Brook Park Wetland Restoration Project
Brook Avenue at 141st Street, Bronx
Preliminary Submission to the Public Design Commission
July 2013



City of New York
Parks & Recreation
Michael R. Bloomberg, Mayor
Veronica M. White, Commissioner

Brook Park

Bronx Community Board 1

“The native meadow and wetland restoration will bridge educational activities in the urban ecosystem, providing a significant savings to the City, capturing about 17,000 gallons of water per inch of runoff before it enters the combined sewer infrastructure, potentially 1.6 million gallons of rainwater per year saved.”

PROJECT SCOPE

Project Scope

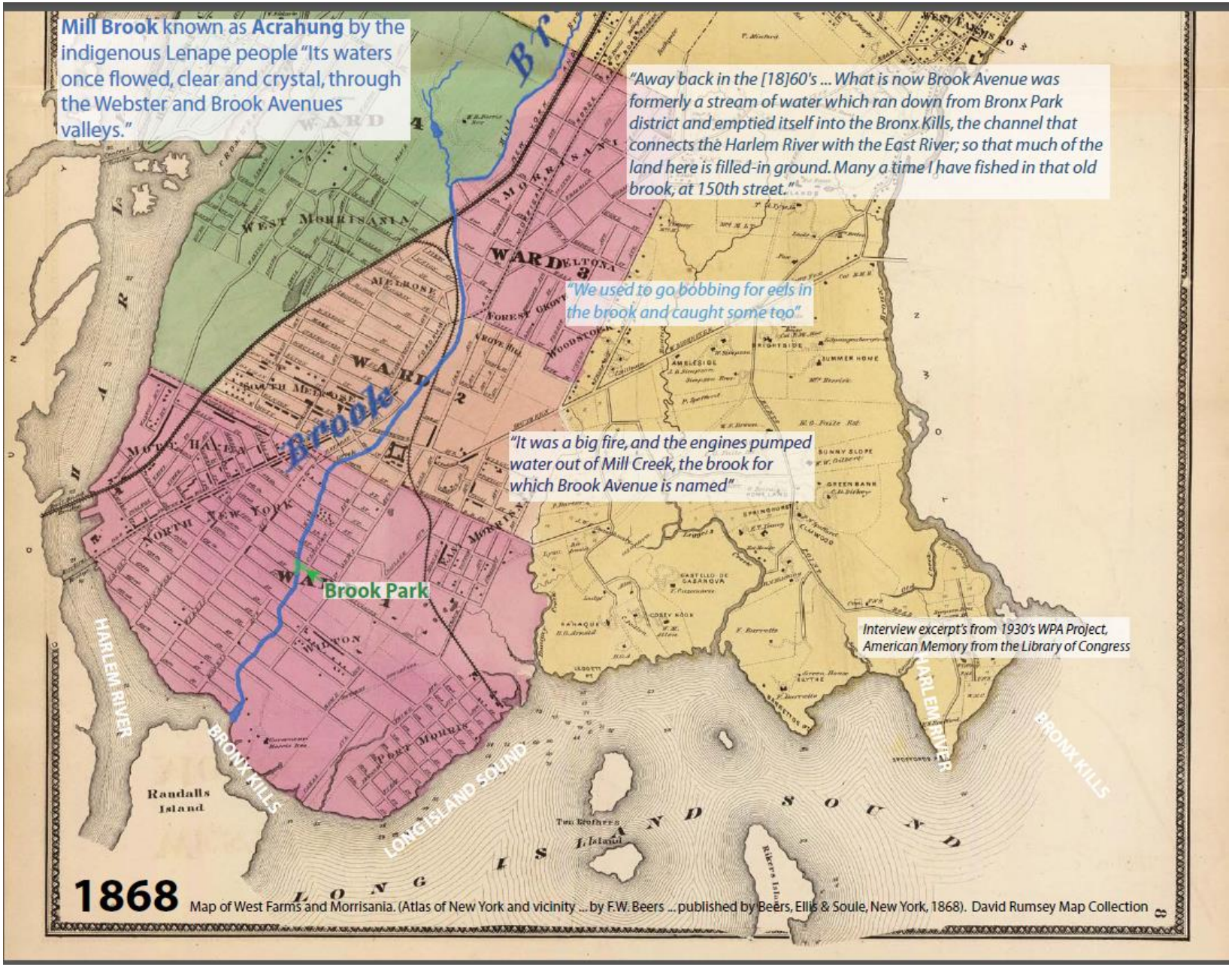
This project provides a diverse ecology in a community which is underserved by green spaces. The native meadow and wetland restoration will bridge educational activities in the urban ecosystem, providing a significant savings to the City, capturing about 17,000 gallons of water per inch of runoff before it enters the combined sewer infrastructure, potentially 1.6 million gallons of rainwater per year saved. The plants and soils this water will support promote community health and would lower the urban heat island effect in and around Brook Park. Over the course of the summer, the captured water and Brook Park plantings will contribute the equivalent of about two thousand tons of air conditioning.

Beyond the community process of planning and renewal, this project will install illustrated signage showing the freshwater history of Brook Park's lost waterway, the old Mill Brook called Acrahung by the native American's, which ran directly through the project site up until the end of the 19th century. This Bronx and New York History will be shown alongside emerging ecological technologies- how the park uses existing urban infrastructure to develop green infrastructure, working to clean water and air, and lower the heat island of the neighborhood.

Project Scope (continued)

The Brook Park Wetland Restoration project will create a native plant meadow and wetland. Rainwater, harvested from adjacent buildings, will be diverted prior to entering the combined-sewer into above ground cistern to hold water for the native plantings as well as a below-grade constructed aquifer as used in NYC DEP and other Bronx and NYC projects to maintain wetland water levels. A ecosystem assessment will determine native plantings and diverse species habitat will maintain a healthy wetland that will naturally abate mosquitos.

Funding for the project implementation and construction provided by Friends of Brook Park with full funding via WCS-NOAA Regional Partnership Grant: Contribution of Congressman Jose E. Serrano, the National Oceanic and Atmospheric Administration and the Wildlife Conservation Society. All work will be a coordinated with New York City Department of Parks & Recreation. Community stewardship will ensure the success of the project over the long-term.


Mill Brook known as Acrahung by the indigenous Lenape people "Its waters once flowed, clear and crystal, through the Webster and Brook Avenues valleys."
"Away back in the [18]60's ... What is now Brook Avenue was formerly a stream of water which ran down from Bronx Park district and emptied itself into the Bronx Kills, the channel that connects the Harlem River with the East River; so that much of the land here is filled-in ground. Many a time I have fished in that old brook, at 150th street."
"We used to go bobbing for eels in the brook and caught some too"
"It was a big fire, and the engines pumped water out of Mill Creek, the brook for which Brook Avenue is named"
Brook Park
Interview excerpt's from 1930's WPA Project, American Memory from the Library of Congress
1868
Map of West Farms and Morrisania. (Atlas of New York and vicinity ... by F.W. Beers ... published by Beers, Ellis & Soule, New York, 1868). David Rumsey Map Collection


