



**NEWEA 2018**

## **Green Stormwater Infrastructure Parks: All Sizes, Designs & Funding Sources**



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- Share information about different funding sources
- Provide different typologies for green stormwater infrastructure in urban parks
- Present case studies
- Present design strategies for streamlining O&M



**Proposed Improvements:**

- Permeous Play Surface Potential 5.0M Road:** 9,900 SF, 918 CF
- Permeous Play Surface:** 8,200 SF, 440 CF
- Bioretention:** 17,500 SF, 138 CF
- Bioretention:** 4,400 SF, 458 CF
- Permeous Play Surface:** 12,400 SF, 1,282 CF
- Permeous Play Surface:** 12,400 SF, 1,282 CF
- Synthetic Turf:** 40,400 SF, 4,228 CF
- Reduction of Park Area:** 4,900 SF, 420 CF

**Callout Details:**

- Permeous Play Surface:** Install permeous play surface in play area with additional subsurface storage to manage ROW flow, if necessary.
- Bioretention:** Create bioretention area by removing asphalt and transplanting small caliper trees at a lower elevation, if permeability is poor, low the grade and connect to adjacent drainage system via underdrain.
- Permeous Play Surface:** Permeous porous pavement to avoid tree roots and active playground areas.
- Synthetic Turf:** Remove impervious surface in undecated area of park and restore with lawn and existing trees. Discuss with DPR the possibility of repurposing the area for DGA storage or stage.
- Bioretention:** Limit excavation within the footprint of existing trees. Existing curbs may limit flow root penetration into paved areas. HDR advocates to review these locations with DPR.
- Bioretention:** Recently removed trees allow for the creation of a bioretention entrance feature.
- Bioretention:** Disconnect roof downspouts from stormwater system and connect to adjacent bioretention or subsurface storage.
- Synthetic Turf:** Synthetic turf is a more desirable alternative to subsurface storage chambers. The excavation is shallow, eliminating the necessity for shoring and turf provides an improved experience for park users.

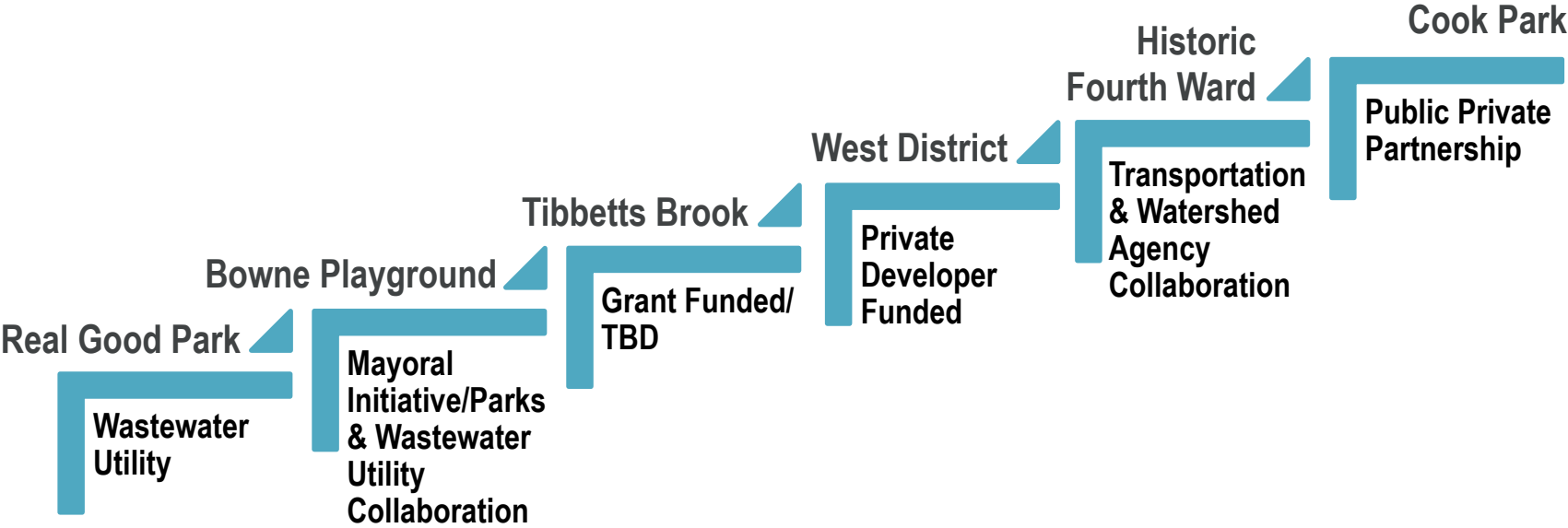
**Legend:**

- Property Line
- Direction of Surface Flow
- Existing Site Drainage
- Synthetic Turf
- Porous Pavement
- Bioretention
- Proposed Drainage Channels/Pipes
- Proposed Area (Square Feet)
- Potential Storage Volume (Cubic Feet)

