Manhattan's East Side
OPEN SPACE INDEX

NEW YORKERS
FOR PARKS

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Letter from the Executive Director

In the grid-bound blocks of New York City Council Districts 4 and 5, naturalistic metaphors abound to describe the built environment— canyons of skyscrapers and forests of buildings. But the neighborhood parks in these districts are more prosaic, serving as the front and back yards for over 300,000 residents. With the limited personal space afforded by apartment living, New Yorkers spend their lives in the streets, sidewalks, parks, and plazas of the city and place extraordinary demands on those spaces to accommodate every form of sport, leisure, and speech.

In our search for new open spaces within these densely built districts we must be exceptionally flexible and creative, considering the use of nontraditional spaces to expand the public realm. In our use of the precious few spaces that do exist here, how do we accommodate the differing needs of young and old, seekers of peace and those in pursuit of active recreation? Should neighborhood parks host greenmarkets, festivals, and fitness classes? Can one park accommodate all of these activities? Does one activity limit the ability of other visitors to enjoy the park? Which use takes precedence and how do we decide? In the limited parks and open spaces of City Council Districts 4 and 5, one person's park use can displace the uses of others, sometimes precluding public use altogether.

Ultimately, it is up to park users and neighborhood stakeholders to answer these questions and determine how to improve and expand open space resources, how to balance the need for parks with other concerns of neighborhood life, to weigh the tradeoffs of programming space within parks for particular uses. We hope the information in this report will help facilitate a local dialogue to tackle these difficult issues.

Holly Leicht
Executive Director

St. Catherine's Park

"Be kind…wait in line."

—Sign affixed to playground equipment in Catbird Playground, Carl Schurz Park

The East Side of Manhattan is one of New York's most vibrant neighborhoods. It's a teeming grid of apartment and office towers, hotels and hospitals, restaurants, bars and boutiques, stately townhouses and rows of tenements. But the line of children waiting to play at Saint Catherine's Park on First Avenue and East 67th Street paints a vivid picture of one of the East Side's biggest challenges: its glaring lack of open space.

To be sure, there are gems scattered among the East Side's dense blocks. Carl Schurz and John Jay Parks in Yorkville offer much-needed recreational opportunities and some of the best waterfront views in the city. Asser Levy Recreation Center and Playground in Kips Bay is a valued neighborhood destination, poised to expand this year. The recently opened Four Freedoms Park on Roosevelt Island has been lauded as an architectural masterpiece, and of course, for those who live in the western part of the area, there's the most popular urban park in the world, Central Park.

But Manhattan's Council Districts 4 and 5 (CD4 and CD5) still fall short of meeting nearly all of New Yorkers for Parks' (NY4P) 15 New York City-specific benchmarks for neighborhood open space. From overall active and passive open space to environmental sustainability, the numbers reflect an urgent need for improvement. Even when the area's ubiquitous privately owned public spaces (known as POPS) are taken into account, the East Side still doesn't meet our Open Space Index standards.

Given the commercial and residential density and scant undeveloped land in the study area, these failures aren't surprising. And because these challenging conditions are unlikely to change, addressing the East Side's dearth of open space requires thinking outside the realm of traditional park expansion. How?

REIMAGINING UNDERUTILIZED PUBLIC SPACES through expanding successful initiatives like Schoolyards-to-Playgrounds and the Department of Transportation's innovative Plaza Program.

PAIRING NEW DEVELOPMENT WITH OPEN SPACE IMPROVEMENTS. As development plans are proposed for the East Side, nearby open space enhancements or expansion should accompany them. For example, Memorial Sloan-Kettering Cancer Center has proposed funding enhancements to Andrew Haswell Green Park, located at the base of the Queensboro Bridge, as mitigation for constructing a new hospital building at East 73rd Street. The Bloomberg Administration's proposed rezoning of Midtown East presents another potential opportunity to offset the impacts of additional density with new open space and public infrastructure improvements.

REALIZING THE FULL POTENTIAL OF THE EAST RIVER WATERFRONT. There have been numerous inspired plans and studies for improving public access to the waterfront. It's time to act on them to create a seamless waterfront esplanade along the East River.

These ideas are just a starting point, but with this report as a springboard, we hope stakeholders in Council Districts 4 and 5 will develop a blueprint for how a dense urban community can expand and improve its public realm. The challenge is great, but so is the payoff to those who call the East Side of Manhattan home.

Open Space Index:
An Overview

New Yorkers for Parks developed the Open Space Index in 2008 as a tool to guide neighborhood open space planning and help today's park advocates ensure that the next generation of city residents will enjoy adequate parkland, greenery, and recreation.

Through 15 open space standards, the Index provides a comprehensive picture of a neighborhood's open space resources. These standards address a broad spectrum of open space measures, from provision and access, to environmental sustainability and maintenance. Following is an explanation of the broad categories of the Open Space Index (OSI), followed by details on the 15 standards.

Asphalt Green

ACTIVE OPEN SPACE

Active open spaces offer places for recreational sports, exercise and play. Recognizing the need for a variety of active recreation opportunities, the OSI contains four sub-categories of active open space—playgrounds, fields, courts, and recreation centers—each of which is critical to providing neighborhood residents with adequate recreational opportunities.

PASSIVE OPEN SPACE

Passive open spaces offer places to relax, stroll, socialize, and experience the outdoors. Parks with seating, shade and peaceful passive programming are important resources that support the healthy aging of seniors,[1] and passive open spaces are particularly important to populations who may be unable to participate in active recreation but still benefit immensely from being outdoors.

ACCESS AND DISTANCE

The OSI standards for park access are connected to the PlaNYC goal that every New Yorker should live within a 10-minute walk of a park. Recognizing that every resident should have access to a variety of open space options and that living within walking distance of a pleasant outdoor seating area meets different recreational and leisure needs than living near a large park with multiple recreational and natural amenities, we provide access targets for three types of parks.

Pocket Parks (less than one acre) usually accommodate one or two features such as a play area, a court, or a passive seating area. Their small size limits the services they provide, yet they are critical amenities for residents with limited mobility, such as caretakers with small children, the elderly and the infirm.

Neighborhood Parks (one to 20 acres) typically offer a broad range of recreational opportunities, allowing park-goers to enjoy both active recreation and outdoor relaxation. Neighborhood parks in CD4 and CD5, such as St. Vartan and John Jay, contain multiple courts, play areas and space for active recreation, as well as seating areas and landscaped greenery.

Large Parks (greater than 20 acres) contain expansive acreage that allows for a wide variety of recreational activities, as well as space for distinctive resources such as lakes, golf courses, natural areas and greenways. Large parks provide swaths of uninterrupted green lawns and natural landscaping, aesthetic features that in dense cities can often only be experienced in these vast spaces.

East River Esplanade

URBAN TREE CANOPY

New York City trees provide both aesthetic and environmental benefits to the city. Trees connect residents to nature and enhance the park experience with their shade and beauty. They also provide multiple ecological services: they remove pollutants from the air, their leaves absorb and store carbon dioxide, they cool the air, and the permeable ground in which they grow helps to absorb and manage stormwater runoff.

In 2006 the United States Forest Service completed an analysis of New York City's tree canopy coverage.[2] As part of their report, the Forest Service calculated the existing and potential tree canopies for each New York City neighborhood, and these neighborhood statistics form the OSI tree canopy coverage standard (see Appendix A for methods discussion).

PERMEABLE SURFACING

Like the urban tree canopy, permeable ground surfacing enhances the city's environment and beautifies parkland. There is a qualitative difference, in both comfort and scenic beauty, between accompanying a child to a playground with lawns, gardens and shade trees and passing an afternoon on a patch of uninterrupted asphalt. Increased permeable surfacing also provides a number of environmental benefits.[3] As we saw during Hurricane Sandy, this is particularly important in New York City with our shared sewer and stormwater infrastructure.

The OSI offers a standard of 70% permeable surfacing in parks. As with the other OSI standards, this target does not apply to a single park, but rather to the full set of parks and public open spaces within a neighborhood. For instance, in a small park filled with basketball and handball courts, 70% permeability would not be feasible. Yet in natural areas, up to 100% of the land is permeable, and in a large park with substantial passive areas, 80-90% permeability can be attained. As long as a neighborhood has a variety of park sizes and types, an overall rate of 70% permeable surface can be attained.

Carl Schurz Park

PARK MAINTENANCE

Keeping parks clean and safe is essential to visitors' comfort and enjoyment. The Parks Inspection Program (PIP), the New York City Department of Parks and Recreation's method of tracking park maintenance, rates parks as "acceptable" or "unacceptable" based upon the condition of specific park features. Each DPR park property receives ratings in two categories: cleanliness and overall maintenance. Cleanliness is determined by five factors: litter, broken glass, graffiti, ice and weeds. Overall maintenance is determined by seventeen factors, including an inspection of benches, fences, sidewalks and lawns.[4] The OSI utilizes the NYC Mayor's Management Report standards for park maintenance.

