Park Surface Coverage &
Green Infrastructure

Brooklyn Community Board 3,
Bedford Stuyvesant

Benjamin Engel
Fund for the City of New York Planning Fellow 2022/23
Baruch College, MPA
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INTRODUCTION

Purpose:

● To analyze the amount of impervious surfaces in park properties and compare to similar community boards
● Pervious surfaces are grass/shrubs, trees and soil
● Asphalt, concrete and other surfaces are impervious and do not drain water, leading to flooding
● Parks with highest impervious surface coverage are overlaid with flood water maps
● To provide a tool for board members to use when redesigning park spaces
After reading the statement of community and district needs, the idea for the project emerged out of conversations with board chair Anthony Buissereth and district manager Henry Butler.

We started looking at the eastern part of Fulton Street in the district with a focus on new HPD developments to be built on vacant land on Fulton between Howard and Saratoga.

The district population is growing and there is a question as how will community assets like parks handle this influx.

A simple question emerged: just how much park space is concrete?
2018 City-Wide Parcel Based Impervious Area Study

- Tree Canopy
- Grass/Shrub
- Bare Soil
- Buildings
- Roads
- Water
- Railroads
- Other Impervious

DATA & METHODOLOGY

<table>
<thead>
<tr>
<th>Land Cover Class</th>
<th>C-Value Range</th>
<th>Level of Imperviousness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal</td>
<td>&gt; 0.98</td>
<td>Impervious</td>
</tr>
<tr>
<td>Rubble</td>
<td>0.31-0.98</td>
<td>Impervious</td>
</tr>
<tr>
<td>Gravel</td>
<td>0.30-0.50</td>
<td>Semi-Pervious</td>
</tr>
<tr>
<td>Asphalt</td>
<td>0.40-0.60</td>
<td>Semi-Pervious</td>
</tr>
<tr>
<td>Rock</td>
<td>0.35-0.80</td>
<td>Semi-Pervious</td>
</tr>
<tr>
<td>Solar Panel</td>
<td>0.20</td>
<td>Semi-Pervious</td>
</tr>
<tr>
<td>Pool</td>
<td>N/A</td>
<td>Pervious</td>
</tr>
<tr>
<td>Grass</td>
<td>0.60-1.00</td>
<td>Pervious</td>
</tr>
<tr>
<td>Bare Soil</td>
<td>0.30-0.60</td>
<td>Pervious</td>
</tr>
<tr>
<td>Building</td>
<td>0.20-0.50</td>
<td>Pervious</td>
</tr>
<tr>
<td>Water</td>
<td>0.20</td>
<td>N/A</td>
</tr>
<tr>
<td>Open Water</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

DATA LIMITATION NOTE: Radar imaging did not always identify impervious surfaces correctly. Results should be confirmed to verify conclusions. Credit to Zhi Keng He of BetaNYC with technical help.
FINDINGS

- There 74 park properties totalling 68 acres of space in Community Board 3.
- Parks have an average of **36% impervious** surface coverage.
- 29 parks in Community Board 3, or a little more than a third, have at least 50% of its surface covered with an impervious surface.
- There are 15 playgrounds and parks jointly operated with the DOE. 8 of them have 50% or more impervious surface coverage with two having 80% or more.
FINDINGS

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Parks Surface Data

Interactive Map

Mapping by: Benjamin Engel, benjmin@gmail.com
FINDINGS

Parks Surface Data & Green Infrastructure Assets


Parks surfaces

Predominant category
- Tree Canopy
- Other Imperious
- Grass and Shrub
- Bare Soil
- Buildings
- Roads

Green Infrastructure Practices - DEP GI Assets
- Constructed
- In Construction
- Final Design

FINDINGS

2080 Extreme Flood Map

SOURCE: CITY OF NEW YORK STORM WATER RESILIENCY PLAN, https://services9.arcgis.com/jzHsRPm3d1aMJuBp/arcgis/rest/services/Brooklyn_Queens_Stormwater_Flood_Map_Extreme_Flood/FeatureServer

Mapping by: Benjamin Engel, benjamin@gmail.com
FINDINGS

Parks Surface Data, Green Infrastructure Assets & 2080 Extreme Flood Map

Brooklyn Neighborhoods Extreme and Moderate Stormwater Floods

Green Infrastructure Practices - DEP GI Assets
- Constructed
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FINDINGS
Comparison Snapshot

Median Income in 2021 Dollars

FINDINGS
Comparison Snapshot

SOURCE: NYC OPEN DATA, PARKS PROPERTIES
FINDINGS

Example

As an example, St. Andrews Playground is seen in Google maps as being a “green space”
FINDINGS

Example

But 75% of St Andrews Playground surface is impervious

SOURCE: GOOGLE MAPS
SUGGESTIONS

Upcoming Capital Projects, NYC Parks Department

- St Andrews Park: Design phase
- Classon Playground: Procurement phase for green infrastructure, expected to be completed May 13th

SOURCE: PARKS DEPARTMENT CAPITAL PROJECTS TRACKER
https://www.nycgovparks.org/planning-and-building/capital-project-tracker#Brooklyn
SUGGESTIONS
Green Infrastructure Examples

Figure A1: DEP Rain Gardens

Figure A2: NYC Greenstreets Plaza

Figure A3: NYCHA South Jamaica Houses cloudburst pilot. The existing basketball court will be excavated to create underground water storage and repair the surface. The new "cloudburst" design will lower the basketball court, allowing it to fill with water during extreme rain, and providing a new seating area for residents.

SOURCE: CITY OF NEW YORK STORM WATER RESILIENCY PLAN, 2021
SUMMARY

- Impervious surfaces account for 36% of parks in Brooklyn Community Board 3
- As the new residents move into the district, resources will be strained to accommodate a growing population
- Impervious surface area of park properties throughout the city follow a similar pattern
- There is an opportunity to transform park space to proper green spaces and address stormwater capture

SOURCE: ENGEL, 2023
NEXT STEPS/ACTIONABLE ITEMS

- Park spaces should be double checked for accuracy on surface coverage
- Stakeholders should collaborate on daylighting impervious surfaces where possible
- There should be transparency on google maps and city data about what kind of parks people have access to. An impervious surface score or something similar
- Partnership for parks or Central Park Conservancy Institute for Urban Parks can help with community engagement and building local advocates
REFERENCES/FURTHER READINGS


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