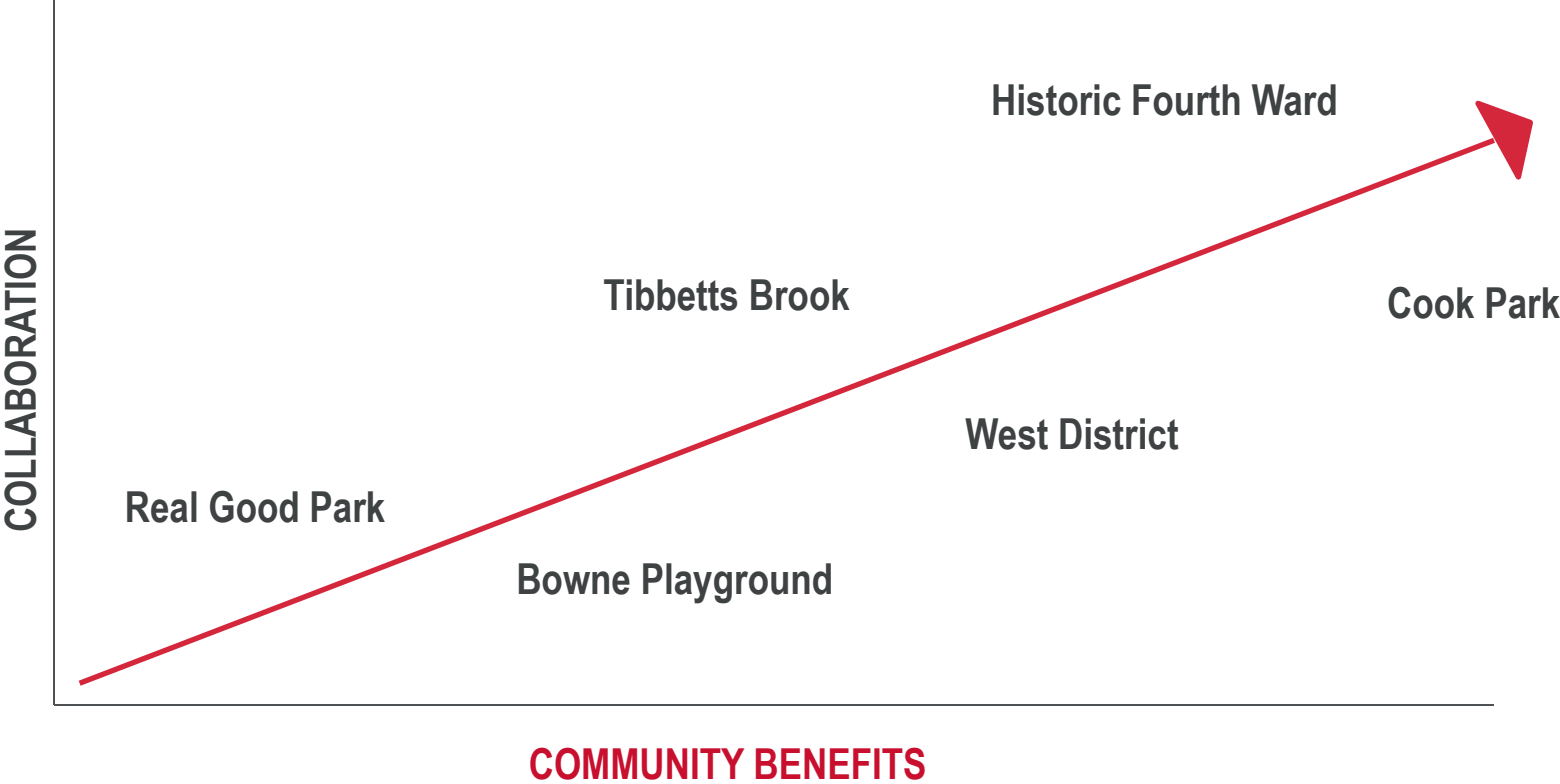
**Summary:**

- Total Area = 140,648 SF
- Impervious Area = 130,000 SF
- Potential Volume Managed = 9,102 CF

# Spectrum of Funding Strategies

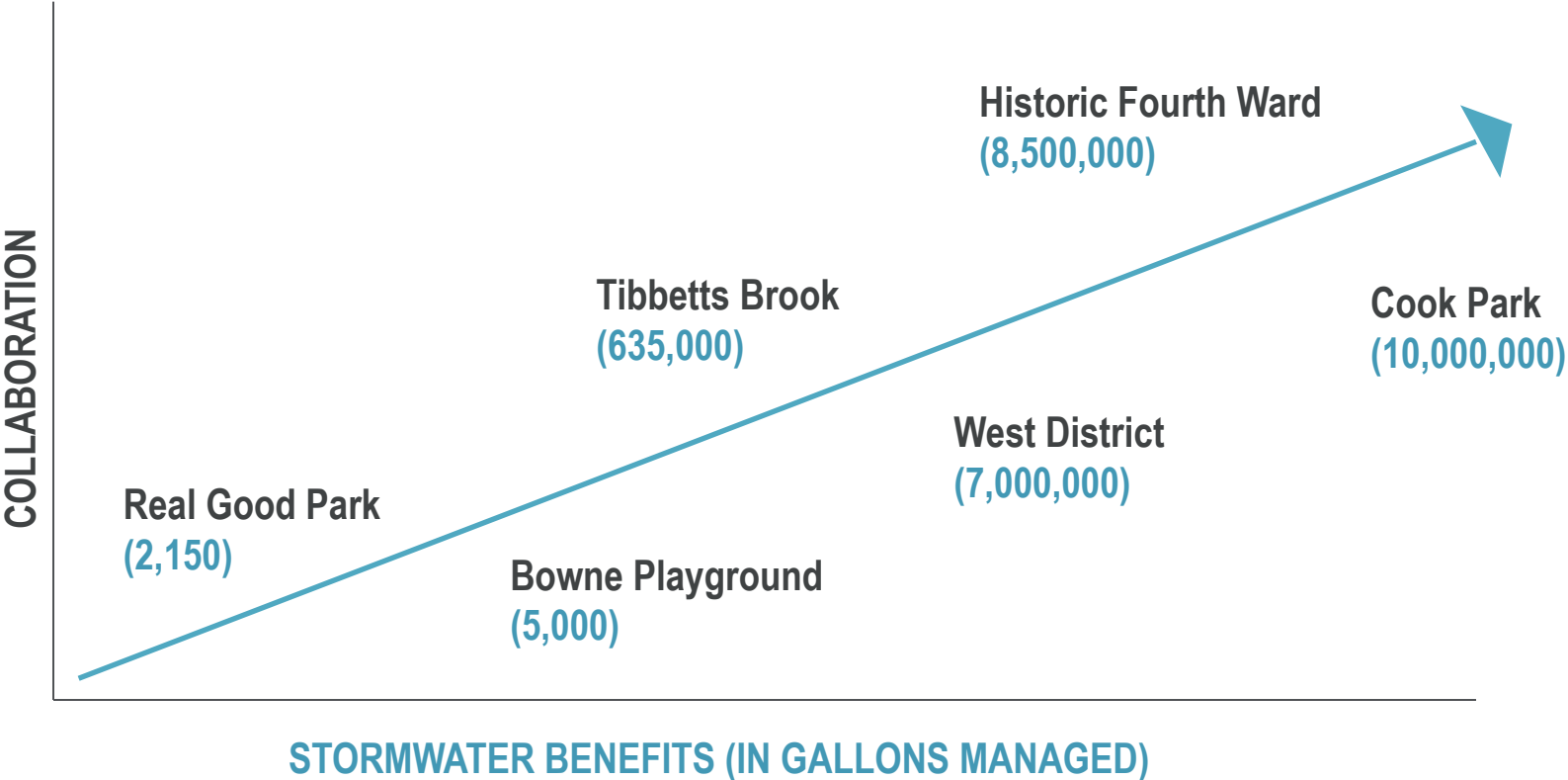


# Collaboration & Community Benefits





# Collaboration & Stormwater Benefits



# historic fourth ward park | atlanta





# Historic Fourth Ward Park

- **Client:** Atlanta Beltline, Inc.
- **Partners/Collaborators:** Department of Watershed, Parks Department
- **Funding Source:** Department of Watershed (pond), Atlanta Beltline (park)
- **Project Cost:** \$25 million
- **Key Features:**
  - Regional stormwater management facility
  - Public amenity
- **Key Benefits:**
  - Environmental
  - Social
  - Economic