Open Space Standards for New York City

Amount of Open Space

Active Open Space

PLAYGROUNDS	**ATHLETIC FIELDS**	**COURTS**	**RECREATION CENTERS**	**ACTIVE OPEN SPACE**
Places for play, containing equipment such as swings, structures for climbing, water features, sand boxes or other play features	Soccer, football, cricket, baseball, and hockey fields, as well as ice rinks	Basketball, handball, volleyball, tennis and bocce courts	New York City Department of Parks and Recreation (DPR) indoor recreation facilities, and other indoor facilities with DPR-comparable fees and public access	Total acreage of playgrounds, fields, courts and recreation centers, plus unprogrammed active open space
Standard	**Standard**	**Standard**	**Standard**	**Standard**
I	I.5	5	I	I
playground per	*athletic fields per*	*courts per*	*recreation center per*	*acre of active open space per*
I,250	I0,000	I0,000	20,000	I,000
children	*residents*	*residents*	*residents*	*residents*

Passive Open Space

COMMUNITY GARDENS	**PASSIVE OPEN SPACE**
All GreenThumb gardens and other gardens that provide a clear mechanism for public involvement and access	Total acreage of lawns, esplanades, plazas, beaches, natural areas, and planted areas, plus community gardens
Standard	**Standard**
I	I.5
community garden per	*acres of passive open space per*
I0,000	I,000
residents	*residents*

Total

TOTAL OPEN SPACE
The aggregate acreage of all neighborhood open space including all active and passive open spaces that provide opportunities for play, relaxation, and contact with nature
Standard
2.5
acres of total open space per
I,000
residents

Carl Schurz Park

Access and Distance to Parks

POCKET PARKS
Parks less than one acre

Standard

100%

of residents live within a five-minute walk (1/4 mile)

NEIGHBORHOOD PARKS
Parks between one and 20 acres

Standard

100%

of residents live within a five-minute walk (1/4 mile)

LARGE PARKS
Parks larger than 20 acres

Standard

100%

of residents live within a ten-minute walk (1/2 mile)

Environmental Sustainability

URBAN TREE CANOPY (UTC)
The percent of district land not covered by water, roads or buildings, identified by the U.S. Forest Service using GIS data and aerial photography

Standard

28.7%

CD4 potential UTC

31.7%

CD5 potential UTC

PERMEABLE SURFACING
Land that can absorb water, including tree pits, natural areas, community gardens, natural grass fields, artificial turf fields, and other porous surfaces within parks

Standard

70%

permeable surfacing in parks

Park Maintenance

CLEANLINESS
DPR Park Inspection Program (PIP) rating based on the presence of litter, glass, graffiti, weeds, and ice

Standard

90%

of park inspections should be rated "acceptable"

OVERALL MAINTENANCE
DPR Park Inspection Program (PIP) rating for overall park maintenance

Standard

85%

of park inspections should be rated "acceptable"

Fieldwork

Working in teams of two, field surveyors walked every block of CD4 and CD5. They counted all courts, fields, playgrounds, and recreation centers. In addition, they used a measuring wheel to measure the total amount of active, passive, and permeable public open space in the districts.

Surveyors supplemented their measurements with site drawings and photo documentation, and collected information on additional neighborhood open space conditions, including a count of all empty street tree pits and measurements of seating accommodations in parks and public plazas. This detailed field work allowed surveyors to reconcile public map information with actual neighborhood conditions, a critical component of accurately measuring public open space, especially in districts with Privately Owned Public Spaces (POPS), DOT plazas, closed public streets, and other open spaces outside of the Parks Department's purview.

Southpoint Park

St. Catherine's Park

City Council
District 4
Open Space Index

City Council District 4 Open Space Index

Manhattan City Council District 4 spans more than 80 blocks from 14th Street to 97th Street. The district zigs and zags, carving out portions of those blocks from the East River all the way west to Columbus Circle. Access to open space varies greatly, depending on residents' proximity to Central Park and the East River.

For some residents, particularly those with limited mobility, such as the elderly and caretakers of small children, neighborhood green spaces are few and far between. Stuyvesant Town and Peter Cooper Village are 80-acre private residential developments that contain private lawns, courts, fields, and playgrounds for use by residents. The residents of Murray Hill and Midtown East live beyond easy walking distance to Central Park and have limited access to the East River, with one at-grade crossing at East 37th Street and a pedestrian bridge to a four-block stretch of waterfront pathway accessible through Peter Detmold Park at East 51st Street. Although Central Park is not technically within CD4, the park spans the southern border and the western border of the district from 59th to 97th Streets; the majority of residents in this portion of the district live within a 10-minute walk of it.

Taken as a whole, the district lacks adequate passive and active open space per resident. It falls short of every standard except maintenance. Those who live in proximity to Central Park have it better: when we take into account the area of Central Park that falls within a one-quarter mile radius of park entrances abutting CD4, the district meets open space standards for passive space per resident, playgrounds per child, and proportion of parkland with permeable surfacing. But still, despite perceptions, this district is grossly underserved in terms of open space resources.

Council District 4 □
Study Area Parks ■
Other Parks ■

Asser Levy Playground

Ralph J. Bunche Park

City Council District 4 Open Space Index Results

Amount of Open Space

CD4 falls short of every active recreation standard. Given the density of the population and the paucity of active recreation facilities, it is critical that permits for use of these spaces are distributed in a transparent and equitable manner, and that private use of public facilities is minimized.

While Central Park falls outside of CD4, it is contiguous with the district along its southern border and from 59th Street to 97th Street. Because of its close proximity, we analyzed CD4's open space with and without Central Park. The bar graphs represent two scenarios: CD4 open space excluding Central Park, and CD4 open space including all land in Central Park within one-quarter mile of a park entrance that resides along the CD4 border. The numeric results presented in these charts reflect CD4 open space conditions without Central Park.

OSI Standard ▪
CD4 Result ▪
CD4 Result with Central Park ▪

Active Open Space

PLAYGROUNDS	ATHLETIC FIELDS	COURTS	RECREATION CENTERS	ACTIVE OPEN SPACE
Result	**Result**	**Result**	**Result**	**Result**
.92	.38	1.76	.13	.03
playground per 1,250 children	athletic field per 10,000 residents	courts per 10,000 residents	recreation center per 20,000 residents	acre per 1,000 residents
Fails to meet standard	*Fails to meet standard*	*Fails to meet standard*	*Fails to meet standard*	*Fails to meet standard*
Standard	**Standard**	**Standard**	**Standard**	**Standard**
1	1.5	5	1	1
playground per 1,250 children	athletic fields per 10,000 residents	courts per 10,000 residents	recreation center per 20,000 residents	acre of active open space per 1,000 residents

CD4 also falls short of passive and total open space standards. With the inclusion of Central Park, the district exceeds the standards for passive and total open space, but there are no Greenthumb community gardens that allow for public participation.

Tudor City Greens

Passive Open Space

COMMUNITY GARDENS

Result

0

community gardens per 10,000 residents

Fails to meet standard
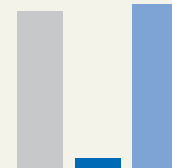
Standard

1

community garden per 10,000 residents

PASSIVE OPEN SPACE

Result

.17

acre per 1,000 residents

Fails to meet standard

Standard

1.5

acres of passive open space per 1,000 residents

East River Waterfront

Total

TOTAL OPEN SPACE

Result

.25

acre per 1,000 residents

Fails to meet standard

Standard

2.5
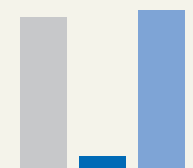
acres of total open space per 1,000 residents

Access and Distance to Parks

The results below take into account that some CD4 residents live within walking distance of parks that fall outside of the district. Residents in the southernmost portion of the district live within walking distance of East River Park—a large park—and can readily access the pocket parks and community gardens of the East Village. While Central Park is an amenity for the district's Upper East Side residents, 40% of CD4 residents live beyond a 10-minute walk from this large park. Approximately 3% of district residents live beyond walking distance to any type of park.

51%

of CD4 residents live within a 5-minute walk

☐ Council District 4
■ Pocket Parks
■ 1/4 mile to Pocket Parks
■ Other Parks
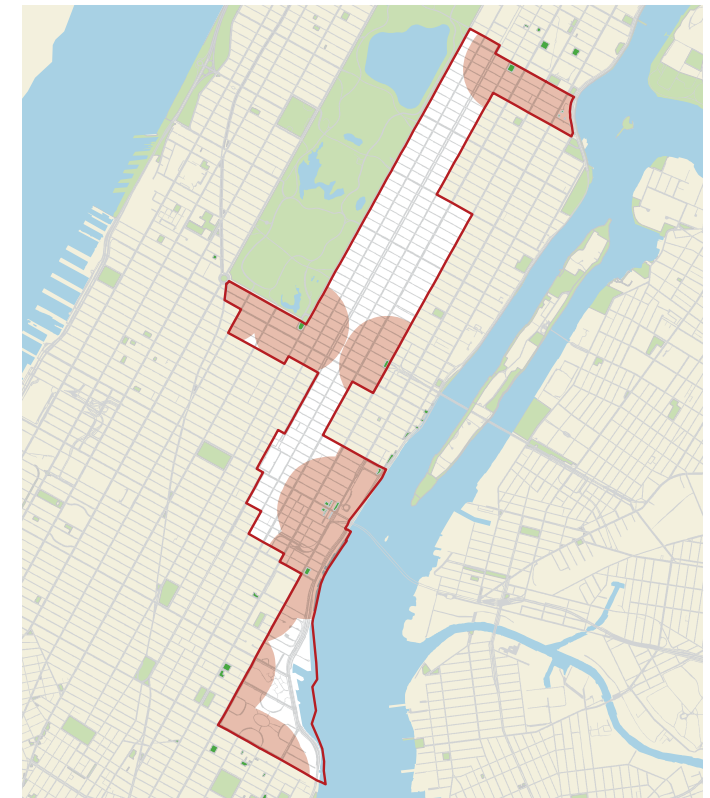
POCKET PARKS