Mill Brook Watershed
THE BRONX
Map of New York City

DESIGN INTENTION AND PLANNING PRINCIPLES

Design intention and planning principles

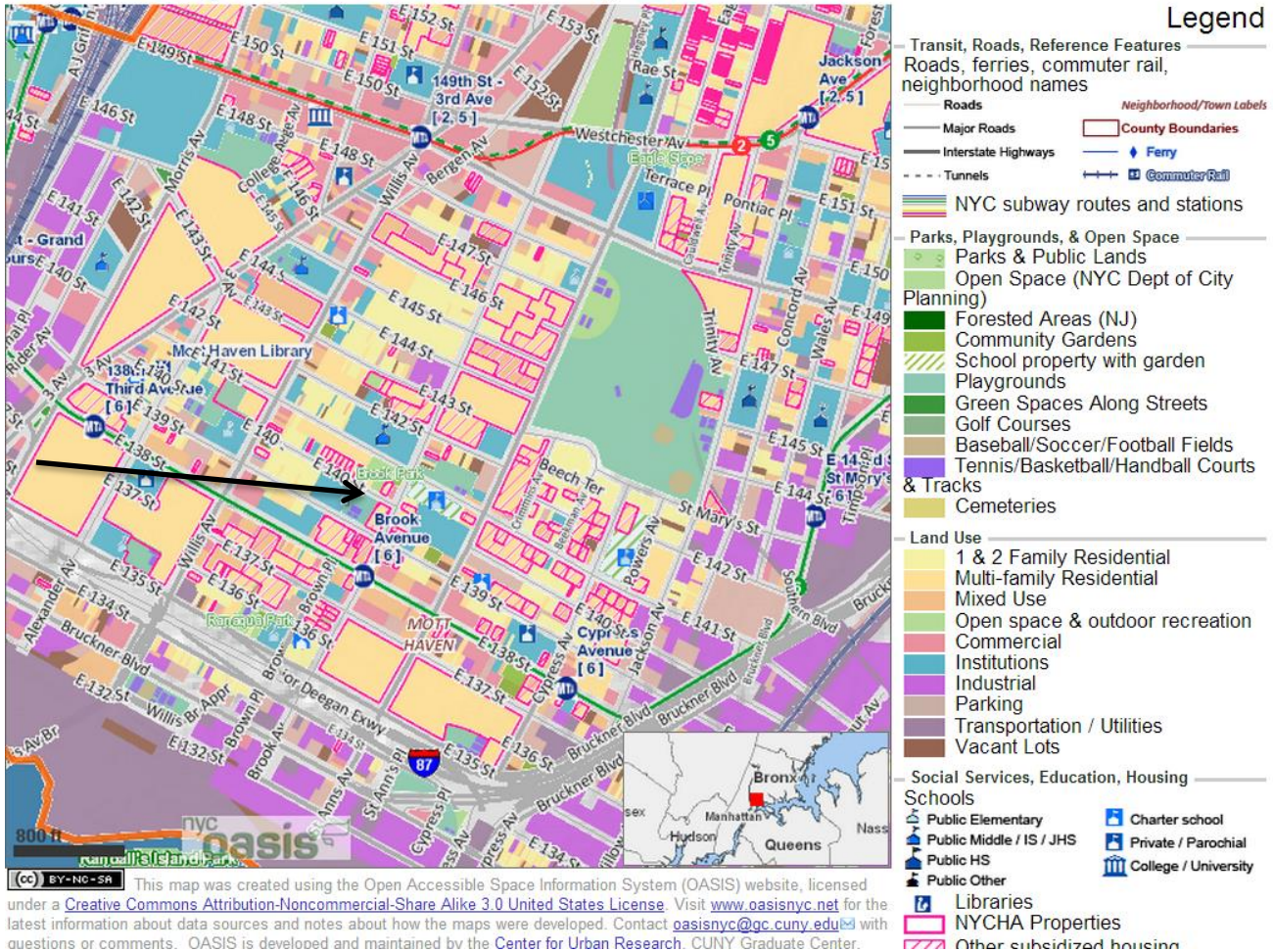
The Brook Park Wetland Restoration plan includes developing (3) flowing wet meadow pools providing habitat for native plants and aquatic life. Seed production of some of the plantings as well as the habitat they provide will attract and support migrating warblers, as well as sparrows, finches and other birds. The first two smaller pools will flow into a larger pool, and all pools will be impermeably lined. Rainwater from the twenty eight adjacent townhouses on the northwest side of the park will flow into Brook Park's constructed aquifer for water storage and habitat creation. This same methodology has been used by the Gaia Institute and others in a number of NYC DEP and other Bronx projects.

Solar powered pumps in the collection chamber will move water into a sub-surface detention arrays which feeds the Brook. The proposed native meadow and wetland planting includes some thirty five species, including obligate and facultative wetland plants, as well as plants which can withstand dryer habitat. These will include graminoids, forbs, shrubs and vines. Green frogs and fish will provide mosquito control also reducing overall local mosquito population, and the wet and planted areas would extend the habitat of salamanders and toads native to southeastern New York State. Several species of dragonflies would use the wetland system as a breeding ground as well.

COMMUNITY/NEIGHBORHOOD CONTEXT

Brook Park is located in the Mott Haven neighborhood of the South Bronx in Community Board 1 on Brook Avenue between 140th and 141st Streets.





Brook Park Location and Community Context

Community/neighborhood context

Brook Park, located in the Mott Haven neighborhood of Bronx Community Board 1, has experienced a slight increase in population (census tract 39). In particular, the under 24 year old population is higher than the rest of the Bronx and the City as a whole. The median age here is 29.8, while the Bronx is 32.8 and the city is 35.5. It is expected that this younger population will seek and use parks at a greater frequency.

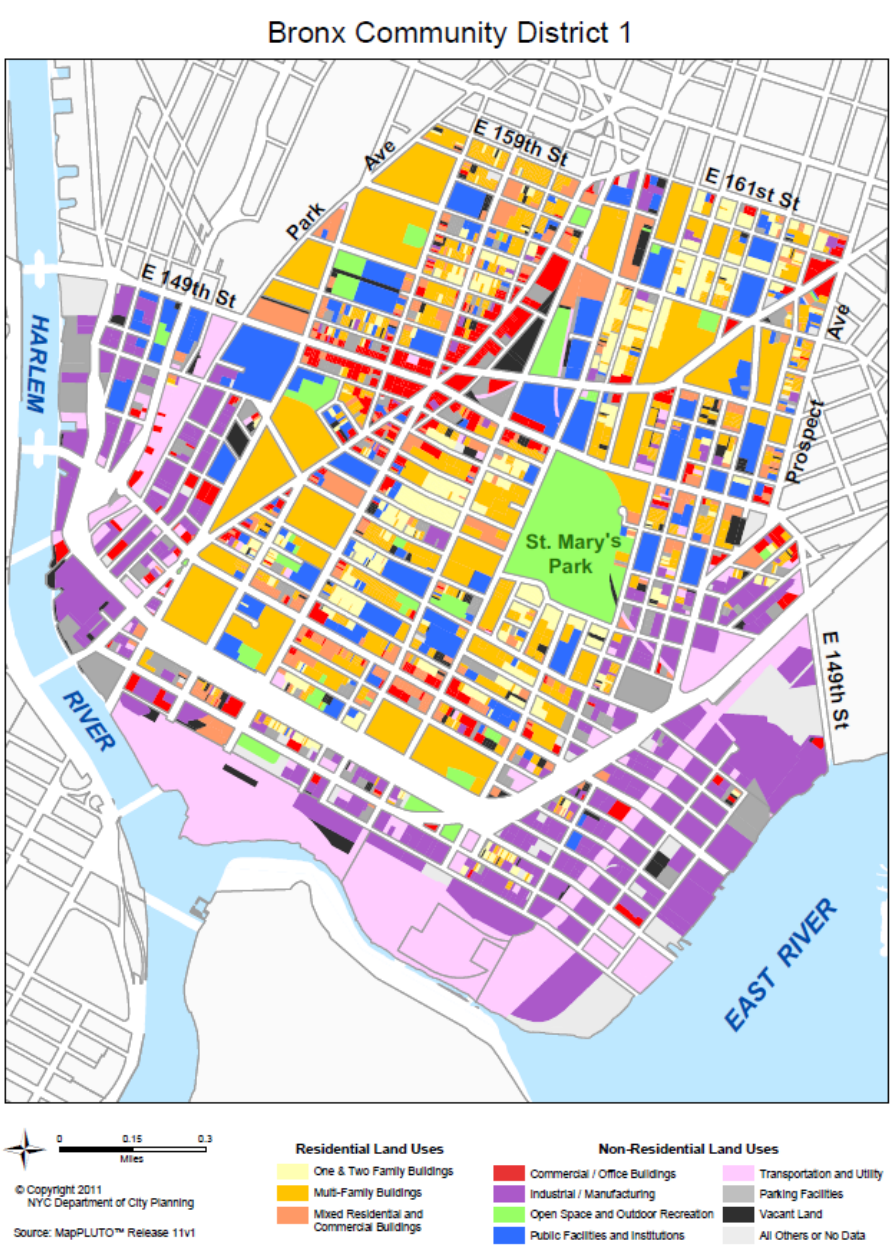
The six census tracts surrounding Brook Park (CT 23, 25, 27.01, 27.02, 39 and 41) account for 30,614 people or one third of the community board area -- a very densely populated area, surrounded by NYCHA housing.