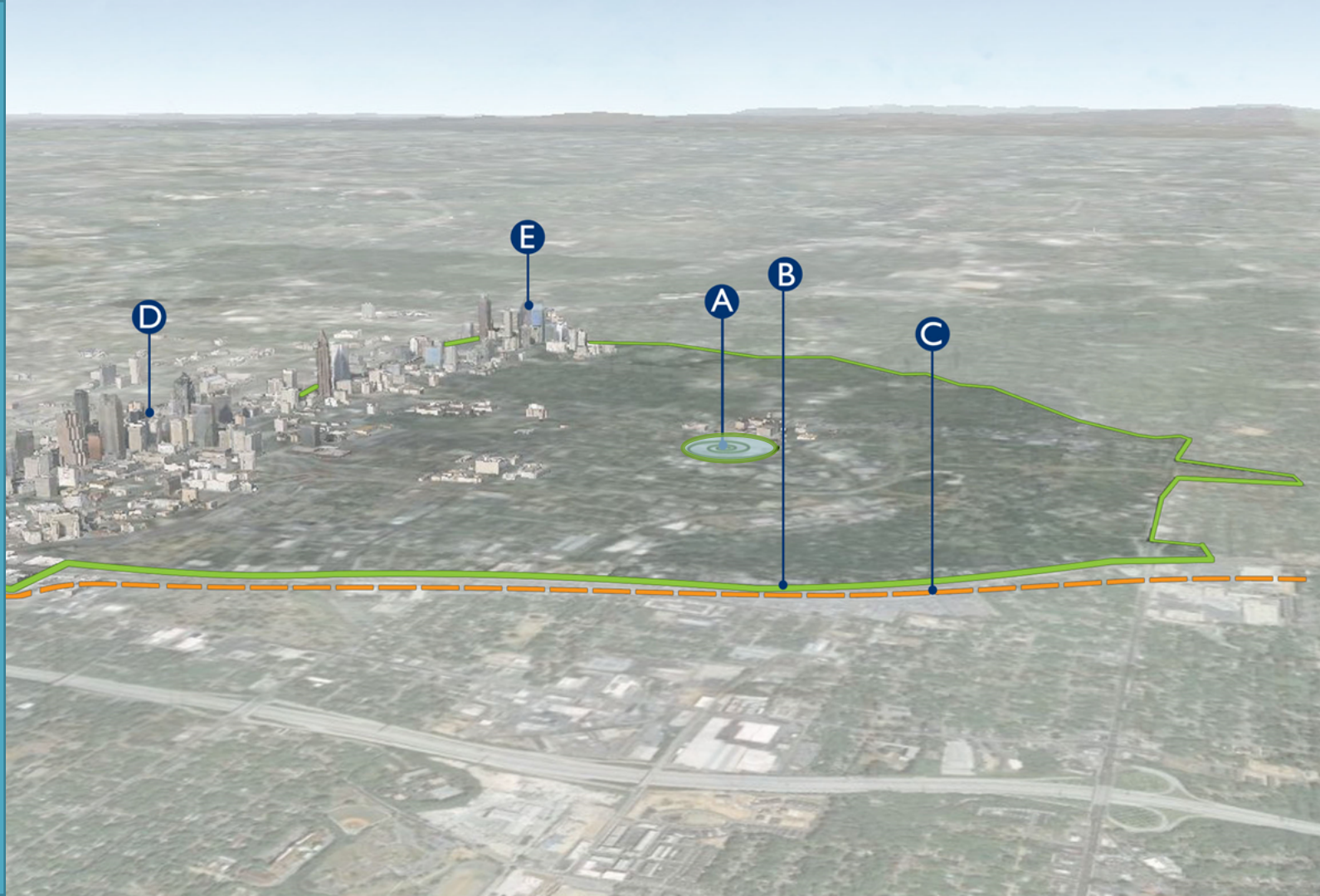
A – Historic Fourth  
Ward Park

B – 350-acre  
Watershed

C – Eastern  
Continental Divide

D – Downtown  
Atlanta

E – Midtown  
Atlanta

























PONCE CITY MARKET

GLEN IRIS LOFTS

EXCELSIOR MILL

PONCE PARK

AMLI O4W

BoHo O4W

SAGER LOFTS

PARKSIDE

FORD FACTORY

725 PONCE

755 NORTH

NEW REALM BREWING

760 RALPH MCGILL

COPENHILL LOFTS

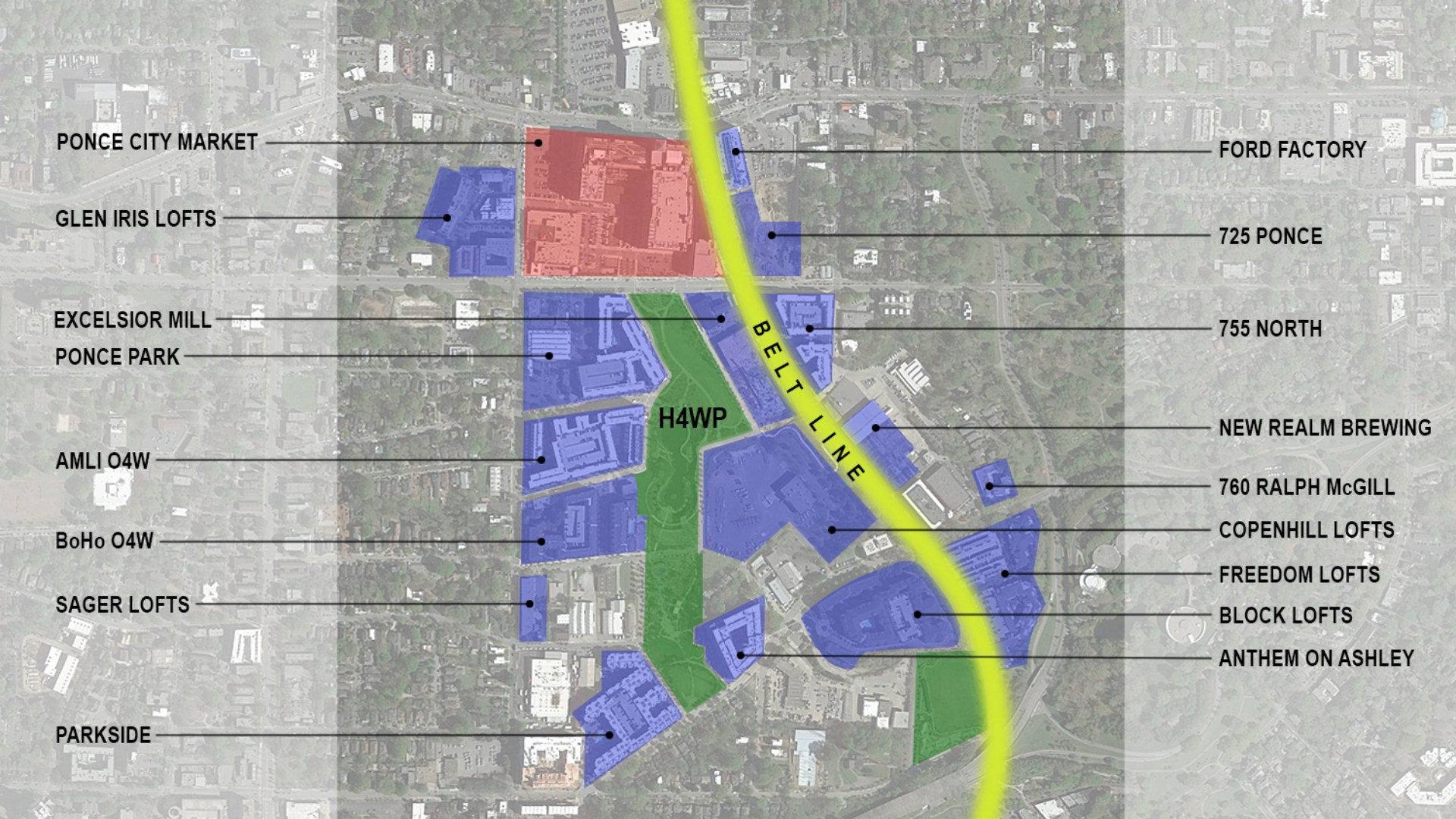
FREEDOM LOFTS

BLOCK LOFTS

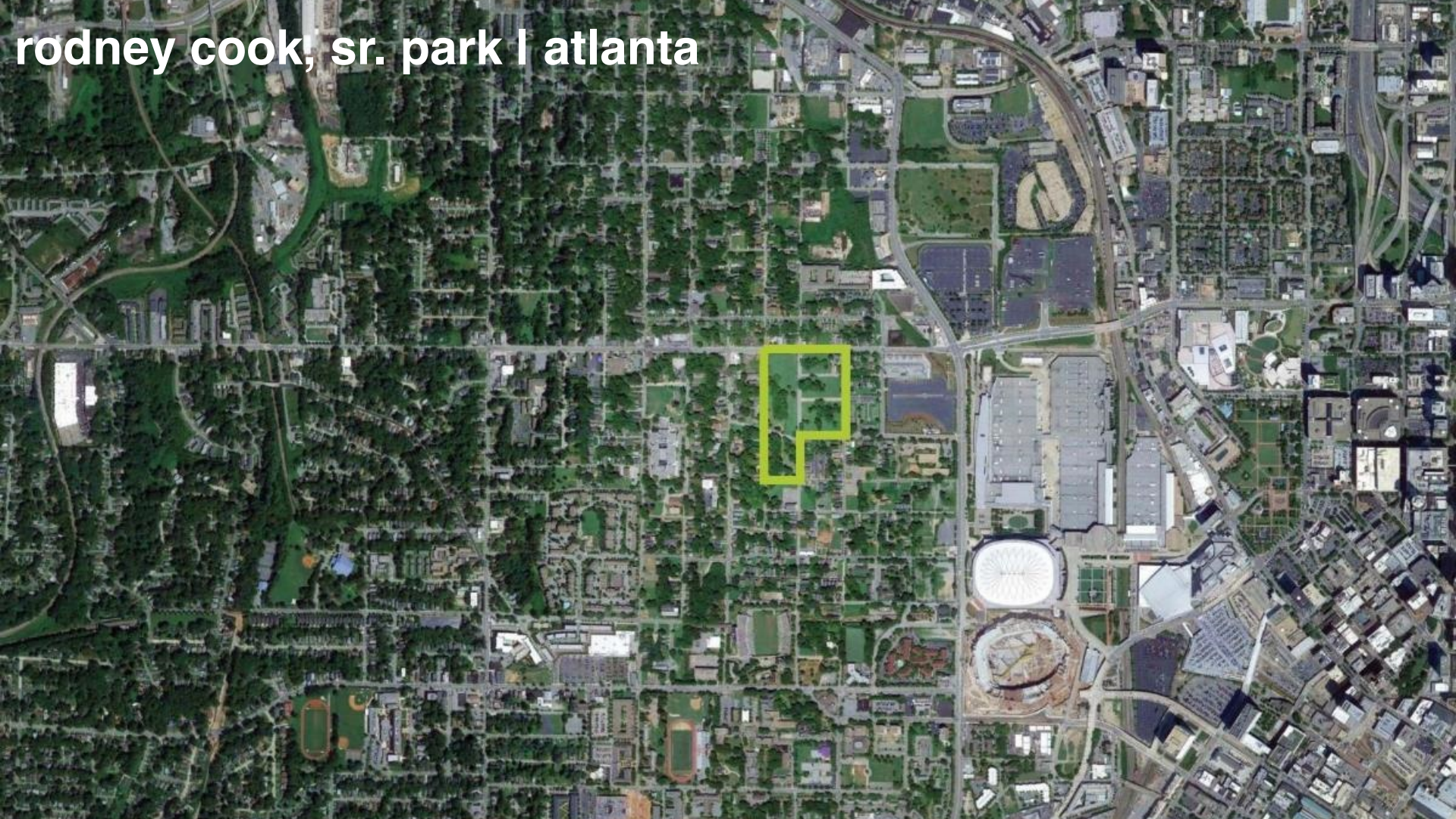
ANTHEM ON ASHLEY

H4WP

BELT LINE







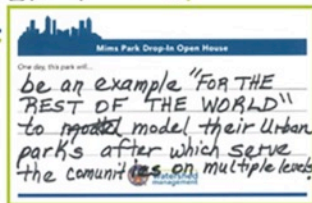
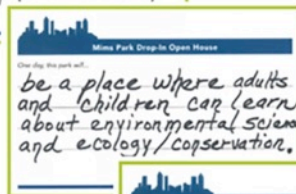
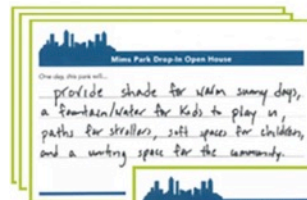
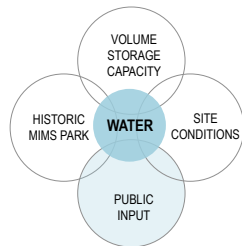
rodney cook, sr. park | atlanta



# Rodney Cook, Sr. Park

- **Client:** Trust for Public Land
- **Partners/Collaborators:** Department of Watershed, Parks Department
- **Funding Source:** Department of Watershed (pond), Private Funding (park)
- **Project Cost:** \$35 million