Result

51%

of residents live within a 5-minute walk

Fails to meet standard

Standard

100%

of residents live within a 5-minute walk

NEIGHBORHOOD PARKS

Result

51%

of residents live within a 5-minute walk

Fails to meet standard

Standard

100%

of residents live within a 5-minute walk

LARGE PARKS

Result

60%

of residents live within a 10-minute walk

Fails to meet standard
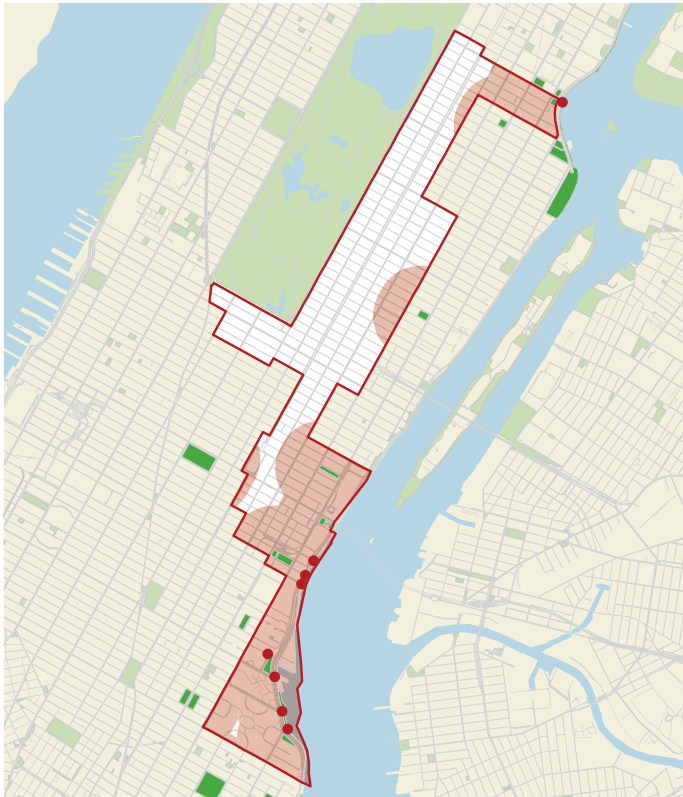
Standard

100%

of residents live within a 10-minute walk

OSI Standard ▢
CD4 Result ■

51%

*of CD4 residents live
within a 5-minute walk*

☐ Council District 4
◼ Neighborhood Parks
◼ 1/4 mile to Neighborhood Parks
◼ Other Parks
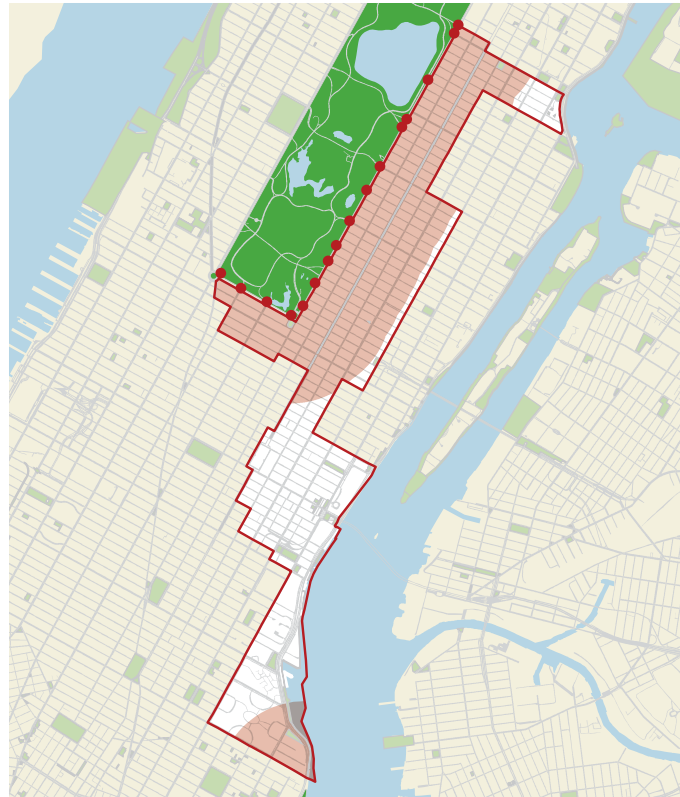● East River Esplanade Access Points

60%

*of CD4 residents live
within a 10-minute walk*

☐ Council District 4
◼ Large Parks
◼ 1/2 mile to Large Parks
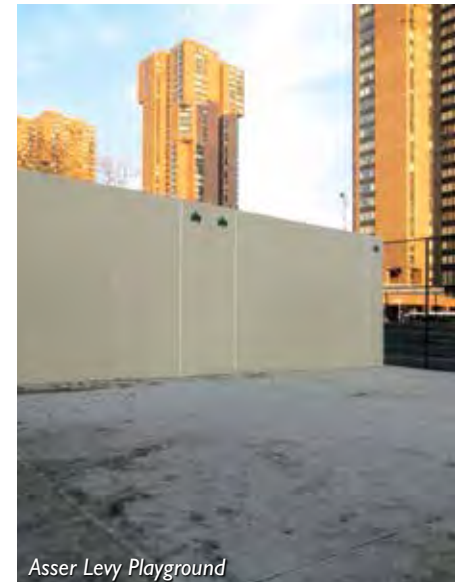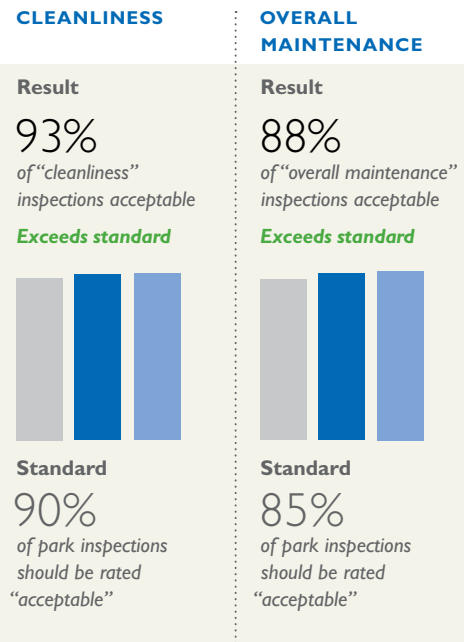◼ Other Parks
● Central Park Access Points

Environmental Sustainability

There are few opportunities for greening the existing street infrastructure, with only 2.7% of street tree pits sitting empty. However, the East River Esplanade would benefit aesthetically, acoustically, and environmentally from additional trees. Periodic park upgrades, esplanade improvements, and new park plans should incorporate greening strategies to increase the permeability of parkland within the district.
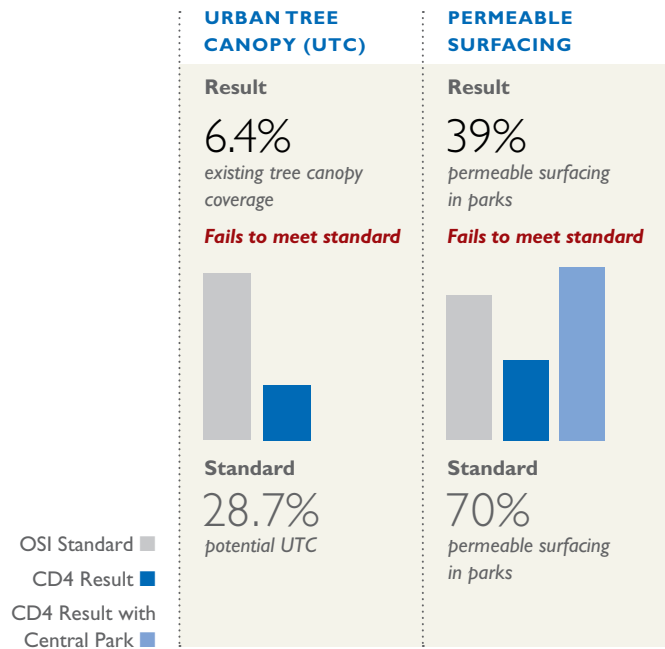
Park Maintenance

While CD4 contains few traditional parks, the existing spaces are well maintained, on average. 75% of the unacceptable cleanliness ratings and half of the unacceptable overall maintenance ratings were concentrated in two parks: St. Vartan and Stanley Isaacs, which were cited for litter in their most recent inspections.

URBAN TREE CANOPY (UTC)

Result

6.4%

existing tree canopy coverage

Fails to meet standard

Standard

28.7%

potential UTC

PERMEABLE SURFACING

Result

39%

permeable surfacing in parks

Fails to meet standard

Standard

70%

permeable surfacing in parks

CLEANLINESS

Result

93%

of "cleanliness" inspections acceptable

Exceeds standard

Standard

90%

of park inspections should be rated "acceptable"

OVERALL MAINTENANCE

Result

88%

of "overall maintenance" inspections acceptable

Exceeds standard

Standard

85%

of park inspections should be rated "acceptable"

OSI Standard ▪
CD4 Result ▪
CD4 Result with Central Park ▪

Asser Levy Playground

City Council
District 5
Open Space Index

City Council District 5 Open Space Index

City Council District 5 contains two distinct land configurations: the residentially and commercially dense blocks of the Upper East Side and Midtown East on the island of Manhattan, and park-rich Roosevelt Island. While common quality-of-life concerns unite CD5 residents, the two enclaves are very different from an open space perspective.

Roosevelt Island residents have convenient access to waterside paths, landscaped lawns, courts, fields, and a recreation center. 100% of Roosevelt Island residents live within walking distance of a neighborhood park. Manhattan island residents live in a very different landscape. Those closest to the East River have access to the Esplanade, pocket parks such as the Sutton Place Parks, and neighborhood parks such as John Jay.

However, almost 150,000 CD5 residents share just 36 acres of open space on the island of Manhattan, far fewer acres than can adequately accommodate residents' needs. In the following section, we present open space data for the district as a whole, including Roosevelt Island. Appendix B presents results for the portion of the district on the island of Manhattan.