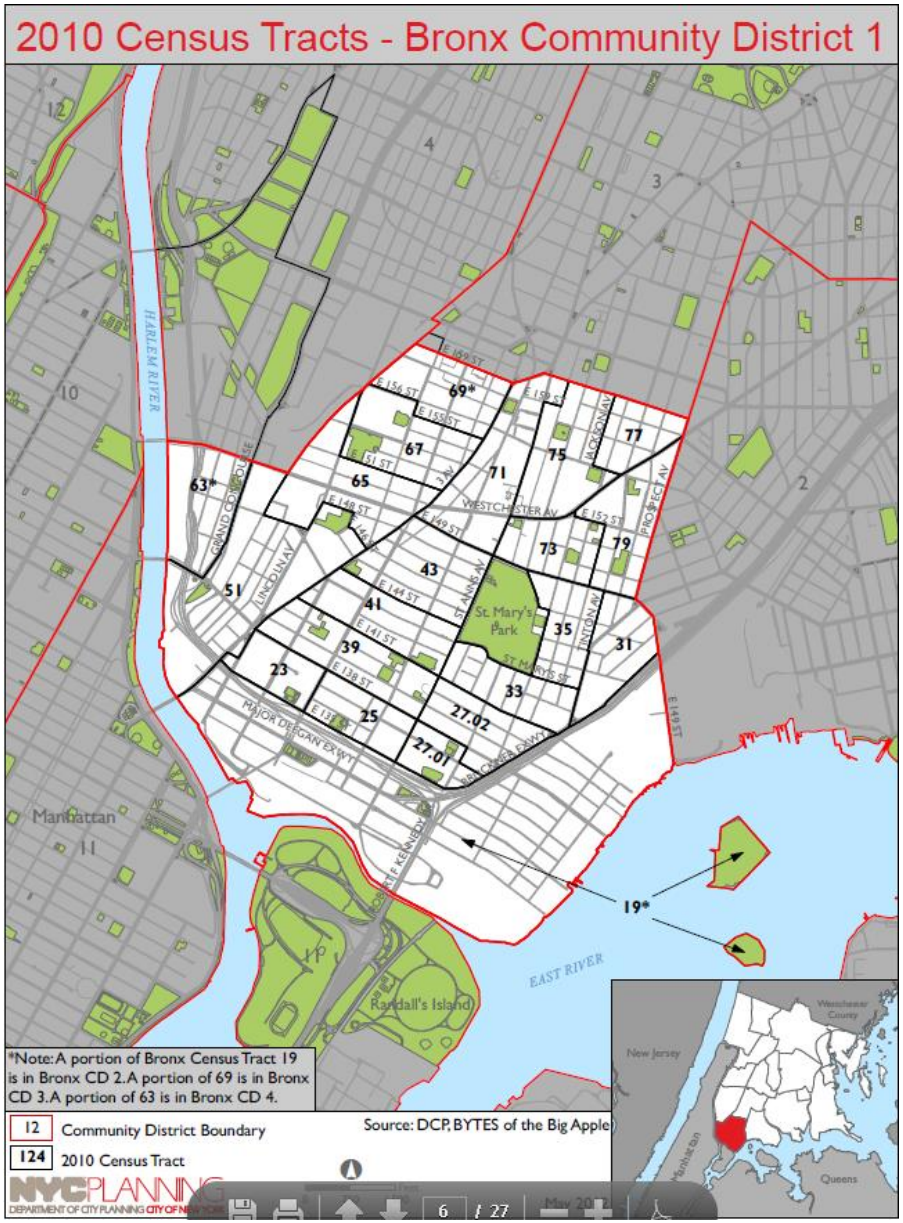
North and west of the parkland there are several educational facilities that utilize this parkland as well as the more traditional and fully paved parks and recreation spaces. The homes immediately adjacent to Brook Park, built in the 1990's, saved money on water carrying infrastructure by utilizing an aggregate discharge into the combined sewer system. What was once simply a unique cost savings strategy has now become a potential environmental benefit, and is a central feature of this project.

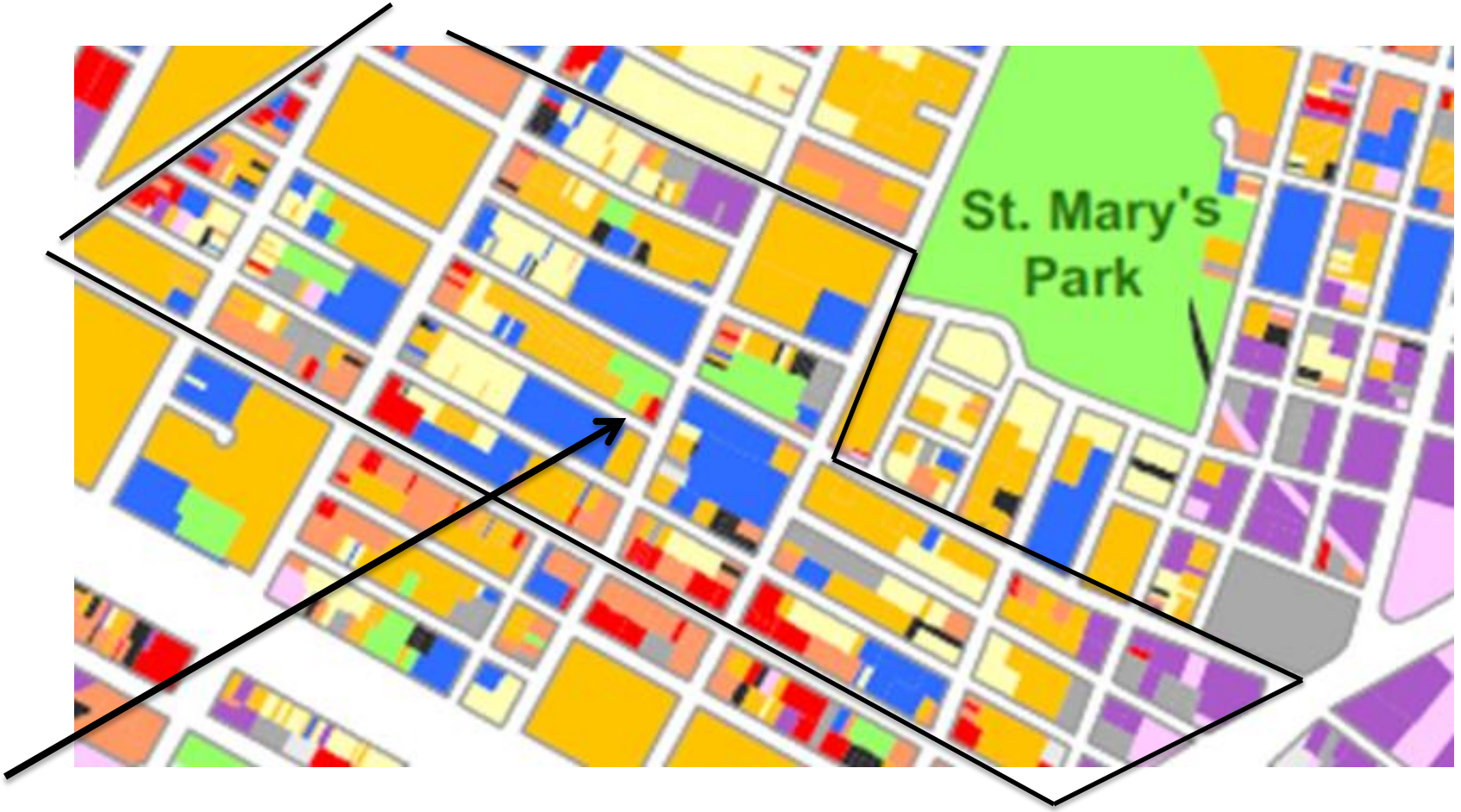
Community / neighborhood context (continued)