- **Key Features:**
  - Regional stormwater management facility
  - Public amenity
- **Key Benefits:**
  - Environmental
  - Social
  - Economic





## MIMS PARK

OLMSTED BROTHERS PRELIMINARY  
PLAN - 1908

## MIMS PARK

NATIONAL MONUMENTS FOUNDATION  
PLAN - 2014

## MIMS PARK

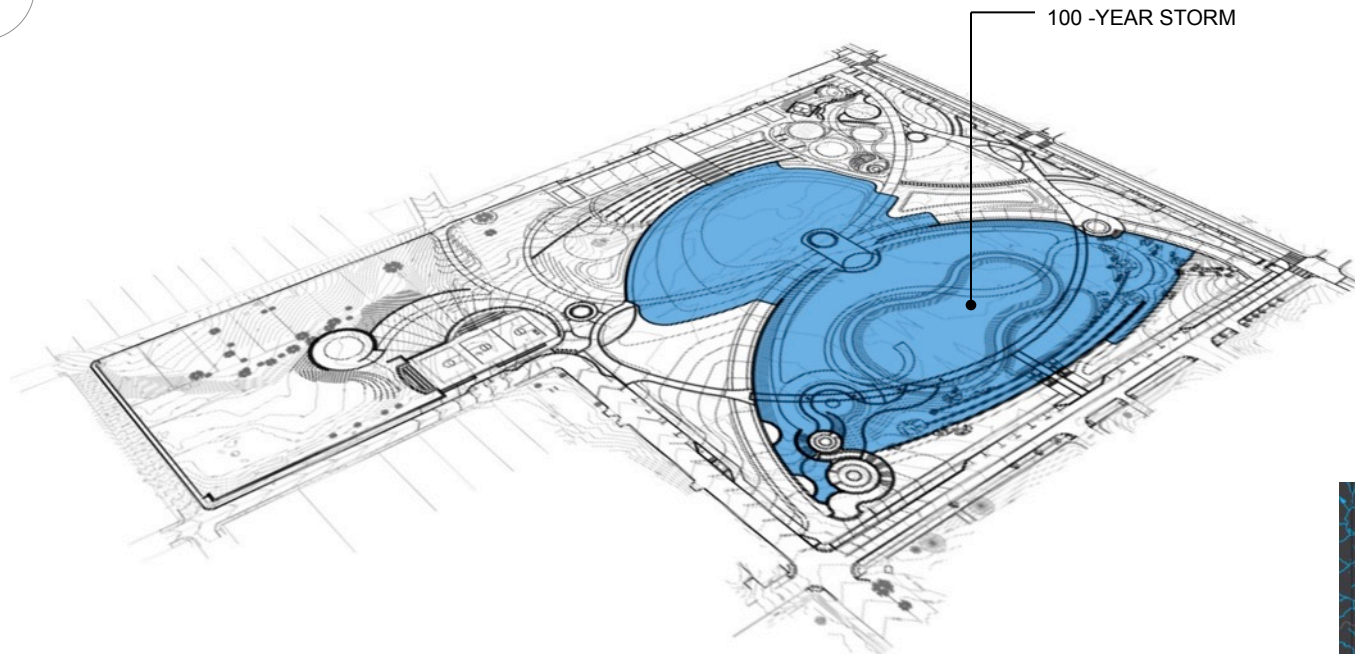
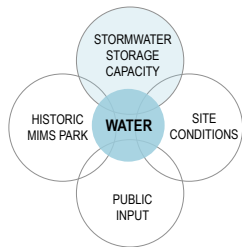
CITY OF ATLANTA, TRUST FOR PUBLIC LAND, MONUMENT FOUNDATION PUBLIC OUTREACH  
MARCH 31, 2016

PARK ELEMENTS	PARK ELEMENTS	FEELING	ACTIVE RECREATION	ARCHITECTURE	PASSIVE RECREATION	AMENITIES
Passive Recreation (Great Lawn)	Orchard	Safety	Playground	Comm/Rec Center	Learning	Benches
Social game space (Sand Courts)	Play fields	Safety	Playground	Comm/Rec Center	Learning (agriculture)	Benches
Water features	Tennis courts	Safety	Playground	Comm/Rec Center (pool)	Learning (ecology)	Benches
Plazas	Basketball courts	Safety	Playground	Amphitheater	Walking	Picnic Tables
Public Restrooms	Playground	Unity	Exercise stations	Amphitheater	Walking	Picnic Tables