Council District 5
Study Area Parks
Other Parks
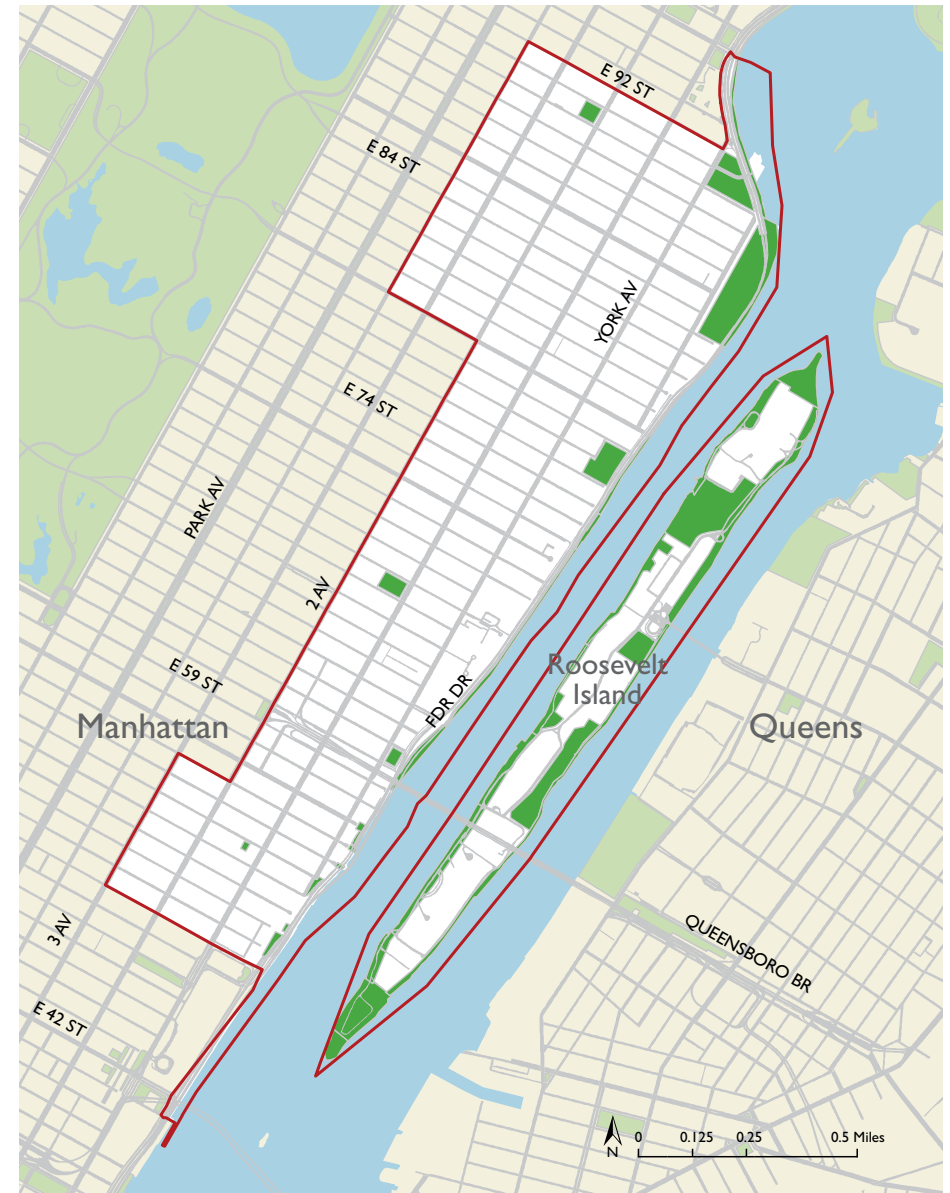
Total population
160,131

Children under 18
19,750

Seniors 65+
26,199

Total area
848 acres

Carl Schurz Park

St. Catherine's Park

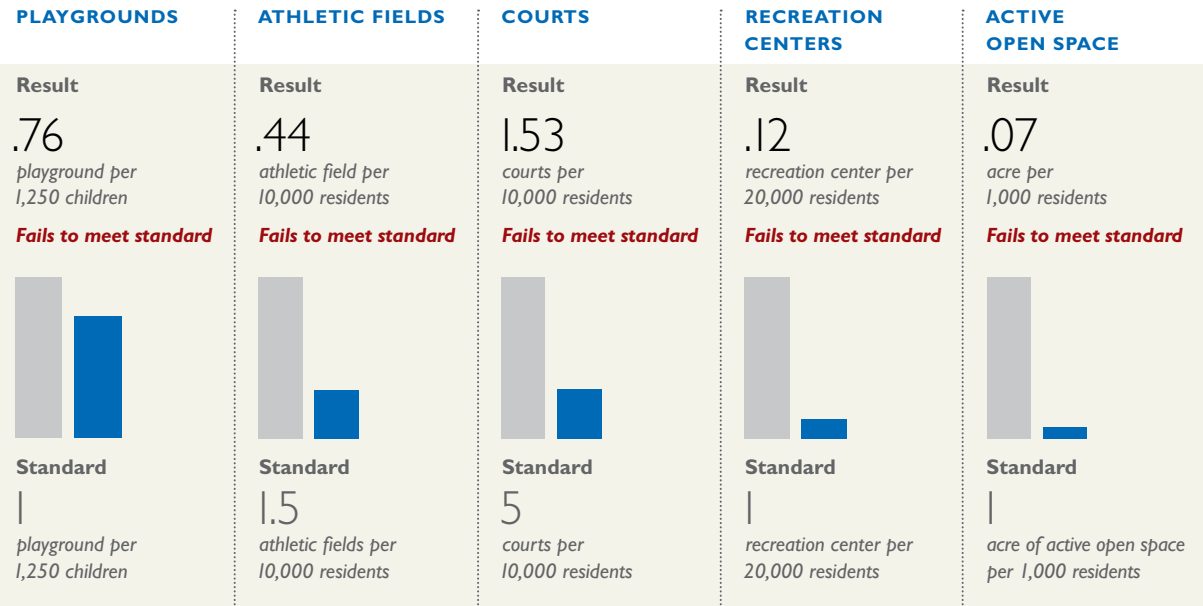# City Council District 5 Open Space Index Results

Amount of Open Space

CD5 falls short of all active open space standards, from overall acreage per resident to recreational facilities.

What's more, Queensboro Oval, the only baseball field in the district on the island of Manhattan, is currently unavailable to the public for the majority of the year. The Sutton East Tennis Club, a private concessionaire, occupies the field with an indoor tennis bubble nine months of the year, charging court fees far in excess of DPR costs.[7] The balance of time between this private use and public use as a ball field has steadily shifted toward private use in recent years, with an additional six weeks of field time removed from the public calendar in the club's most recent contract.

Active Open Space

PLAYGROUNDS	ATHLETIC FIELDS	COURTS	RECREATION CENTERS	ACTIVE OPEN SPACE
Result	**Result**	**Result**	**Result**	**Result**
.76	.44	1.53	.12	.07
playground per 1,250 children	athletic field per 10,000 residents	courts per 10,000 residents	recreation center per 20,000 residents	acre per 1,000 residents
Fails to meet standard	*Fails to meet standard*	*Fails to meet standard*	*Fails to meet standard*	*Fails to meet standard*
Standard	**Standard**	**Standard**	**Standard**	**Standard**
1	1.5	5	1	1
playground per 1,250 children	athletic fields per 10,000 residents	courts per 10,000 residents	recreation center per 20,000 residents	acre of active open space per 1,000 residents

OSI Standard
CD5 Result

CD5 also falls short of passive and total open space standards, even taking into account POPS, privately owned public spaces that require public access (providing, at a minimum, a place to sit).

Passive Open Space

Total

COMMUNITY GARDENS

Result

.12

community garden per 10,000 residents

Fails to meet standard

Standard

1

community garden per 10,000 residents

PASSIVE OPEN SPACE

Result

.40

acre per 1,000 residents

Fails to meet standard

Standard

1.5

acres of passive open space per 1,000 residents

TOTAL OPEN SPACE

Result

.47

acre per 1,000 residents

Fails to meet standard

Standard

2.5

acres of total open space per 1,000 residents

Sutton East Tennis Club

East River Esplanade

Access and Distance to Parks

CD5 fails to meet the standard that all residents live within walking distance of pocket, neighborhood and large parks.

Tramway Plaza provides a departure point to Roosevelt Island's parks and open spaces. The plaza received an $846,000 facelift in 2007, which included new lighting, plantings, fencing and paving. Still, additional investment in the space, especially signage about the attractions on Roosevelt Island, could promote Roosevelt Island's parks, including the new FDR Four Freedoms Park and Southpoint Park, and increase local awareness of this significant neighborhood resource.[8]

☐ Council District 5
■ Pocket Parks
■ 1/4 mile to Pocket Parks
■ Other Parks

POCKET PARKS

Result

30%

of residents live within a 5-minute walk

Fails to meet standard

Standard

100%

of residents live within a 5-minute walk

NEIGHBORHOOD PARKS

Result

77%

of residents live within a 5-minute walk

Fails to meet standard

Standard

100%

of residents live within a 5-minute walk

LARGE PARKS

Result

13%

of residents live within a 10-minute walk

Fails to meet standard

Standard

100%

of residents live within a 10-minute walk
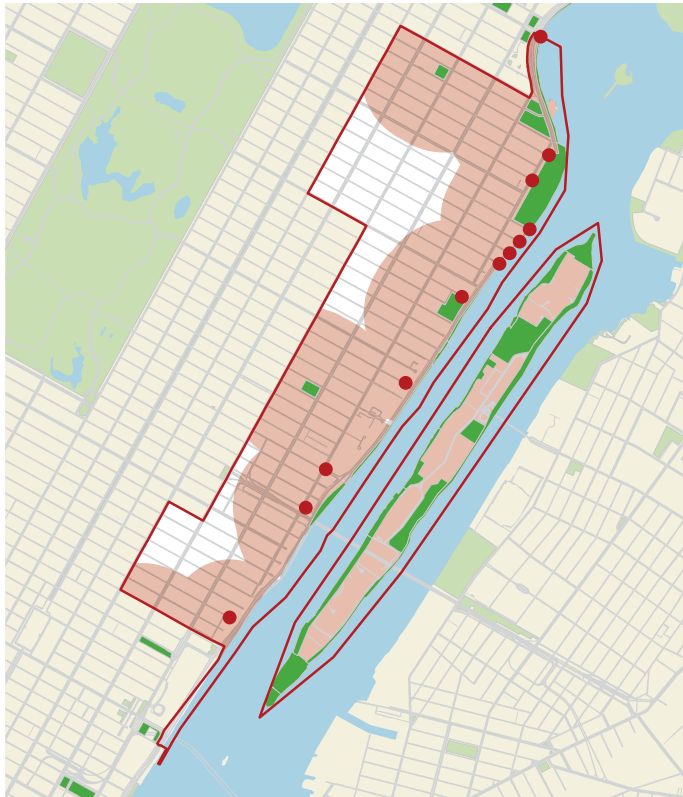
OSI Standard ■
CD5 Result ■