This project provides a much needed planted area and diverse ecological system in our community which is underserved by green spaces. Residents of the southern Bronx have fewer acres of green spaces per person than almost any other city in the country. The city's own guidelines recommend 1.5 acres of open space per thousand residents, yet the South Bronx has less than half an acre per thousand people and much of that open space is asphalt, concrete or artificial turf. The environmental restoration would provide a much needed bridge for educational activities to include a historic resource linking wetland ecology with the current urban ecosystem and the pre-existing rural landscape.

Interest in the restoration of the old brook habitat has emerged from years of extensive community consultations resulting in design collaborations with Mott Haven Prep and Pueblo en Marcha with exhibitions at the local public library. As part of the Appendix you will find a selection of letters from a sample of our community partners, which include local schools and organizations committed to the long-term success of this effort. You will find letters from Bronx Helpers of the New Settlement Apartments, ASPIRA, United Confederation of Taino People, NYC Audubon, and Council on the Environment of NYC's Water Resources Group.


Bronx Community District 1
E 149th St
Park Ave
E 159th St
E 161st St
Prospect Ave
HARLEM
RIVER
St. Mary's Park
E 149th St
EAST RIVER
0 0.15 0.3
Miles
© Copyright 2011
NYC Department of City Planning
Source: MapPLUTO™ Release 11v1
Residential Land Uses
One & Two Family Buildings
Multi-Family Buildings
Mixed Residential and Commercial Buildings
Non-Residential Land Uses
Commercial / Office Buildings
Industrial / Manufacturing
Open Space and Outdoor Recreation
Public Facilities and Institutions
Transportation and Utility
Parking Facilities
Vacant Land
All Others or No Data


2010 Census Tracts - Bronx Community District 1
HARLEM RIVER
Manhattan
EAST RIVER
Randall's Island
St. Mary's Park
*Note: A portion of Bronx Census Tract 19 is in Bronx CD 2. A portion of 69 is in Bronx CD 3. A portion of 63 is in Bronx CD 4.
12 Community District Boundary
124 2010 Census Tract
Source: DCP, BYTES of the Big Apple
NYCPLANNING
DEPARTMENT OF CITY PLANNING CITY OF NEW YORK



0 0.15 0.3
Miles

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NYC Department of City Planning

Source: MapPLUTO™ Release 11v1

Residential Land Uses

- One & Two Family Buildings
- Multi-Family Buildings
- Mixed Residential and Commercial Buildings

Non-Residential Land Uses

- Commercial / Office Buildings
- Industrial / Manufacturing
- Open Space and Outdoor Recreation
- Public Facilities and Institutions
- Transportation and Utility
- Parking Facilities
- Vacant Land
- All Others or No Data

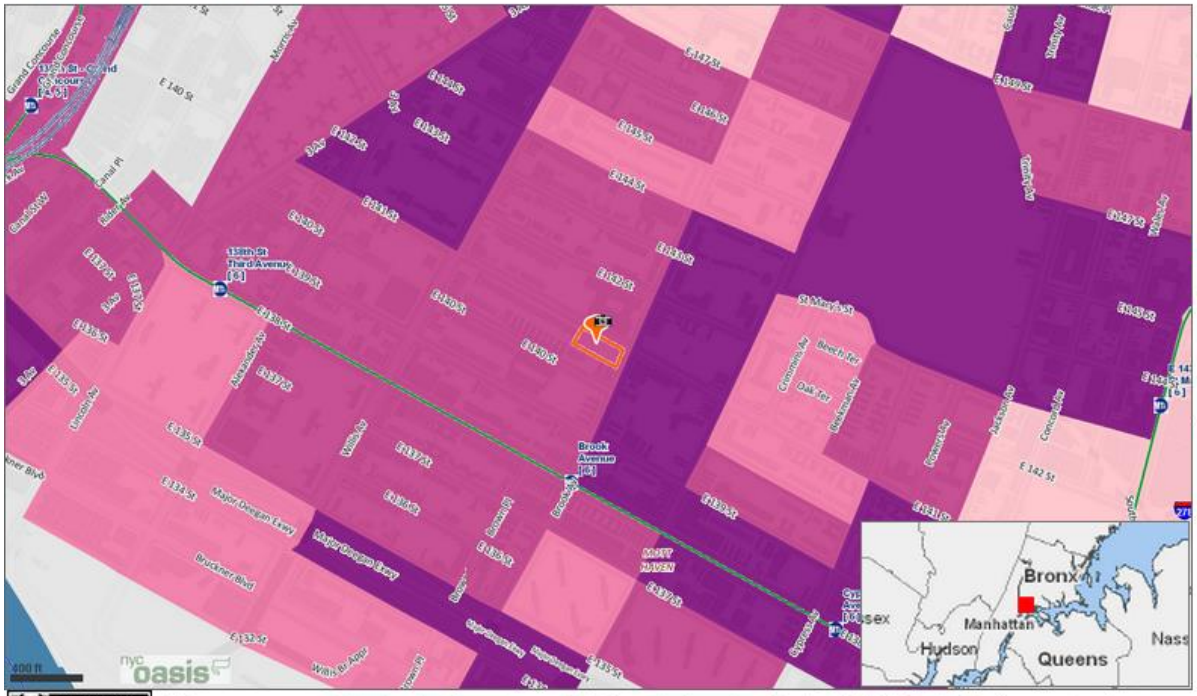


Change in Total Population, 2000 to 2010
by Census Tract
Bronx Community District 1

Census Tract	Total Population		Population Change, 2000-2010	
	2000	2010	Number	Percent
19*	1,584	1,917	333	21.0
23	4,338	4,933	595	13.7
25	5,109	5,491	382	7.5
27.01	3,033	3,113	80	2.6
27.02	4,736	4,475	-261	-5.5
31	1,478	1,597	119	8.1
33	3,116	3,413	297	9.5
35	3,473	3,761	288	8.3
37	478	245	-233	-48.7
39	6,022	6,475	453	7.5
41	5,240	6,127	887	16.9
43	4,789	5,056	267	5.6
51	5,634	5,810	176	3.1
63*	5,885	5,280	-605	-10.3
65	4,655	5,337	682	14.7
67	6,491	6,984	493	7.6
69*	4,323	7,564	3,241	75.0
71	1,885	1,907	22	1.2
73	3,248	3,893	645	19.9
75	4,688	4,869	181	3.9
77	1,307	1,927	620	47.4
79	6,598	6,733	135	2.0

* Census tract is within two or more community districts. Data are for entire census tract.