Pavilions	Tot Lot	Unity	Exercise stations	Olmsted		Urban farm (veggie garden)
Picnic Area	Water features	Unity (fellowship)	Exercise stations			Urban farm (veggie garden)
	Plazas	Beauty	Basketball			Fountain
	Public Restrooms	Beauty	Basketball			Fountain
	Pavilions	Beauty	Soccer			Waterfall
	Picnic Area	Redevelopment	Soccer			Drinking fountain
	Urban farm	Redevelopment	Water park			Lake
		History	Volleyball			Job Training
		History	Skate park			
		History	Mix			
		Mosquito free	Baseball			
		Mosquito free				
		Cleanliness				
		Place for kids				
		Shade				



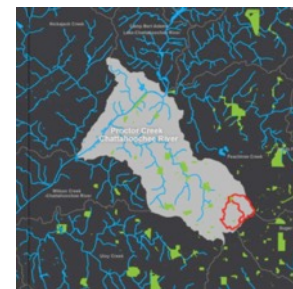
## Public Input

Public meetings, community workshops, online surveys, and stakeholder interviews were performed to gain an understanding of public needs and desires



## Stormwater Storage Capacity

Stormwater (10 million gallons maximum) is conveyed to the park's pond and raingardens and stored - this alleviates flooding and reduces combined sewer overflows into Proctor Creek.



