



Park Surface Coverage & Green Infrastructure

Brooklyn Community Board 3,
Bedford Stuyvesant

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Fund for the City of New York Planning Fellow 2022/23

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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



SARATOGA PARK: NEIGHBORHOOD PARK CATEGORY
SOURCE: GOOGLE MAPS



TAAFFEE PLAYGROUND: NEIGHBORHOOD PARK
CATEGORY
SOURCE: GOOGLE MAPS

BACKGROUND

Statements of Community District Needs and Community Board Budget Requests

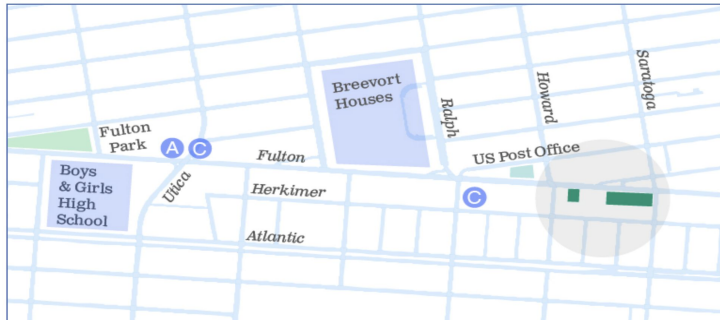
Fiscal Year 2023



Top Three Pressing Issues

1. Affordable Housing
2. Parks and Open Space
3. Trash Removal and Cleanliness

“Less than 3% of the land in Bedford-Stuyvesant is open or recreational space, placing it in the bottom 10 citywide and the second lowest in Brooklyn.”



SOURCE: HBD BEDFORD-STUYVESANT HOUSING PLAN

- 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?***

DATA & METHODOLOGY



2018 City-Wide Parcel Based Impervious Area Study



Parks Property Data Set

Land Cover Class	C-Value Range	Level of Imperviousness
1. Metal	> 0.98	Impervious
2. Rubber		
3. Wood		
4. Concrete		
5. Roof		
6. Asphalt	0.8-0.98	Impervious
7. Brick Paver		
8. Rock		
9. Solar Panel	N/A	Impervious
10. Pool		
11. Water	0.25-0.85	Semi-Pervious
12. Gravel		
13. Synthetic Turf		
14. Bare Soil		
15. Sand	0.3-0.5	Pervious
16. Grass	0-0.35	
17. Bush		
18. Tree	N/A	N/A
19. Open Water	N/A	

Source Datasets

- All source datasets were analyzed and determined to be suitable for the study
- Four core datasets – **Ortho Imagery, LIDAR, Planimetrics, and MapPLUTO** – were identified as a robust set for developing a rational impervious area GIS layer

Source Datasets Used for Impervious Area Layer

- 2018 Ortho Imagery
- 2017 LIDAR Intensity
- 2017 LIDAR Digital Elevation Model
- 2016 Planimetrics
- Parcels – 2018 MapPLUTO

2018 Building Footprints

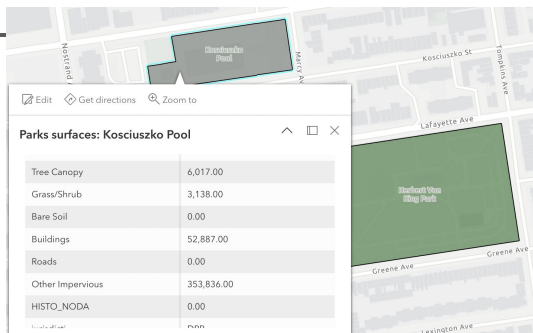
DATA LIMITATION NOTE: Radar imaging did not always identify impervious surfaces correctly. Results should be confirmed to verify conclusions

Credit to Zhi Keng He of BetaNYC with technical help

8 categories were narrowed down from this list to include:

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

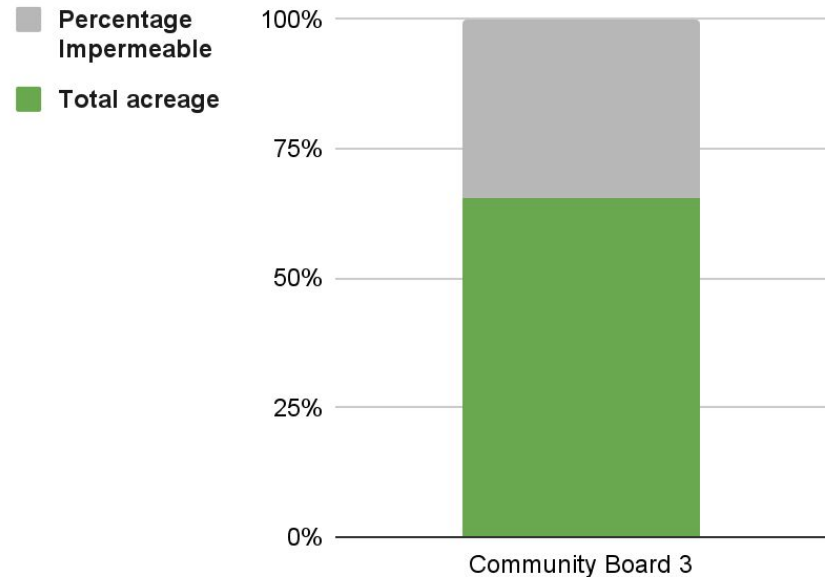
SOURCE: DEP WEBINAR, JUNE 23, 2020



FINDINGS

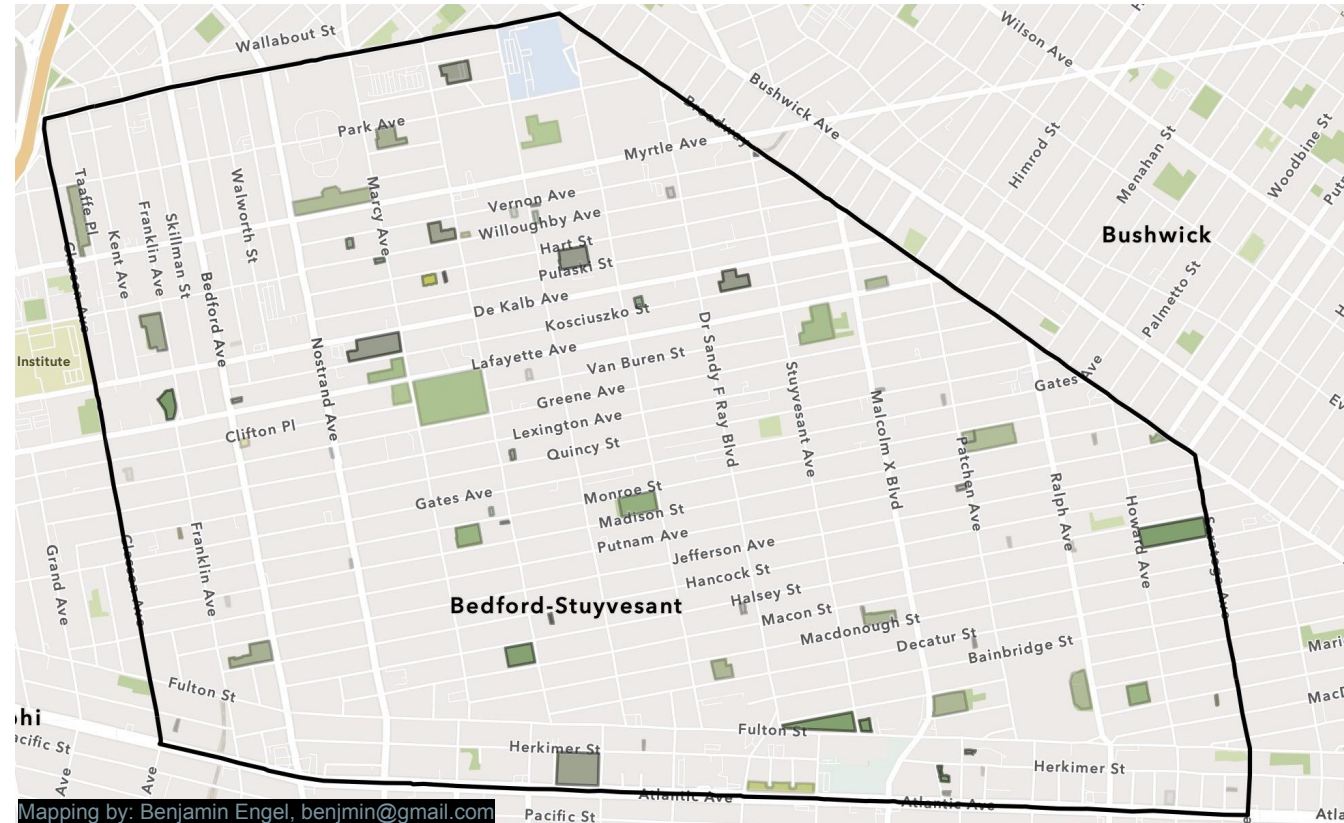
- There 74 park properties totalling 68 acres of space in Community Board 3
- Parks have an average of **36%** *impervious* surface coverage.
- 29 parks in Community Board 3, or a little more than a third, have at least 50% of its surface covered with an impervious surface.
- There are 15 playgrounds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