Population Characteristics for Youth living around Brook Park



(cc) BY-NC-SA This map was created using the Open Accessible Space Information System (OASIS) website, licensed under a Creative Commons Attribution-Noncommercial-Share Alike 3.0 United States License. Visit www.oasisnyc.net for the latest information about data sources and notes about how the maps were developed. Contact oasisnyc@gc.cuny.edu with questions or comments. OASIS is developed and maintained by the Center for Urban Research, CUNY Graduate Center.

Table SF1-DP CD: Demographic Profile - New York City Community Districts
2000 and 2010

Bronx Community District 1	2000		2010	Change 2000-2010		
	Number	Percent	Number	Percent	Number	Percent
Total Population	**82,159**	**100.0**	**91,497**	**100.0**	**9,338**	**11.4**
White Nonhispanic	1,097	1.3	1,428	1.6	331	30.2
Black Nonhispanic	21,272	25.9	23,680	25.9	2,408	11.3
Asian and Pacific Islander Nonhispanic	420	0.5	542	0.6	122	29.0
Other Nonhispanic	392	0.5	393	0.4	1	0.3
Two or More Races Nonhispanic	774	0.9	567	0.6	(207)	-26.7
Hispanic Origin	58,204	70.8	64,887	70.9	6,683	11.5
Female	44,253	53.9	48,615	53.1	4,362	9.9
Male	37,906	46.1	42,882	46.9	4,976	13.1

The addresses of each parcel of Brook Park are:

94 East 141 Street, Bronx 10454, Owner: Parks and Recreation, Block 2285 Lot 42, Lot area: 25,988 sq. ft. (255.23' x 100.45')

505 East 140 Street, Bronx 10454, Owner: Parks and Recreation, Block 2285 Lot 51, Lot area: 7,500 sq. ft. (75' x 100')

Brook Park Sustainability:

Paved to Permeable, Ecologically Diverse and Productive

SUSTAINABILITY OBJECTIVES

Sustainability Objectives

New York City needs best management practice (BMP) sites that lessen the impact of rain on the combined sewer system. The NYC DEP and Mayor's Office of Long Term Planning and Sustainability is aggregating these BMP sites which include rainwater harvesting in community gardens throughout the city. Brook Park would be a model project in a New York City park for innovative use of rainwater harvesting practices to restore a valuable wetland ecosystem. Our stewardship activities and regular consistent teams of volunteers will be on-site during and after the funding period to assess concerns and ecological contributions, and to ensure the continued success of this project. Local educators will be trained in wetland stewardship, and made aware of the ecological technologies that have made this and other green infrastructure projects possible.

Location of interconnected roofs of the 28 townhouses directly adjacent to the northwest of Brook Park offers a special sustainability advantage. The area of this rooftop watershed effectively doubles the water collection area of the park. This single feature would allow this landscape to multiply ecological productivity, carbon capture and air filtration, right here in *asthma alley*, as well as cooling capacity of the urban core in the Bronx.

Sustainability Objectives, continued

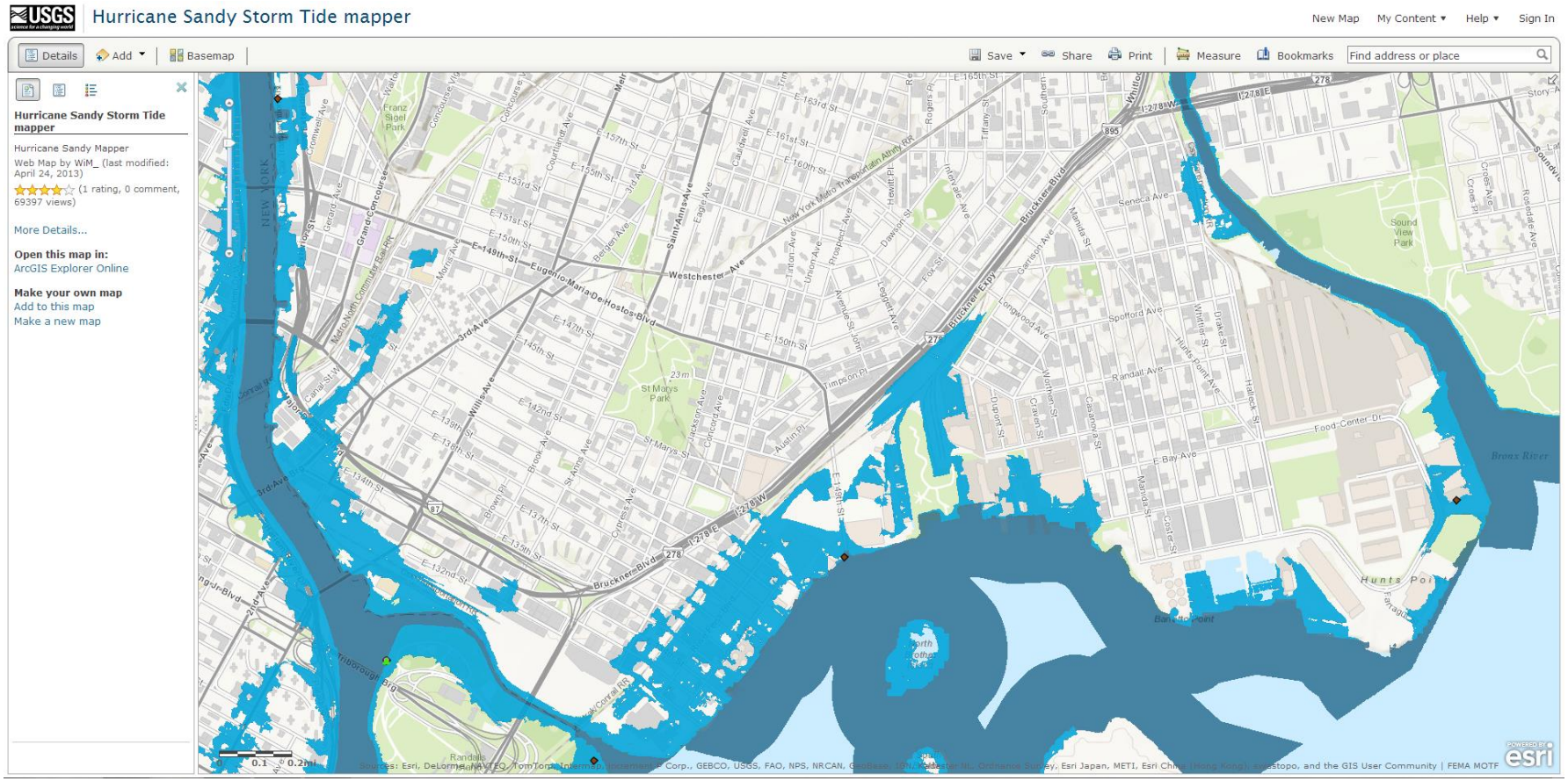
In the concrete city, where the watershed is the sewershed, we would bring our ecologically underserved South Bronx neighborhood forward by (re-)introducing a diverse freshwater ecology that brings diverse plantings and ecology back to the landscape, and thereby Brook Park back to Nature. Comparing current stream mapping to historical mapping, between 40-90% of streams in New York City have been buried or filled. Where just a few percent of the landscape was impermeable bedrock when New York City was first settled, at present, the impervious area is 75% or more of the landscape. The Brook Park Wetland Restoration will reverse this trend, and thereby help to reduce the burden on the combined sewer and protect local water bodies downstream from the Combined Sewer Overflows (CSOs) during storms by catching rain at the source. Harvesting 1.6 million gallons of pure rainwater a year to utilize locally for native habitat, will also save the City a tens of thousands of dollars spent on sewage treatment. This project, therefore, is not only about restoring meadow and wetlands but demonstrates how to establish a self-sustainable model for our children and their families.