Proctor Creek Watershed  
(Project drainage basin  
highlighted red)













# west district central park | calgary

 TRUMAN



# West District Central Park

- **Client:** Truman Development Corporation
- **Partners/Collaborators:** Calgary Water Resources, Calgary Parks Department
- **Funding Source:** Private Funding (Truman)
- **Project Cost:** \$20 million
- **Key Features:**
  - Regional stormwater management facility
  - Public amenity
- **Key Benefits:**
  - Environmental
  - Social
  - Economic



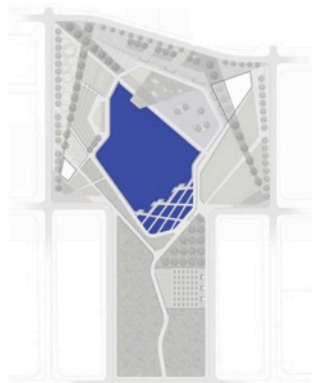




## STORMWATER MANAGEMENT



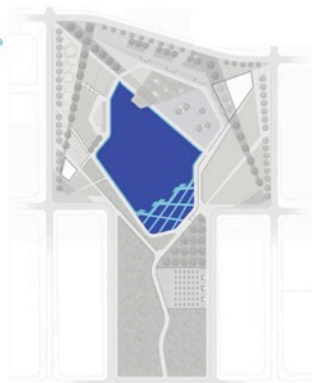
**PERMANENT POOL**  
elevation 1231.84



PUBLIC WORKSHOP | MAY 14TH 2019

## STORMWATER MANAGEMENT

**2 YEAR STORM**  
flood elevation 1233.06  
using 55-yr continuous model data  
80% impervious, no infiltration

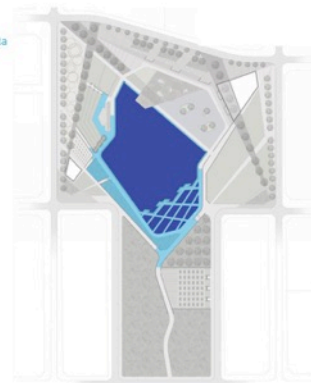


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## STORMWATER MANAGEMENT



**5 YEAR STORM**  
flood elevation 1233.48  
using 55-yr continuous model data  
80% impervious, no infiltration

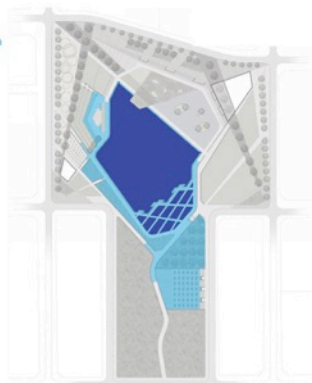


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## STORMWATER MANAGEMENT



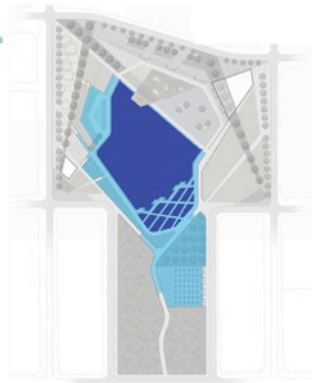
**10 YEAR STORM**  
flood elevation 1233.74  
using 55-yr continuous model data  
80% impervious, no infiltration