NEIGHBORHOOD PARKS

77%

*of CD5 residents live
within a 5-minute walk*

- ☐ Council District 5
- ■ Neighborhood Parks
- ■ 1/4 mile to Neighborhood Parks
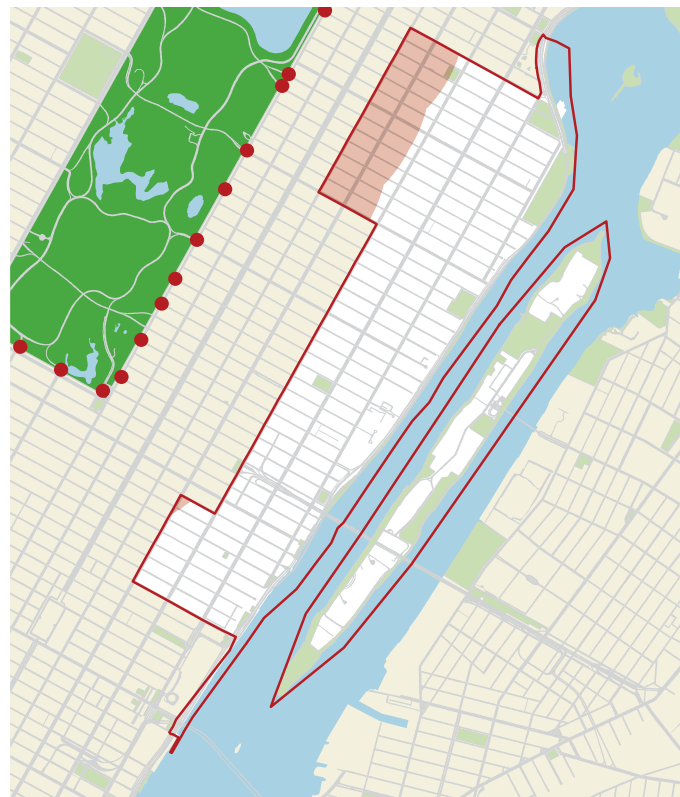- ■ Other Parks
- ● East River Esplanade Access Points

LARGE PARKS

13%

*of CD5 residents live
within a 10-minute walk*

- ☐ Council District 5
- ■ Large Parks
- ■ 1/2 mile to Large Parks
- ■ Other Parks
- ● Central Park Access Points

Environmental Sustainability

With only 3.2% of street tree pits sitting empty, there are few opportunities for greening the district's streets. As with CD4, the East River Esplanade provides an opportunity for additional tree coverage and increased permeability.

URBAN TREE CANOPY (UTC)

Result

8.4%
existing tree canopy coverage

Fails to meet standard

Standard

31.7%
potential UTC

PERMEABLE SURFACING

Result

64%
permeable surfacing in parks

Fails to meet standard

Standard

70%
permeable surfacing in parks

OSI Standard ▪
CD5 Result ▪

Park Maintenance

While CD5 parks approach the standard for cleanliness, they fall short on overall maintenance.

Seven of 10 parks received at least one "unacceptable" overall rating. In John Jay Park, where excessive litter was the most common concern, only one-quarter of overall maintenance inspections were deemed "acceptable." Parks on Roosevelt Island are managed by the State-run Roosevelt Island Operating Corporation and do not receive DPR PIP scores.

CLEANLINESS

Result

89%
of "cleanliness" inspections acceptable

Approaching standard

Standard

90%
of park inspections should be rated "acceptable"

OVERALL MAINTENANCE

Result

80%
of "overall maintenance" inspections acceptable

Fails to meet standard

Standard

85%
of park inspections should be rated "acceptable"

East River Esplanade

Sutton Place Park

# A Note About Privately Owned Public Spaces (POPS)

The most common form of open space in CD4 and CD5 is not parks or playgrounds, but the paradoxically titled "privately owned public space" (POPS), a creation of New York City's Zoning Resolution that allows developers to construct bigger and bulkier buildings in return for providing ground-level open space amenities.

The provisions of the Zoning Resolution that define and regulate POPS have evolved since the inception of "incentive zoning" in 1961.[9] The result is multiple categories of POPS, including but not limited to urban plazas, residential plazas, sidewalk widenings, through-block connections, arcades, and open air concourses. The CD4 and CD5 built environment contains the best and worst of these various iterations. The better-designed POPS provide much-needed spaces for enjoying lunch, socializing or simply resting amid the crowds and congestion of Midtown Manhattan.

In our Open Space Index methodology, public plazas count toward the passive and total open space of a neighborhood. We have thus included in the CD4 and CD5 Index calculations "plazalike" POPS— privately owned public spaces in which a person can enter and sit on some form of seating as defined in the Zoning Resolution (moveable seating, fixed benches, seat walls, fixed individual seating, and planter ledges or seating steps of adequate width and height). Field surveyors made this determination after visiting all POPS identified on the Department of City Planning website;

surveyors counted and measured seating, identified public access signs, and noted the presence of any potential impediments to access. The map at right shows the full distribution of POPS across CD4 and CD5, and identifies the smaller subset of accessible and accommodating POPS included in our Index calculations. Despite their proliferation, POPS fail to compensate for the shortage of passive open space in these districts.

□ Council District 4
□ Council District 5
● Included Privately Owned Public Spaces
● Excluded Privately Owned Public Spaces
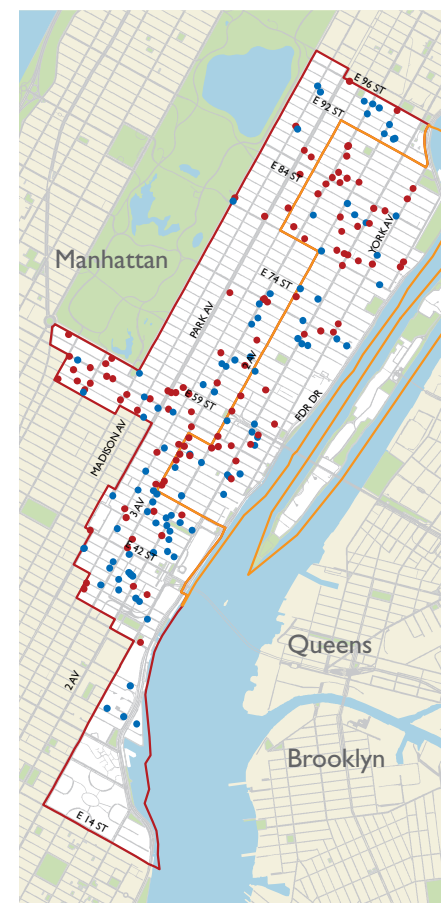
EARLY POPS

The minimal POPS design standards in the 1961 Zoning Resolution lead to what Jerold Kayden, the Frank Backus Williams Professor of Urban Planning and Design at the Harvard University Graduate School of Design and preeminent scholar of POPS, calls "privatization by design": spaces that conform to the minimum legal standard, but are often featureless expanses of uninviting hardscape.[10] In his book *Privately Owned Public Space: The New York Experience*, Kayden documents the many design elements that could constitute legal "bonusable plazas," such as loading docks, driveways and garage entries—hardly what one would consider public amenities.

DESIGNING FOR USE

Since William H. Whyte's astute ethnographic observations of social interactions in public space in the early 1970s, urban planners have developed a better understanding of features that promote successful public spaces. A series of zoning reforms, instituted in 1975, 1977 and sporadically up to the present, have improved POPS considerably. Amenities such as ample movable seating and clear, unimpeded street-level access, have contributed to more vibrant, comfortable, and accommodating POPS. The most recent zoning amendments of 2007 and 2009 contain specifications for POPS size, access, seating and amenities. Diagrams specify the proper width and height of seating ledges, and rules are explicit about everything from the required linear feet of seating with backs, to additional amenities from which developers must choose. There are even explicit standards for the content, design and placement of public information plaques.

While POPS are ubiquitous across Manhattan's East Side, their total acreage adds little to the overall open space for CD4 and CD5, both of which fail on passive open space.

ENFORCEMENT

Because of the wide spectrum of rules under which POPS were created, current-day enforcement requires a case-by-case investigation into a building's history to ascertain the relevant regulations. In order to clearly and publicly document the location and history of POPS, The Municipal Art Society of New York, working closely with Professor Kayden, has launched Advocates for Privately Owned Public Space (APOPS) in partnership with the Department of City Planning to "work with owners of POPS, city officials, and members of the public to encourage improvements to public space design, operation, and use."[11] As part of this effort, APOPS has created an online public database of POPS (http://apops.mas.org/). The goal is to simplify enforcement by making the site-by-site requirements publicly available.

ACRES OF PASSIVE OPEN SPACE

Even accounting for POPS, CD4 and CD5 (on the island of Manhattan) still fall short of open space standards, suggesting that bonus plazas cannot compensate for the districts' open space shortages. The paucity of passive open space in these districts puts even more pressure on property managers and citizens to maintain POPS to the highest standards of design, access and cleanliness.

CD4 without POPS	**CD5 without POPS**
.11 acre	.16 acre
per 1,000 residents	*per 1,000 residents*
CD4 with POPS	**CD5 with POPS**
.17 acre	.20 acre
per 1,000 residents	*per 1,000 residents*
Standard	**Standard**
1.5 acres	1.5 acres
of passive open space per 1,000 residents	*of passive open space per 1,000 residents*

Nearly half of residents in CD4 and 70% of residents in CD5 live outside of walking distance to a pocket park. However, when we treat POPS as pocket parks, those numbers improve dramatically: 89% of CD4 residents and 100% of CD5 residents can walk to an open space that at a minimum accommodates seating.

ACCESS TO POCKET PARKS

Though POPS do not compensate for an overall shortage of open space, with their wide distribution they do provide passive resting spots for the majority of East Side residents.