Sustainability objectives, continued

The sustainability goal for the Brook Park Restoration is to take our under-utilized South Bronx landscape and adjacent existing stormwater infrastructure and then restore and re-create soil water holding capacity and habitat structure. This change from paved to permeable provides at once both for native plant habitat and significant functional contribution to environmental quality. The re-creation of water features together with the natural infiltration and water holding capacities of soil together function to increase biodiversity, ecological productivity, and carbon capture. These intrinsic properties of this restored landscape create a cool oasis that increases health benefits and other values of this ecological and recreational parkland by reversing the urban heat island. What was rubble and asphalt a few short years ago will become a new center of community learning about the production of nutritious and locally grown vegetables, natural history, and ecology. The new features of the park will add ecological restoration and the basics of ecological engineering to the shared experience of Brook Park's regular users.

Super Storm Sandy Surge overloaded the sewershed in the lower Bronx

This project can capture gallons of rain per storm mitigating a storm like Sandy.







Brook Park Restoration will capture gallons of water from every storm. This will not only free up the expense on the Hunts Point WWTP, but it will lessen the amount of stormwater discharging into the waterways, nullifying the extent of a future surge. The cost is minimal.

Existing Conditions

Where the wetland will grow



Potential Plant List

Grasses/Grass-like

Andropogon glomeratus (bushy bluestem)

Carex stipata (owlfruit sedge)

Calamagrostis canadensis (bluejoint)

Perennials

Asclepias incarnata (swamp milkweed)

Chelone glabra (white turtlehead)

Hibiscus moscheutos (crimsoneyed rosemallow)

Monarda didyma (scarlet beebalm)



Ferns

Athyrium filix-femina (common ladyfern)

Osmunda cinnamomea (cinnamon fern)

Shrubs

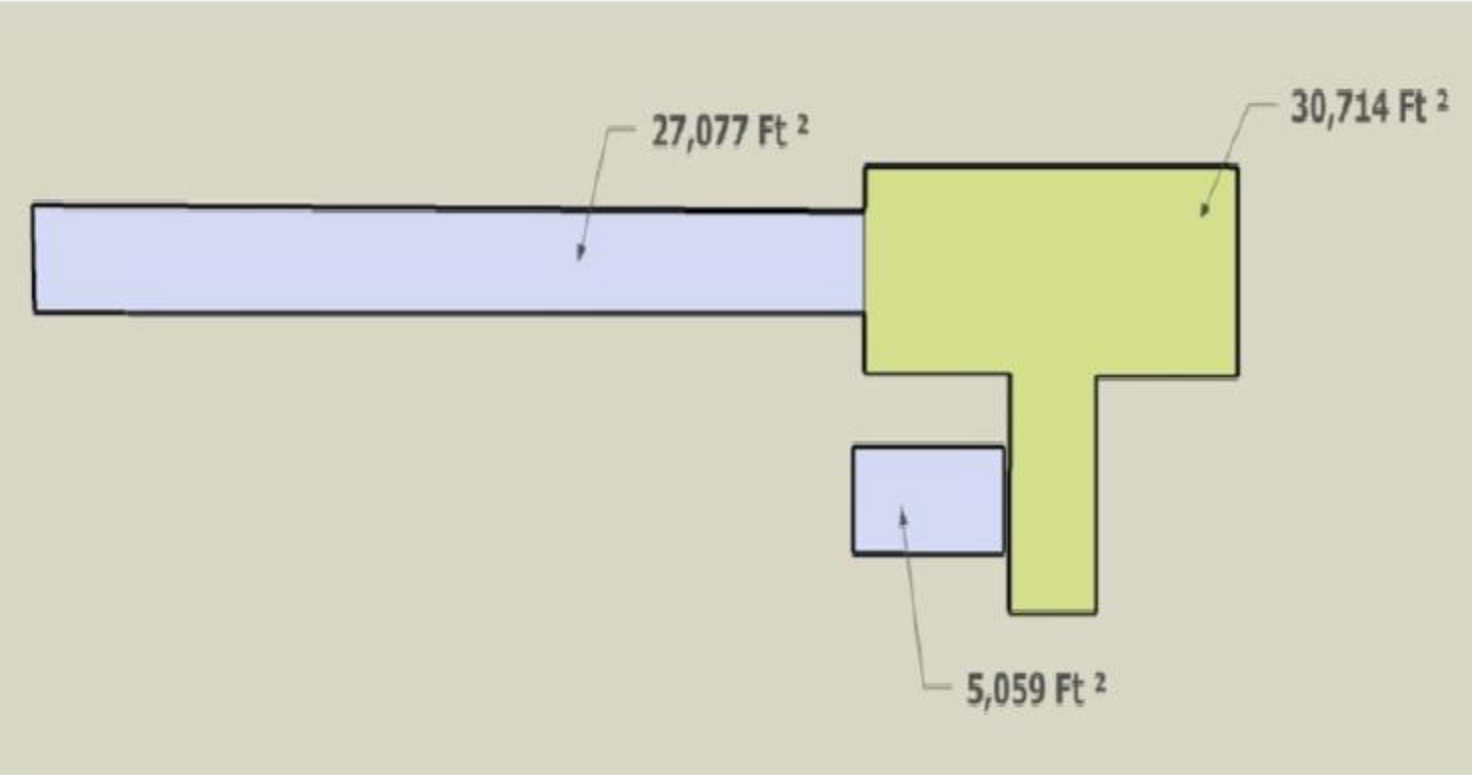
Cephalanthus occidentalis (common buttonbush)

Physocarpus opulifolius (common ninebark)