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## STORMWATER MANAGEMENT

**50 YEAR STORM**  
flood elevation 1234.26  
using 55-yr continuous model data  
80% impervious, no infiltration

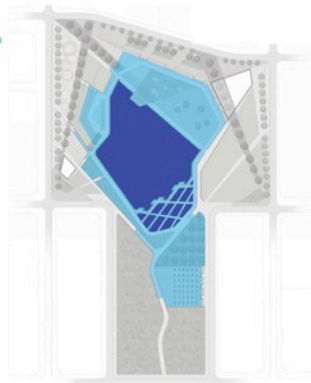


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## STORMWATER MANAGEMENT



**100 YEAR STORM**  
flood elevation 1234.47  
using 55-yr continuous model data  
80% impervious, no infiltration



PUBLIC WORKSHOP | MAY 14TH 2019













# tibbetts brook wetland restoration | the bronx

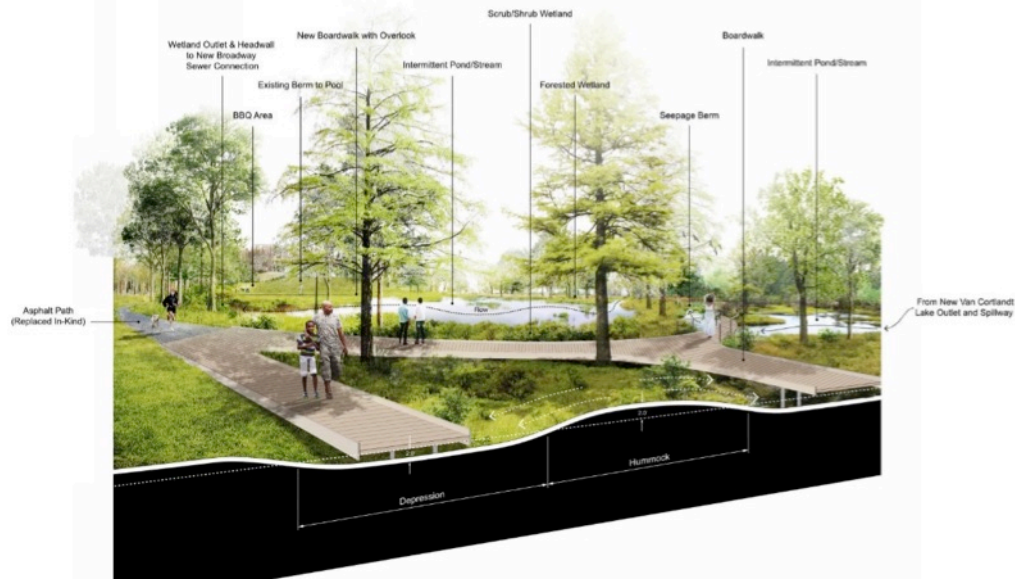




# Tibbetts Brook Wetland Restoration

- **Client:** NYC Parks
- **Collaborators:** NYC Department of Environmental Protection, Friends of Van Cortland Park, and Community Boards
- **Funding Source:** National Fish and Marine Services
- **Project Cost:** \$250,000 (for conceptual design)
- **Key Features:**
  - Enhanced wetland restoration
  - Management of base flow currently discharging to sewer system
  - New pedestrian circulation
- **Key Benefits:**
  - Additional water quality treatment
  - Potential connection to future daylighting

*Project Team: HDR, Biohabitats, and dlandstudio.*



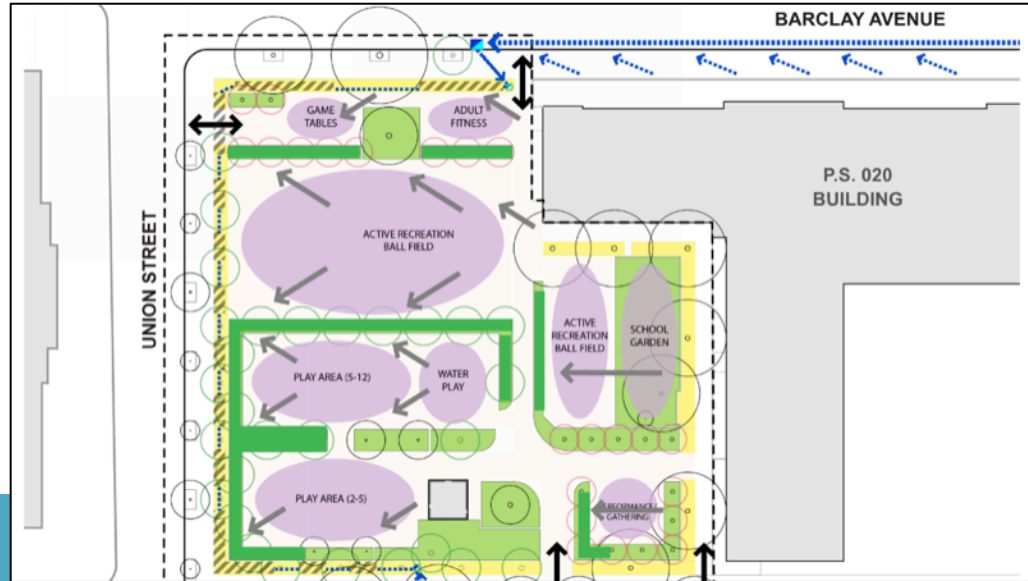




**bowne playground | queens**

# Bowne Playground

- **Client:** NYC Parks
- **Partners/Collaborators:** NYC Department of Environmental Protection
- **Funding Source:** Mayoral funds
- **Project Cost:** \$4.6 million
- **Key Features:**
  - JOP improvements and greening
  - Bioswales with underdrains and beehive grates
- **Key Benefits:**
  - Captures 120% of the 1-inch runoff from over an acre onsite and approximately an acre of surrounding right of way
  - Maximized use of open space of after rain events





## LEGEND

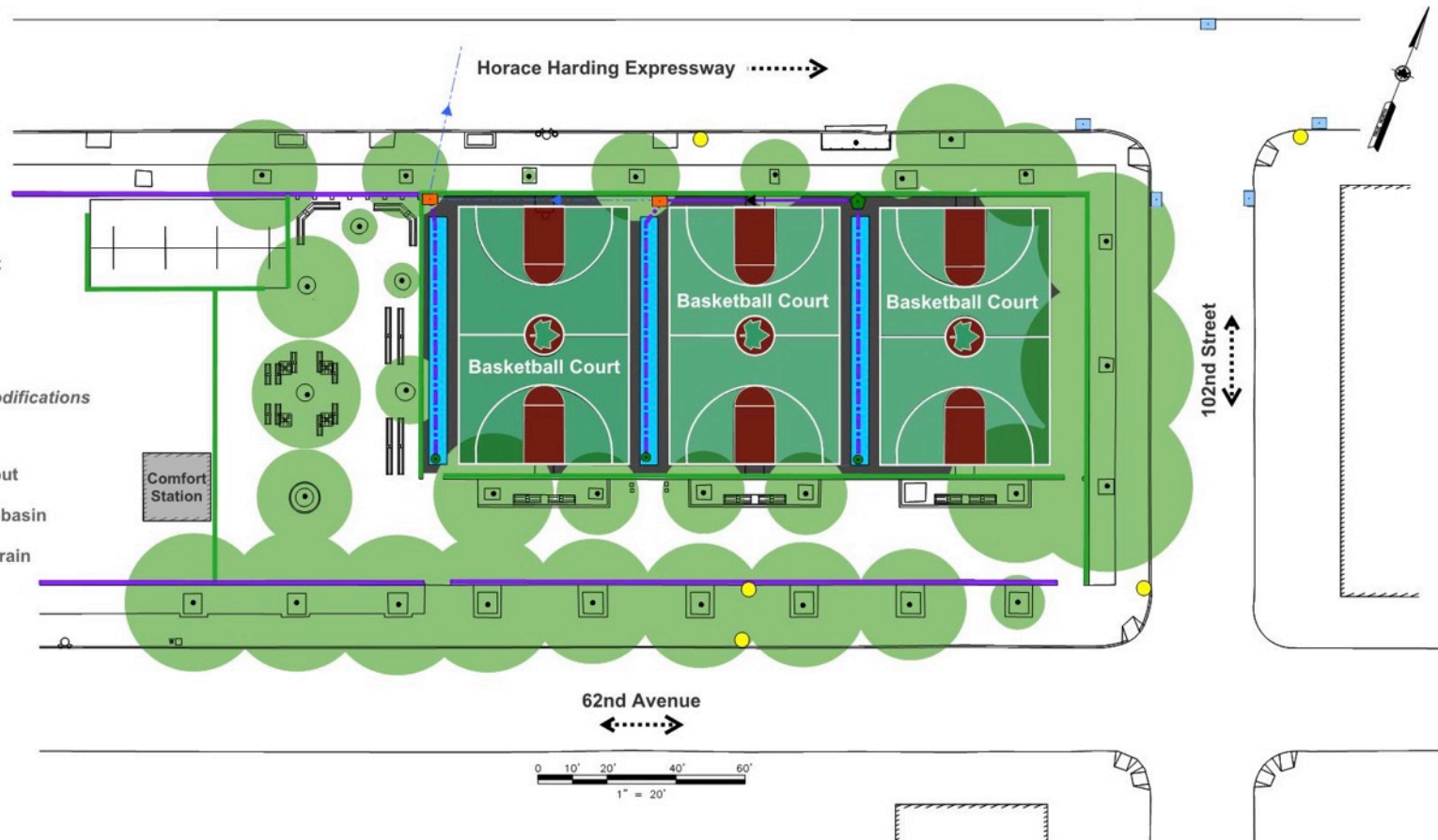
-  Vehicle Traffic
-  Storm Sewer
-  Light Pole
-  Permeable Asphalt
-  New Asphalt
-  Tree Canopy