CD4 without POPS	**CD5 without POPS**
51%	33%
of residents live within a 5-minute walk	*of residents live within a 5-minute walk*
CD4 with POPS	**CD5 with POPS**
89%	100%
of residents live within a 5-minute walk	*of residents live within a 5-minute walk*
Standard	**Standard**
100%	100%
of residents live within a 5-minute walk of a pocket park	*of residents live within a 5-minute walk of a pocket park*

Discussion:
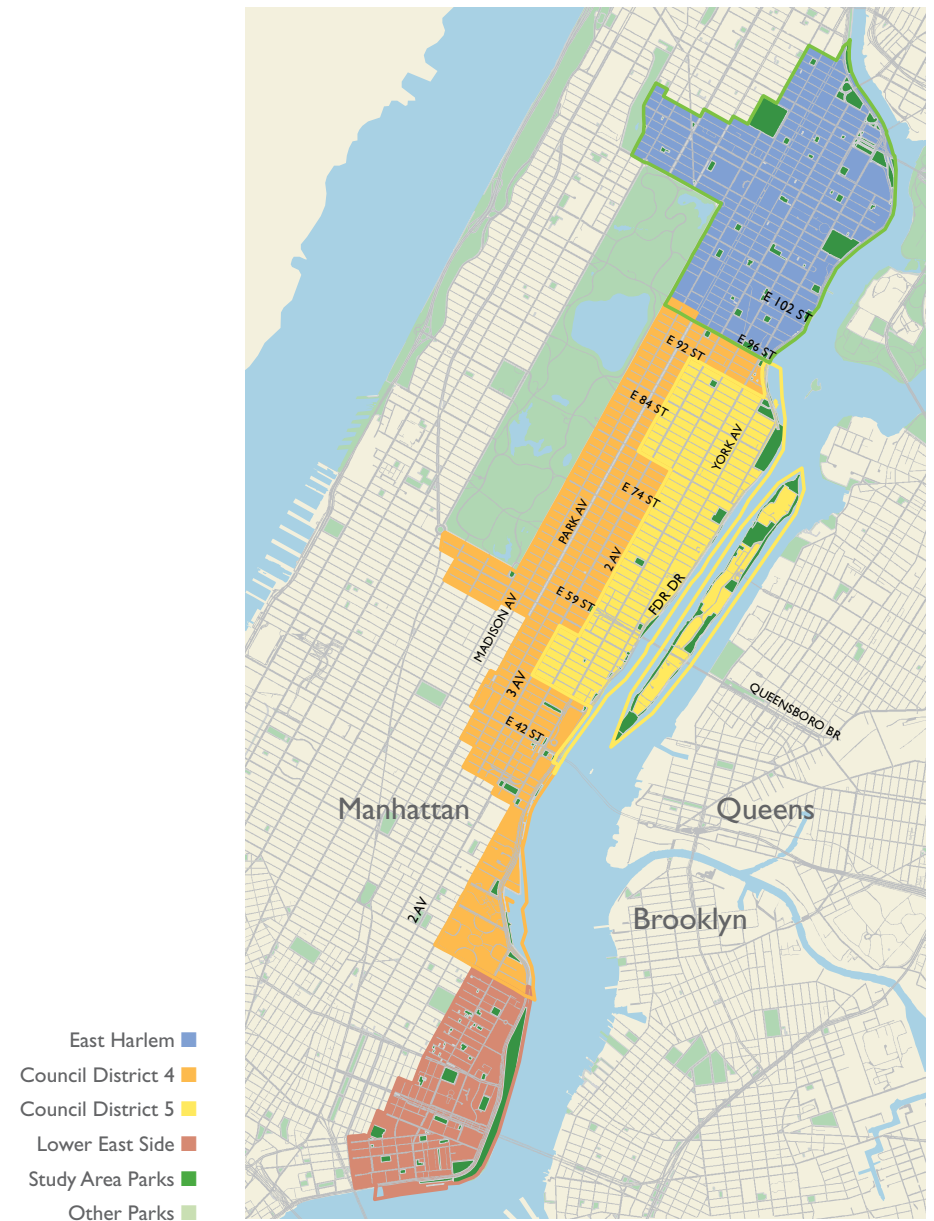## Open Space on Manhattan's East Side

Rethinking Open Space on Manhattan's East Side

New Yorkers for Parks has now conducted four Open Space Index assessments along Manhattan's East Side, from the Lower East Side up to East Harlem. The history of population settlement and the cycles of investment and divestment in each neighborhood's infrastructure have dictated the existing open space landscape of the East Side, and each neighborhood has its own set of challenges and strengths.

The Lower East Side and East Harlem are rich with community gardens that were created by neighborhood residents on formerly vacant land that was abandoned by absentee owners. Land in CD4 and CD5 has maintained extraordinary market value, creating the incentive for developers to take advantage of zoning bonuses in exchange for providing open space amenities. Despite these differences, we also observed commonalities across all four districts. The four

study areas are situated along the East River Esplanade, which would better serve residents if it were more accessible, continuous, and well-maintained. And all four districts fall short of adequate open space per resident.

Addressing the dearth of adequate open space on Manhattan's East Side requires a combination of small-scale interventions and big picture planning. There are small, immediate open space improvements that can be made, such as bringing the districts' parks up to maintenance standards, planting trees in empty tree pits, and enforcing the public accessibility requirements of POPS. And there are ambitious longer-term ideas, such as creating a continuous esplanade along the East River, that may be dozens of years and hundreds of millions of dollars away, but leadership is needed now to take the first steps toward realizing a transformed East Side.

Legend:
- East Harlem
- Council District 4
- Council District 5
- Lower East Side
- Study Area Parks
- Other Parks

Pedestrian street closure, East 91st Street

Capitalize on Existing Open Spaces

A number of successful PlaNYC initiatives provide opportunities to make the most of our park-starved, densely built urban environment. For example, the Schoolyards-to-Playgrounds initiative converts dormant school playgrounds into neighborhood play spaces during afterschool and weekend hours. The East Harlem OSI study area contains three successful conversions, and there are several viable locations in CD4 and CD5.

Concrete Safaris, a not-for-profit that works with children to encourage green, healthy living in East Harlem, has transformed barren New York City Housing Authority (NYCHA) lawns into beautiful community gardens that engage children in environmental education. The Department of Transportation's CityBench initiative will bring 1,000 new public benches to New York streets

by 2015, making sidewalks more accommodating, particularly for residents with limited physical mobility. This amenity can facilitate more comfortable passage to and from parks. The program's inaugural bench was installed in front of Leonard Covello Senior Center in East Harlem in the fall of 2011.

Existing open spaces must also be protected and maintained in the public realm. Some East Side open spaces are threatened with privatization, such as Queensboro Oval, which is off limits to public use for the majority of the year. Others spaces, such as community gardens, can become de facto private enclaves if public hours and means of access are not clearly posted and enforced.

Look Beyond Parks

Advocates for increased East Side open space must look beyond the scope of traditional parks. The Department of Transportation has developed a number of innovative open space programs. The DOT Play Streets program turns streets into public gathering spaces through temporary street closures that provide space for community organizations to sponsor games and activities. The DOT Plaza Program converts underutilized streetscapes into passive seating plazas. Workers, tourists and residents benefit from seating and plantings in the DOT Plaza on Broadway at 57th Street in CD4. A street closure at 91st Street between 2nd and 3rd Avenues has created a wide pedestrian avenue that provides relief from crowded sidewalks.

The East Side of Manhattan is also extraordinarily rich in private institutions, including a number of hospitals, universities, houses of worship and museums. There are examples throughout the four East Side districts of institutions acting as good neighbors by welcoming the public into their private grounds.

Envision a Better East River Waterfront

As important as small-scale interventions will be to maximize and activate East Side open spaces, CD4 and CD5 also require long-term, large-scale thinking, especially to create a truly vibrant waterfront. The map at right shows areas along the East Side waterfront that are the subjects of diverse planning documents, from comprehensive waterfront plans to Community Board visions for investment in local waterfront blocks. Increasing public access, enlivening the waterfront through design and amenities, and connecting neighborhoods to the waterfront are among the broad goals that comprise Vision 2020, New York City's 2011 comprehensive waterfront plan. The plan calls for much-needed remediation along the East River Esplanade, including design improvements such as noise-buffering plantings, increased seating and lighting, and

pathway widening; increased maintenance; safer and well-marked pedestrian access; and the development of a continuous waterfront pathway.

Community boards and local civic organizations have also drafted planning documents and convened design competitions to address specific portions of the East River waterfront. CIVITAS' Reimagining the Waterfront competition invited design teams from around the world to rethink the East River waterfront from 60th to 125th Streets. Entrants were encouraged to make connections from the waterfront to existing parks and the broader East Side neighborhood. The winning entry proposed a series of canals and elevated walkways that extend into streets and integrate the waterfront ecology into the neighborhood. Manhattan
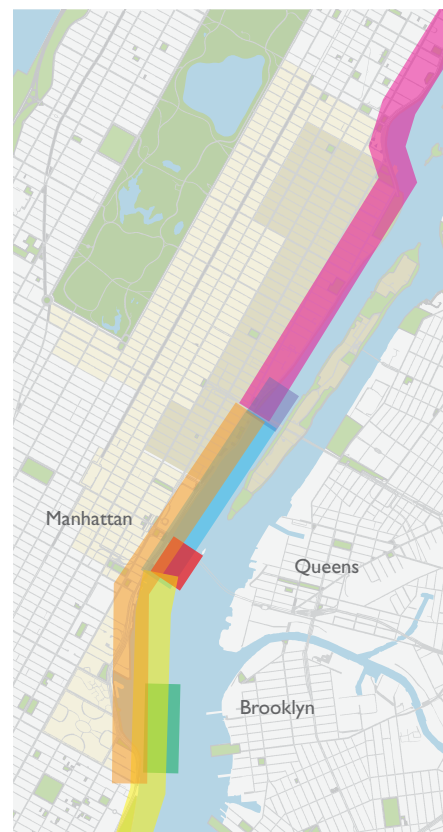
Community Board Eight's 197-a Plan for the Queensboro Bridge Area is guiding the construction and continuing development of Andrew Haswell Green Park, while the success of Manhattan Community Board Six's Stuyvesant Cove 197-a Plan can be seen in the vibrant Stuyvesant Cove Park (18th to 23rd Streets), opened in 2002. Exercises like these encourage us to think beyond pothole repair, and to see the waterfront as an integral part of neighborhood infrastructure, design and leisure. The next steps must include building consensus around a plan and identifying funding sources.

