

DESIGN PHASE
COMMUNITY ENGAGEMENT

REBUILD BY DESIGN MEADOWLANDS
Public Meeting // March 11, 2020
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
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
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 and 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
4. Memorial Middle School
5. Little Ferry Library + Municipal Bldg
6. New Riverfront Park
7. Streetside Green Infrastructure -Type Improvements

DIAGRAMS NOT TO SCALE
**DESIGN DRIVERS**

**DESIGN PROCESS OVERVIEW**

**CONCEPTUAL DESIGN**

**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

**FINAL DESIGN**
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
DESIGN PHASE INFRASTRUCTURE

MIKE MURPHY, HDR
DAVID BLAIR, AECOM
INFOWORKS ICM MODEL DESIGN
BUILDING + REFINING THE MODEL FOR PROJECT DESIGN

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

EAST RISER DITCH PROJECT AREA
• 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

LOSEN SLOTE INFRASTRUCTURE PROJECT AREA
EAST RISER DITCH FLOOD RISK REDUCTION
PUMP STATION + CHANNEL 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
**EAST RISER DITCH FLOOD RISK REDUCTION**

**AREA OF IMPROVEMENTS**

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**Proposed Flood Reduction**

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

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[Diagram of East Riser Ditch Flood Risk Reduction Area of Improvements]
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 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

LOSEN SLOTE

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
Proposed Flood Reduction

- Pump Station capacity is 50 cfs
- Activates and pumps into force main when water elevation in existing conduit pipe is ~75% of pipe diameter
Proposed Flood Reduction
- Force main inlet connected to pump station
- Large 36-in diameter pipeline
- Energy dissipation at outflow into Losen Slote
LOSEN SLOTE FORCE MAIN FLOOD RISK REDUCTION
PUMP STATION SITE PLAN

NEW PUMP STATION

PROPERTY LINE

SIDE SETBACK: 4.6 FEET

REAR SETBACK: 2.15 FEET

PROPERTY LINE

10" VENT GOOSENECK EXTENDED TO 3'-6" ABOVE GRADE

10" VENT

ACCESS HATCH (TYP.)

14" VENT

GUARD POST, TYP.

18" VENT GOOSENECK EXTENDED TO 3'-6" ABOVE GRADE

GATE ENCLOSURE

LOCATION OF EXIST.

78'LX32" PIPE

REMOVABLE COVER (TYP.)

BELOW GRADE PUMPING STATION

PROPERTY LINE

CB-1

RM 3.5

INV IN 0.41 (6") PVC

INV OUT -0.37 (12") PVC

18" INX IN -0.56

YARD HYDRANT

GAS METER

CONTROL POINT 0' HORIZONTAL 0' VERTICAL

1" MANUAL VALVE END 3' PVC DRAINAGE

CONE. SIDEWALK AND DEPRESSED CURB

NEW IRRIDUCIBLE PAVEMENT

NEW FORCE MAIN

36" FORCE MAIN, SEE CFM DRAWINGS

GAS SERVICE, SIZE TBD

6" WATER SERVICE

4" WATER SERVICE

WATER SERVICE HOT BOX

NEW CHAIN LINK FENCE

NEW SHRUBS

GRAPHIC FOR ILLUSTRATIVE PURPOSES
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
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

RIVERFRONT PARK
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

STREETSIDE GREEN FEATURES
PROJECT-WIDE COMMUNITY + ECOLOGICAL BENEFITS
AREAS OF STREETSIDE GREEN INFRASTRUCTURE-TYPE IMPROVEMENTS

Improvments 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
PROJECT-WIDE COMMUNITY + ECOLOGICAL BENEFITS
STREETSIDE GREEN INFRASTRUCTURE-TYPE IMPROVEMENTS FEATURES

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.

*Typical sections

- Runoff flows through trench drain
- Native plants absorb + filter runoff
- Sand + gravel filter runoff
- Overflow riser
- Filtration occurs below the sidewalk surface
- Minimum depth to groundwater
- Connection to existing storm sewer

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

ANNA HOCHHALTER, AECOM
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

Website
www.rbd-meadowlands.nj.gov

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rbd-meadowlands@dep.nj.gov

Question & Answer