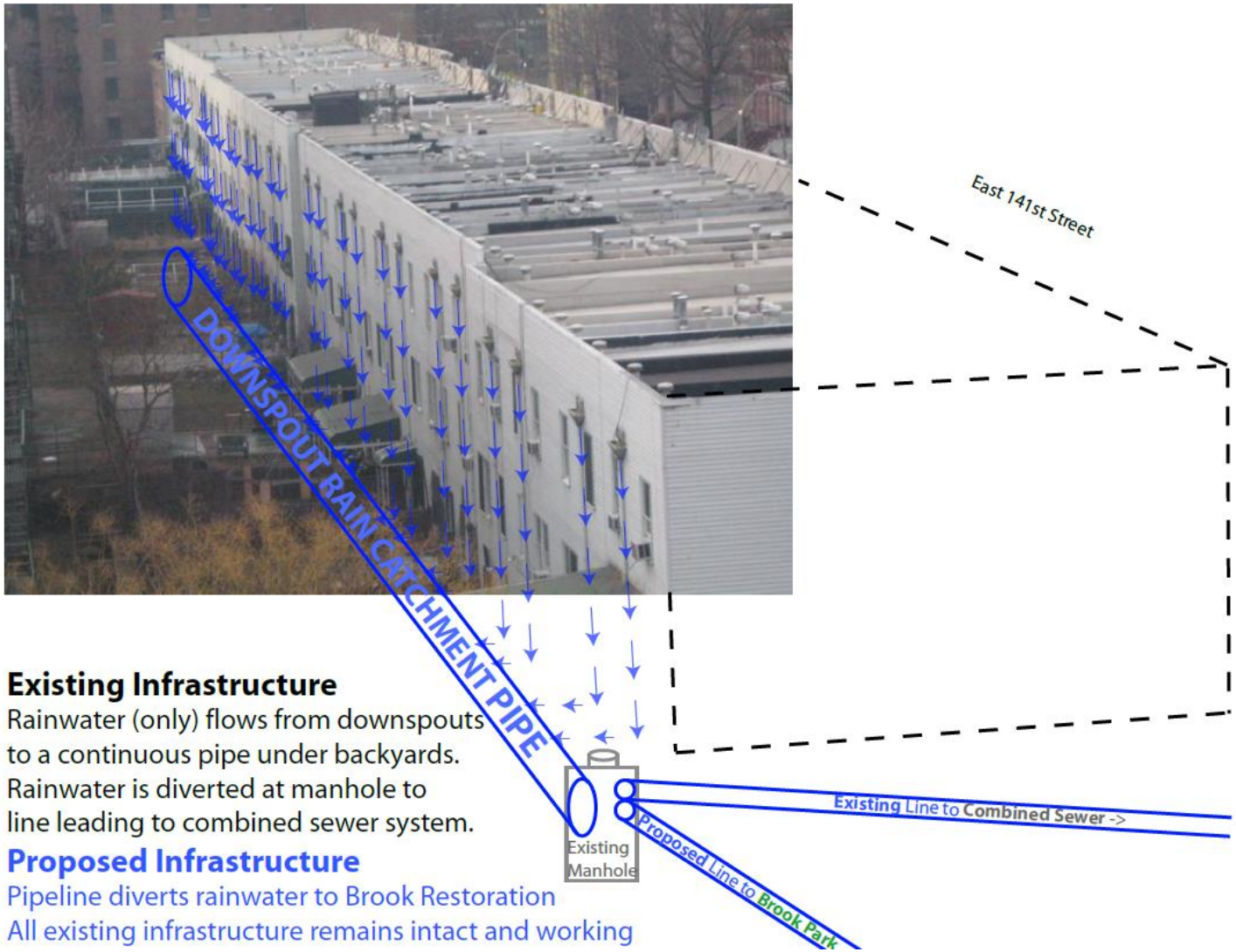
Clethra alnifolia (coastal sweetpepperbush)



Blue is the neighborhood rooftops, Green is Brook Park



Shows existing and proposed infrastructure for 28 townhouses on west side of Brook Park at 141st St.