Manhattan

Queens

Brooklyn

COMPREHENSIVE PLANS [12]
Vision 2020: New York City Comprehensive Waterfront Plan
NYC Department of City Planning, 2011

Manhattan Waterfront Greenway Master Plan
NYC Department of City Planning, 2004

LOCAL PLANS [13]
Reimagining the Waterfront
CIVITAS, 2011
East 60th Street to East 125th Street

197-a Plan for the Queensboro Bridge Area
Manhattan Community Board 8, 2006
East 59th Street to East 63rd Street

East Midtown Waterfront Project
NYCEDC, 2013
East 38th Street to East 60th Street

New York's Next Great Waterfront Park
The Municipal Art Society of New York, 2011
East 38th Street to East 41st Street

197-a Plan for the Eastern Section of Community District 6
Manhattan Community Board 6, 2007
East 14th Street to East 59th Street

The East River Blueway Plan
Office of the Manhattan Borough President Scott Stringer; Office of New York State Assemblymember Brian Kavanagh; NYS Dept. of State Division of Coastal Resources, 2012
Brooklyn Bridge to East 38th Street

Stuyvesant Cove 197-a Plan
Manhattan Community Board 6, 1997
East 16th Street to East 24th Street

Afterward:
The Evolution of the
Open Space Index

Since 2008, New Yorkers for Parks has been field-testing and refining the Open Space Index. One of the most exciting aspects of each new OSI project has been adapting the tool to meet individual communities' needs.

The first OSI report, released in 2010, introduced the 15 standards that comprise the Index, provided technical instructions for open space assessment, and presented the results of the on-the ground survey of the Lower East Side, where the Index standards were first piloted.

From there, we took the Index to Jackson Heights, Queens, a residentially dense neighborhood with limited parkland. The Jackson Heights survey demonstrated how community groups and park advocates can use open space data to spur neighborhood park improvements. Galvanized by the Index results that demonstrated a lack of active,

passive and total open space, a coalition of neighborhood civic groups successfully worked with the City to purchase private property for parkland conversion and to create a DOT Plaza and Play Street.

In 2011, New Yorkers for Parks embarked on an exciting partnership with researchers at the Mount Sinai School of Medicine Children's Environmental Health Center, marking the first time we modified OSI data collection to accommodate research collaboration. The research team at Mount Sinai has been following a cohort of East Harlem children, investigating the effects of the built environment on their health, and they are currently using NY4P's detailed information on the

amount and variety of neighborhood open space to investigate the relationship between open space conditions and children's physical activity. To better answer this question, the East Harlem OSI measured playgrounds and active recreation spaces on New York City Housing Authority land, which had not been included in our first two OSI's.

Advocates for the city's elderly population called our attention to the need for street benches and passive accommodations for seniors, and we subsequently added a measurement of linear feet of park benches to our survey of Council Districts 4 and 5. The current OSI also incorporates a count of street trees, based on our observation during our East Harlem survey that one-quarter of the tree pits along the Esplanade were empty.

As we prepare to conduct our next Open Space Index assessment, of the Mott Haven neighborhood in the South Bronx, we are gathering resident input to inform our field survey. We will collect supplemental data based on community priorities and concerns, and how neighborhood residents use (or don't use) their local parks.

We hope and expect that the Open Space Index will continue to evolve as a planning and advocacy tool with each additional assessment we conduct in New York City's diverse neighborhoods.

Appendix A:
Data Collection

NY4P's development of the Open Space Index began with an extensive survey of open space policies and metrics used in other cities. While many of these standards do not work for New York City's unique population density and geographic constraints, they provided thoughtful groundwork for developing the OSI targets. NY4P also drew upon existing New York City open space and sustainability goals, such as those laid out in PlaNYC, and recommendations by experts in relevant fields such as urban planning and environmental advocacy. NY4P conducted a pilot study of the Lower East Side of Manhattan in the spring of 2009 which helped to refine the Open Space Index and was the basis of our first published Open Space Index Report *in 2010.*

PLAYGROUNDS

Places for play, containing equipment such as swings, structures for climbing, water features, sand boxes and other play features

Data Collection

Collecting data on playgrounds requires surveying neighborhood parks on foot. Surveyors visit all parks and playgrounds in the study area to identify play equipment. The Open Space Index defines a playground as a portion of a park consisting of play equipment, such as swings and structures for climbing. A playground is defined as the maximally bounded area that contains play features. Sometimes this will be a stand-alone property; other times, there will be several playgrounds within a larger park. Most New York City public playgrounds are operated by DPR. We also include in our calculation PlaNYC Schoolyard-to-Playground sites, NYCHA playgrounds that are open to the public, and private schoolyards with explicitly stated hours of public accessibility.

ATHLETIC FIELDS

Soccer, football, cricket, baseball, and hockey fields, as well as ice rinks

Data Collection

Surveyors visit all parks in the study area to confirm the number and types of fields available. When fields overlap one another, surveyors count the maximum number of fields that can be used simultaneously. For instance, if two baseball fields are drawn atop a soccer field, the area will be counted as two fields.

COURTS

Basketball, handball, volleyball, tennis and bocce courts

Data Collection

Collecting data on courts also requires surveying neighborhood parks on foot. Surveyors visit all parks in the study area to confirm the number and types of courts available. All tennis, basketball, volleyball, handball and bocce courts are counted toward this total. When half-basketball courts are identified, they are counted as ½ of a court.

Court and Field Dimensions

Type	Square footage
Baseball Field (Standard)	70,650[14]
Baseball Field (Little League)	25,447[15]
Basketball Court	4,200[16]
Bocce Court	No fixed size, measure bocce court with a measuring wheel[17]
Cricket Pitch & Field	No fixed size, measure cricket fields with a measuring wheel
Football Field	57,600[18]
Golf Course	No fixed size, contact course manager or use DPR website
Handball Court	680[19]
Hockey Rink	17,000[20]
Running Track	No fixed size, measure tracks with a measuring wheel
Pool	a) Long-Course 12,300[21]
	b) Short-Course 4,505[22]
	c) Diving Pool 4,500[23]
Soccer Field (standard)	54,000[24]
Soccer Field (small)	27,000[25]
Tennis Court	2,106[26]
Volleyball Court	1,800[27]

RECREATION CENTERS

New York City Department of Parks and Recreation (DPR) indoor recreation facilities, and other indoor facilities with DPR-comparable fees and public access

Data Collection

Data on recreation centers comes from a variety of sources. DPR lists its recreation center locations on its website. Surveyors also identify community centers run by non-profits, NYCHA and other agencies through field work and in consultation with local officials. If these sites offer recreational opportunities, are publicly-accessible, and maintain a fee structure comparable to DPR recreation centers, they are included in the neighborhood's recreation center count.[28]

ACTIVE OPEN SPACE

Total acreage of playgrounds, fields, courts, pools, golf courses, greenways, bikeways and recreation centers, plus unprogrammed active open space

Data Collection

Calculating a neighborhood's active open space acreage requires measuring the playgrounds, courts, fields, swimming pools, golf courses, greenways, bikeways and recreation centers. Surveyors employ a variety of methods to obtain this data. Most courts, fields and pools follow national size standards (listed at left); however, occasionally these elements are not standard size. When a court, field or pool is shaped irregularly, surveyors use a measuring wheel to obtain the dimensions. A measuring wheel must also be used to calculate the size of playgrounds. In the case of greenways, bikeways, golf courses and recreation centers, DPR can often provide data on acreage. However, when a measurement is not available, these features are measured manually as well.

COMMUNITY GARDENS

All GreenThumb gardens and other gardens that provide a clear mechanism for public involvement and access

Data Collection

New York City's community gardens are owned and operated by a variety of entities including DPR, the Trust for Public Land, New York Restoration Project, and others. NY4P obtains community garden data from DPR and GrowNYC. Surveyors, led by NY4P staff, visit each garden to confirm the data. Surveyors also identify community gardens through on-the-ground fieldwork and confirm potential public gardens with data from OASIS (www.oasisnyc.net) and PLUTO maps.

PASSIVE OPEN SPACE

Total acreage of lawns, esplanades, plazas, beaches, natural areas and planted areas, plus community gardens

Data Collection

Passive open space acreage is calculated using a number of sources and methods. Maps obtained from DPR and other City agencies, NYC Audubon Society, and other sources provide data on parks, beaches, community gardens and natural areas. NY4P staff uses GIS (Geographic Information Systems) mapping software to calculate the acreage of community gardens, natural areas, beaches and parks. For large parks that are primarily passive but contain some active recreation, NY4P subtracts the active space acreage from the total park acreage to obtain the passive open space acreage. For neighborhood parks that tend to be occupied primarily by active open space, NY4P calculates the passive acreage by measuring lawns, esplanades, planted areas and other passive spaces within parks using a measuring wheel. Often these spaces are permeable, and the measurements can also be used for the permeable surfaces element of the OSI. Information on privately owned public plazas developed through the City's incentive zoning program is obtained from the Department of City Planning's website.[29] The locations of the Department of Transportation's Plaza Program are obtained from its website.[30]

TOTAL OPEN SPACE

The aggregate acreage of all neighborhood open spaces

Data Collection

This number combines all active and passive open spaces, as previously calculated.

ACCESS AND DISTANCE TO PARKS

Walking distance to pocket, neighborhood and large parks

Data Collection

NY4P measures access to parks using GIS mapping software. This tool allows NY4P to calculate walking distances to parks by drawing ¼- and ½-mile radius circles, or "buffers," around each park. NY4P calculates ¼-mile buffers around pocket and neighborhood parks and ½-mile buffers around large parks. This includes parks that are located within the recommended walking distance for neighborhood residents but fall outside of the study area. For access to the East River Esplanade, a neighborhood park, we calculated ¼-mile buffers around each entry point to the Esplanade; for access to Central Park, a large park, we calculated ½-mile buffers around each of the park's entrance points.

URBAN TREE CANOPY (UTC)

Neighborhood-level tree canopy capacity estimates from the U.S. Forest Service

Data Collection

The Open Space Index uses the potential neighborhood-level tree canopy coverage estimate published in the U.S. Forest Service's 2006 study, *A Report on New York City's Present and Possible Urban Tree Canopy*, as each neighborhood's target. Using GIS data and aerial photography, the Forest Service calculated New York City's existing Urban Tree Canopy (UTC) at 24%. By identifying all land not covered by water, roads or buildings as possible planting locations, the study estimated that New York City's UTC could be expanded to 42%.[31]

PERMEABLE SURFACING

Land that can absorb water, including tree pits, natural areas, planted green areas, community gardens, natural grass fields, artificial turf fields, and other porous surfaces within parks

Data Collection

NY4P collects permeable surfacing data by surveying neighborhood parks and publicly accessible open spaces on foot and identifying all tree pits, natural areas, planted green areas, community gardens, natural grass fields and artificial turf fields within the survey area's parks and open spaces.[32] In parks that are primarily concrete, we measure each individual permeable space with a measuring wheel. In parks with large swaths of natural surfacing, it is more efficient to measure the impermeable surfaces and subtract them from the park's overall acreage to find the permeable surfacing acreage for that park.