### Proposed Drainage Structure Modifications

-  New Manhole
-  Underdrain Cleanout
-  Reconstruct Catchbasin
-  Proposed Storm Drain
-  Underdrain

### Color Seal Coat

-  Green
-  Terracotta

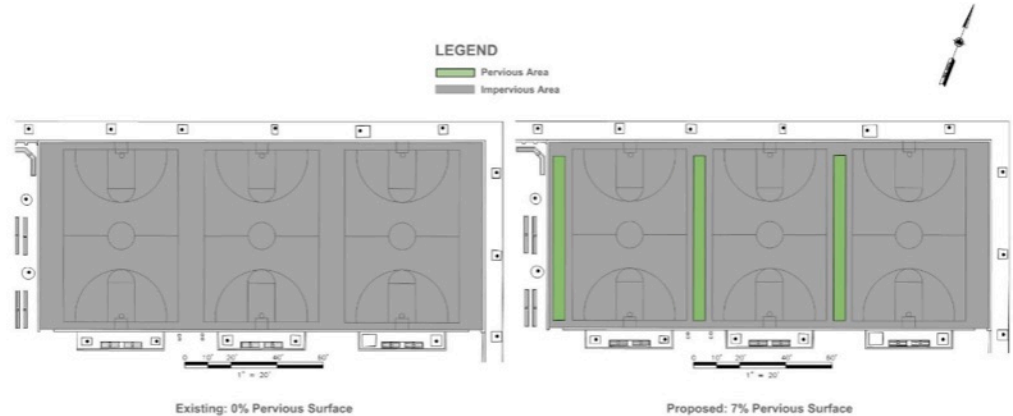


real good park | queens



# Real Good Park

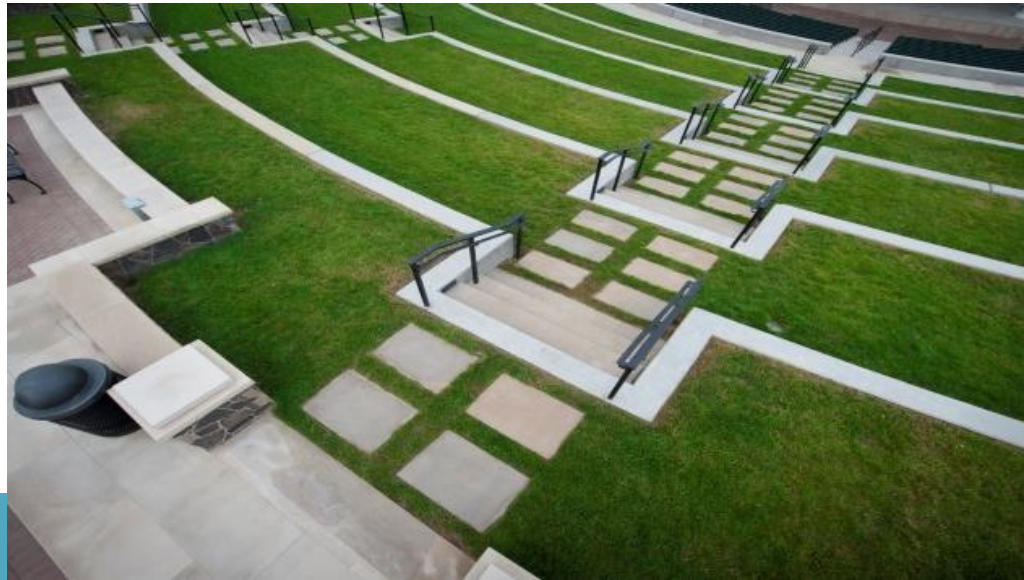
- **Client:** NYC Department of Environmental Protection
- **Collaborators:** NYC Parks
- **Funding Source:** NYC Department of Environmental Protection (as part of CSO Consent Order and BB-006 Areawide Green Infrastructure Design Contract)
- **Project Cost:** \$240,000
- **Key Features:**
  - 3 permeable pavement areas
  - Installation of underdrains and new manhole
- **Key Benefits:**
  - Exceeds 1-inch managed criteria
  - Increases perviousness from 0% to 7%
  - Project area will be restored to existing conditions with updated color seal basketball courts
  - Park users will be interacting directly with permeable asphalt





# Streamlining O&M by Design

- Design with Partnerships & Conservancies as a Goal!
- Design for Easy Maintenance
  - Aeration systems
  - Pretreatment forebays, oil & grit separators & trash racks
  - Siting inlets & outlets
- Contractor Maintenance Funding
- Identifying the Right Skill Sets & Trainings
- Maintenance & Staffing Plans
  - Activities
  - Frequencies
  - Schedules
  - Responsibilities



# Keys to Success: Location, Location, Location

- Impaired Watersheds
- Community Collaboration from Planning through Design
- Focal Point for a Neighborhood
- Invest in Problem Areas (Parks!)
- Potential Partnerships for Funding and O&M







**Together, we make great things possible.**

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