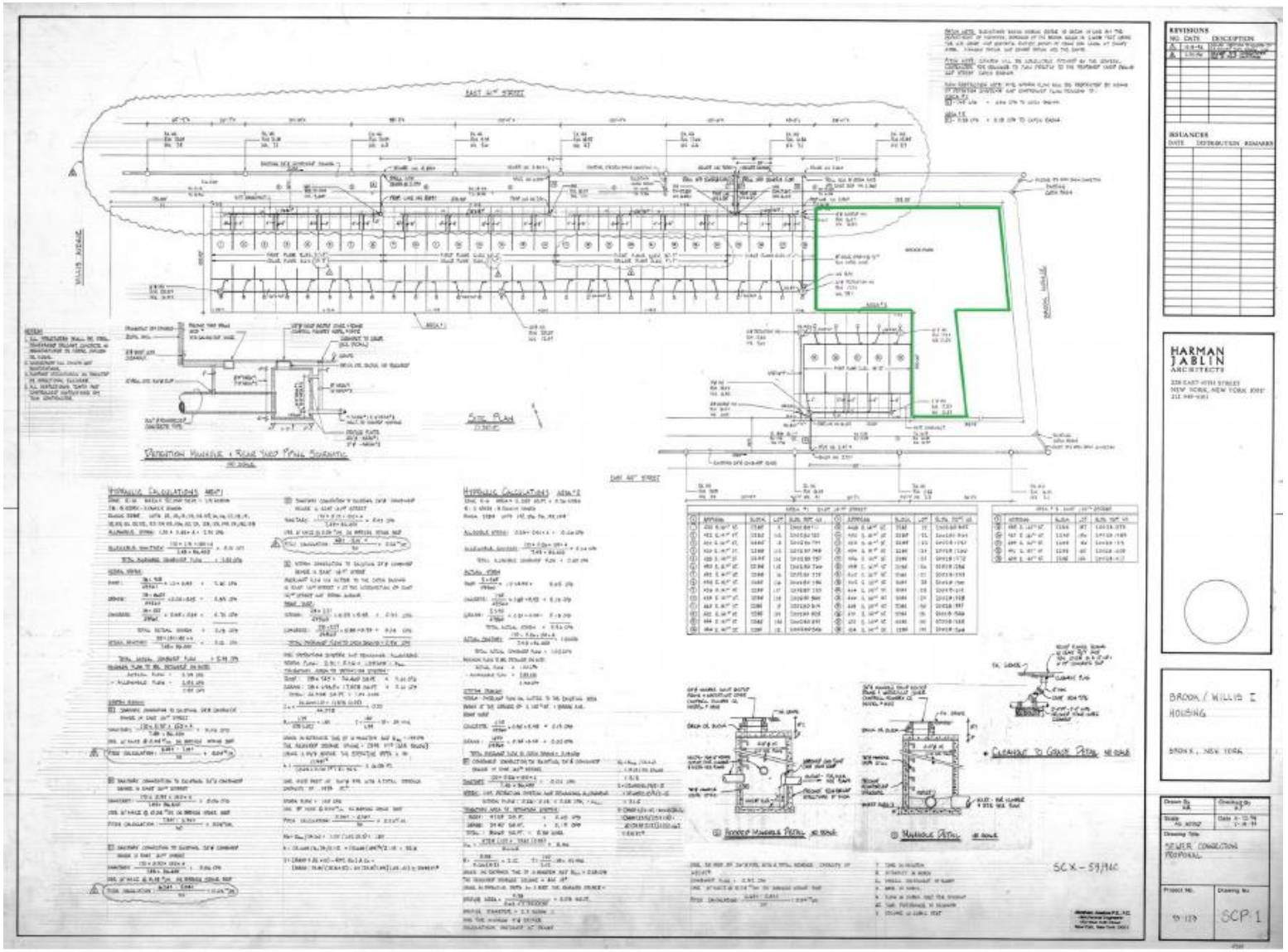
Existing Infrastructure

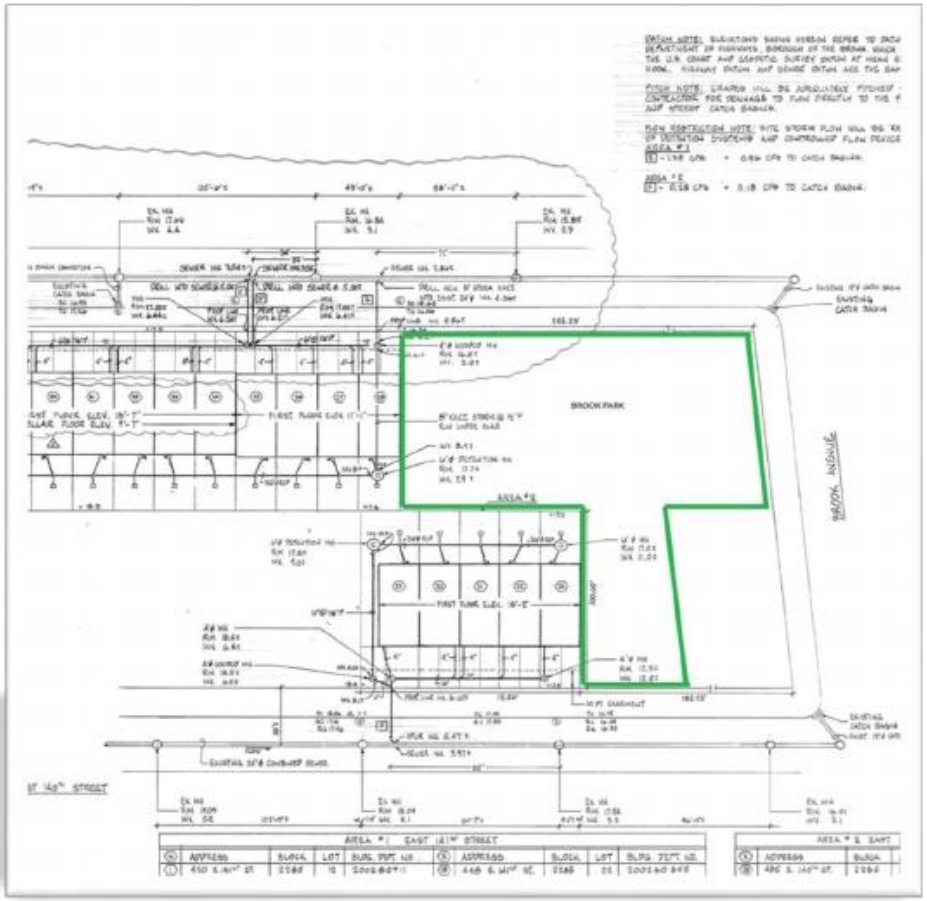
Rainwater (only) flows from downspouts to a continuous pipe under backyards. Rainwater is diverted at manhole to line leading to combined sewer system.

Proposed Infrastructure

Pipeline diverts rainwater to Brook Restoration

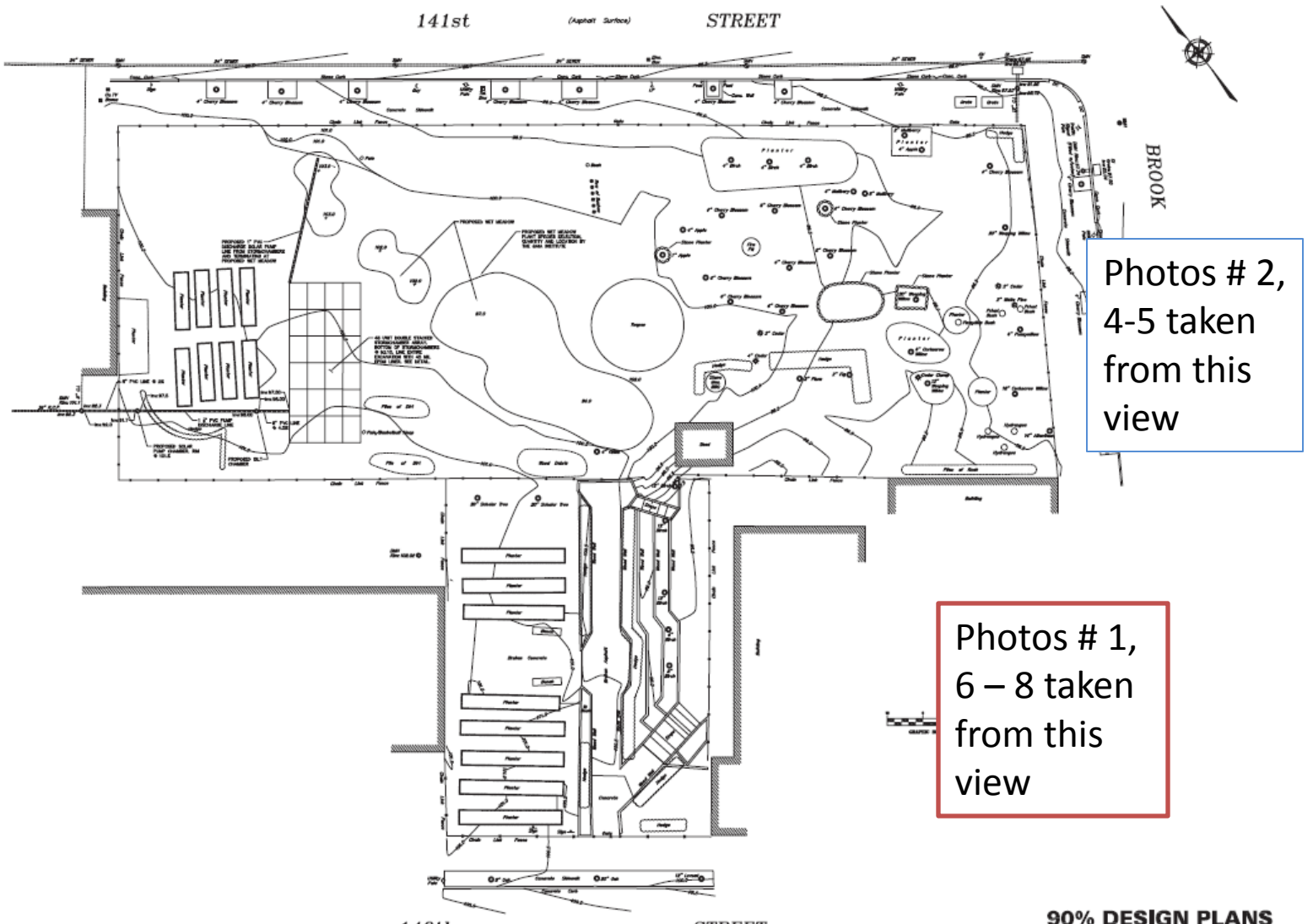
All existing infrastructure remains intact and working


REVISIONS
ISSUANCES
HARMAN JABLIN ARCHITECTS
BROOK / WILLIS I HOUSING
SEWER CONNECTION PROPOSAL
SCP-1


BROOK PARK
BROOK AVENUE
ST 44TH STREET

ATTACHMENTS

A minimum of eight (8) loose 8” x 10”color photographs of the site and surrounding area



90% DESIGN PLANS
NOT FOR CONSTRUCTION

Site Plan

Brook Park
Bronx, NY
Gala Institute
440 City Island Avenue
Bronx, NY 10464

Drawn By: RTK
Checked: JM
Approved:
AECOM Project No.:
File Name:
Date: September 23, 2015

WSP | SELLS

Sheet Number
C103

Numbered photos from 1 to 8 from left to right

1



2



3



4



5



5



7



8



100% schematic design documents (approximately 20% completion of total design) at the minimum scales indicated below.2

a. Location plan
Scale: neighborhood and borough
b. Existing and proposed site plans with contour lines
Scale: 1” = 10’ for projects <1 acre
Scale: 1” = 20’ for 1 to 5 acres
Scale: 1” = 40’ for >5 acres
c. Section-elevations
Scale: 1” = 10’ for projects <1 acre
Scale: 1” = 20’ for 1 to 5 acres
Scale: 1” = 40’ for >5 acres
d. Plant material layout and preliminary plant list

One (1) or more renderings that clearly depict the design in its context.

A preliminary materials list, samples of non-standard materials, and images/catalogue cuts of proposed equipment, lighting, fencing, paving and furnishings.