PARK MAINTENANCE

DPR Park Inspection Program (PIP) ratings for cleanliness and overall maintenance

Data Collection

To calculate park maintenance results, the Open Space Index uses the "cleanliness" and "overall maintenance" ratings from DPR's Park Inspection Program (PIP) for all parks within the survey area over the last three years. The PIP results are listed on each park's page on the DPR website. The "cleanliness" rating is based on the presence of litter, glass, graffiti, weeds and ice. The "overall maintenance" rating assesses: litter, glass, graffiti, weeds, ice, benches, fences, paved surfaces, play equipment, safety surface, sidewalks, athletic fields, horticultural areas, lawns, trails, trees, and water bodies.

Appendix B:
Council District 5
without Roosevelt Island

CD5 Population without Roosevelt Island: 148,470 residents; 17,923 children under 18; 24,455 seniors 65+

For both categories, NY4P calculates a neighborhood's result by adding the number of park inspections that rated acceptable and dividing that number by the total number of inspections for area parks over the last three years. The OSI standards correspond to the NYC Mayor's Management Report park performance targets.

Open Space Elements	NYC Neighborhood Standards	Index Outcomes	
Amount of Open Space			
Active Open Space	1 acre of active open space/1,000 residents	0.04	Below standard
Playgrounds	1 playground/1,250 children	0.42	Below standard
Athletic Fields	1.5 fields/10,000 residents	0.20	Below standard
Courts	5 courts/10,000 residents	0.91	Below standard
Recreation Centers	1 recreation center/20,000 residents	0.13	Below standard
Passive Open Space	1.5 acres of passive open space/1,000 residents	0.21	Below standard
Community Gardens	1 community garden/10,000 residents	0.00	Below standard
Total Acres of Open Space	2.5 acres of open space/1,000 residents	0.25	Below standard
Access and Distance to Parks			
Walking Distance to a Pocket Park (Less than one acre)	100% of residents are within a 5-minute walk	33%	Below standard
Walking Distance to a Neighborhood Park (One to 20 acres)	100% of residents are within a 5-minute walk	75%	Below standard
Walking Distance to a Large Park (Greater than 20 acres)	100% of residents are within a 10-minute walk	14%	Below standard
Environmental Sustainability			
Urban Tree Canopy Cover	31.7%	na[33]	Below standard
Permeable Surface within Parks	70%	48%	Below standard
Park Maintenance			
Parks rated overall "acceptable" by DPR	85%	80%	Below standard
Parks rated "acceptable" on cleanliness by DPR	90%	89%	Approaching standard

Endnotes

1   See *Toward an Age-Friendly New York City: A Findings Report*, The New York Academy of Medicine, http://www.nyam.org/news/docs/AgeFriendly.pdf

2   By identifying all land not covered by water, roads or buildings as possible planting locations, the study estimated that New York City's UTC could be expanded to 42%. The 2006 report finds that all 188 New York City neighborhoods have the potential to increase their tree canopy coverage. In light of these findings, the City initiated MillionTreesNYC, which is facilitating the planting of one million trees with the ultimate goal of achieving 30% citywide tree canopy coverage by 2030. Grove, J. M., O'Neil-Dunne, J., Pelletier, K., Nowak, D., and Walton, J. (2006). *A Report on New York City's Present and Possible Urban Tree Canopy.* http://nrs.fs.fed.us/nyc/local-resources/downloads/Grove_UTC_NYC_FINAL.pdf

3   When rainwater flows off paved surfaces, it picks up contaminants that are then carried through the city's over-taxed wastewater treatment process. But when the runoff encounters a natural surface, the soil and vegetation filter out some of the pollutants. Permeable surfacing can also reduce the volume of stormwater runoff as soil absorbs some moisture. Most importantly, soil and vegetation slow the speed of the runoff by providing a physical barrier.

4   The full set of 17 factors includes: litter, glass, graffiti, weeds, ice, benches, fences, paved surfaces, play equipment, safety surface, sidewalks, athletic fields, horticultural areas, lawns, trails, trees, and water bodies.

5   2010 U.S. Census

6   Ibid.

7   Annual DPR permit costs: Youth 17 and under: $10; Senior Citizens 62 and over: $20; Adults 18-61: $200. Single-play tickets: $15. http://www.nycgovparks.org/permits/tennis-permits. Sutton East Tennis Club hourly court rates (no annual single-fee plan is available): hourly rates vary from $80/hour Saturday and Sunday evenings 9pm-11pm, to $160/hour Saturday and Sunday 9am-2pm. Rate information obtained from brochure acquired at club location. For additional information see: http://www.suttoneasttennis.com/pages/index.cfm?siteid=9370

8   At the same time, we must also be aware that in the coming years Roosevelt Island, as the planned site of Cornell University's new tech campus, will experience an influx of residents and workers, and the campus plans should incorporate open space amenities that help mitigate the increased population demands on existing parks.

9   Beginning with New York City's 1961 Zoning Resolution, private developers of office and residential towers could receive permission to build above the height and bulk regulations (known as floor area ratio, or FAR) of a property lot in return for providing public realm amenities—i.e. additional street level plazas and arcades. These "privately owned public spaces," or POPS, are owned and maintained by a private developer (and subsequent private owners throughout the life of a building), with access rights granted to the public. See, *Privately Owned Public Space: The New York City Experience*, Jerold S. Kayden, The Department of City Planning of the City of New York, and The Municipal Art Society of New York. New York: John Wiley & Sons, 2000.

10 Incentive zoning allowed for "as-of-right" plazas, for which developers were required to do no more than submit to the Department of Buildings plans demonstrating compliance with the minimal letter of the law. Between 1961 and 1975, the City introduced new public space categories and designated special purpose zoning districts. Zoning Resolution reforms in 1975 acknowledged the lackluster design and deadening street-level effect of many as-of-right POPS, implementing for the first time an administrative review process for commercial developments, requiring amenities such as seating, trees and decorative paving, and specifying design standards to encourage truly public spaces (similar reforms in 1977 amended the zoning code to include improved standards for plazas attached to residential buildings). Additional zoning amendments have introduced and subsequently eliminated permissible forms of bonusable space, including sidewalk widenings, through-block galleries and open-air concourses.

11 http://mas.org/urbanplanning/apops/

12 Vision 2020: New York City Comprehensive Waterfront Plan, http://www.nyc.gov/html/dcp/html/cwp/index.shtml; Manhattan Waterfront Greenway Master Plan, http://www.nyc.gov/html/dcp/pdf/transportation/mwg_full.pdf

13 Reimagining the Waterfront, http://reimaginethewaterfront-civitas.com/; 197-a Plan for the Queensboro Bridge Area, http://www.nyc.gov/html/dcp/html/pub/197queensboro.shtml; East Midtown Waterfront Project, http://www.nycedc.com/project/east-midtown-waterfront; New York's Next Great Waterfront Park, http://www.slideshare.net/MASNYC/new-yorks-next-great-waterfront-park-urban-design-10562516; 197-a Plan for the Eastern Section of Community District 6, http://www.nyc.gov/html/mancb6/downloads/pdf/197-A%20Plan.pdf; The East River Blueway Plan, http://www.eastriverblueway.org/; Stuyvesant Cove 197-a Plan, http://www.nyc.gov/html/dcp/pdf/community_planning/mn6_stuyvesant_cove_197a.pdf

14 Outfield and foul ground sizes vary. See Grady L. Miller, "Baseball Field Layout and Construction," Environmental Horticulture Department, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL, Publication date: June 2001, Revised: July 2001. http://ufdc.ufl.edu/IR00001736/00001

15 Ibid.

16 See http://en.wikipedia.org/wiki/Basketball_court

17 See http://www.sportsknowhow.com/bocce/dimensions/bocce-court-dimensions.html

18 For Professional & NCAA football field dimensions, see the Sports-Know-How website. http://www.sportsknowhow.com/football/field-dimensions/high-school-football-field-dimensions.html

19 United States Handball Association. http://ushandball.org/courts2.html

20 Sports-Know-How. http://www.sportsknowhow.com/hockey/dimensions/hockey-rink-dimensions.html

21 For NCAA Standards for Swimming and Diving Pools, see the Recreonics website. http://www.recreonics.com/fyi/ncaa_standards.htm

22 Ibid.

23 Ibid.

24 See the Sports-Know-How website. http://www.sportsknowhow.com/soccer/dimensions/soccer-dimensions.html

25 Ibid.

26 See the Sports-Know-How website. http://www.sportsknowhow.com/tennis/dimensions/tennis-court-dimensions.html

27 See the Sports-Know-How website. http://www.sportsknowhow.com/volleyball/dimensions/volleyball-court-dimensions.html.

28 DPR recreation center membership and fees: http://www.nycgovparks.org/programs/recreation-centers/membership

29 New York City Department of City Planning. http://www.nyc.gov/html/dcp/html/priv/priv.shtml

30 New York City Department of Transportation. http://www.nyc.gov/html/dot/html/sidewalks/publicplaza.shtml

31 J. Morgan Grove, Jarlath O'Neil-Dunne, Keith Pelletier, David Nowak, Jeff Walkton. "A Report on New York City's Present and Possible Urban Tree Canopy." Table 6: Existing, Possible, and Relative UTC by Neighborhood, p 20, July 2006. http://www.nrs.fs.fed.us/nyc/local-resources/downloads/Grove_UTC_NYC_FINAL.pdf

32 The Open Space Index does not separate out artificial turf fields into a unique permeability category because of the variety of turf systems used in city parks and the lack of public research on turf permeability.

33 The tree canopy coverage is calculated across the entire district.

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