Total acreage and percent of acreage that is impermeable



FINDINGS

Parks Surface Data



Parks surfaces

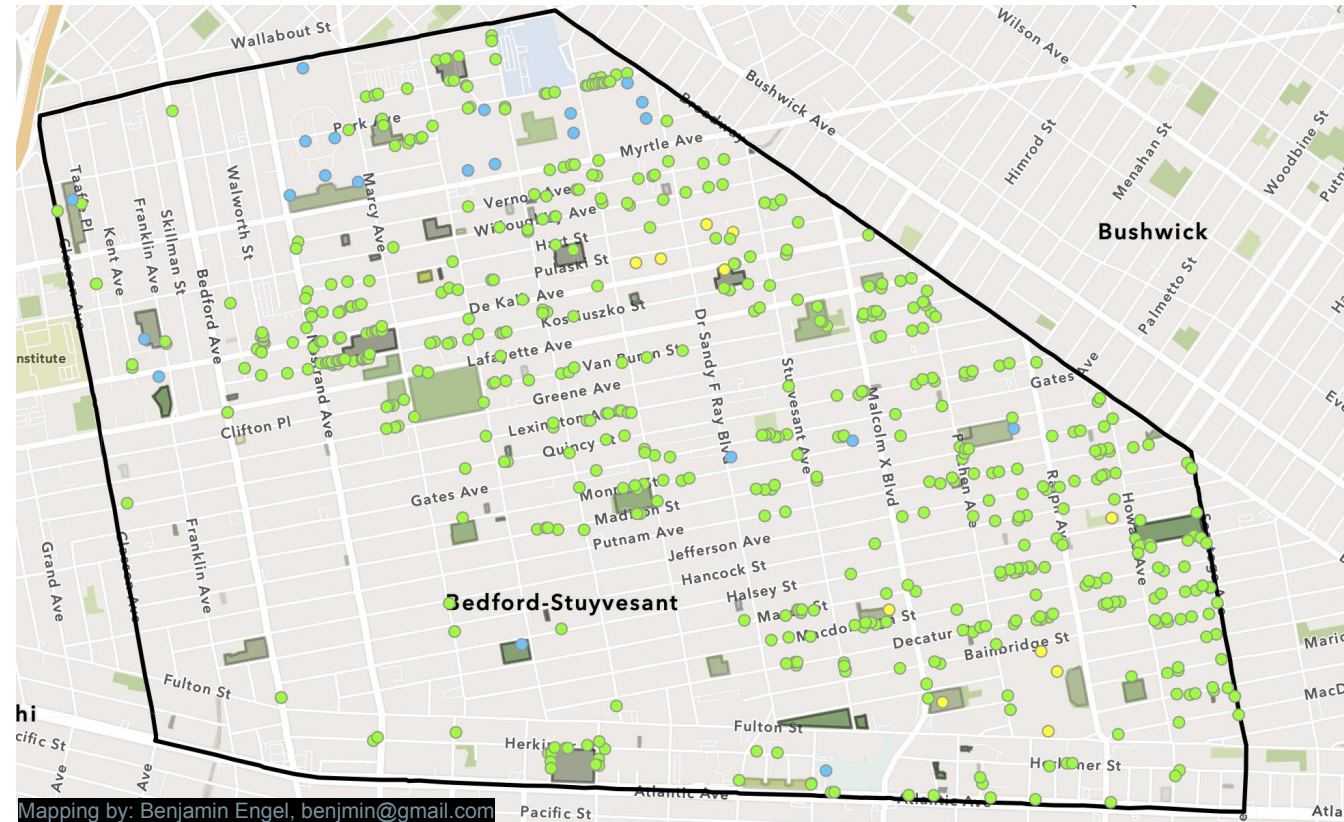
Predominant category

-  Tree Canopy
-  Other Imperivious
-  Grass and Shrub
-  Bare Soil
-  Buildings
-  Roads

[Interactive Map](#)

FINDINGS

Parks Surface Data & Green Infrastructure Assets



Parks surfaces

Predominant category

- Tree Canopy
- Other ImperVIOUS
- Grass and Shrub
- Bare Soil
- Buildings
- Roads

Green Infrastructure Practices - DEP GI Assets

- Constructed
- In Construction
- Final Design

SOURCE: NYC DEC,
<https://www.arcgis.com/home/webmap/viewer.html?webmap=a3763a30d4ae459199dd01d4521d9939&extent=-74.3899,40.497,-73.3757,40.9523>

FINDINGS

2080 Extreme Flood Map



Brooklyn Neighborhoods Extreme and Moderate Stormwater Floods



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

FINDINGS

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

Brooklyn Neighborhoods Extreme and Moderate Stormwater Floods



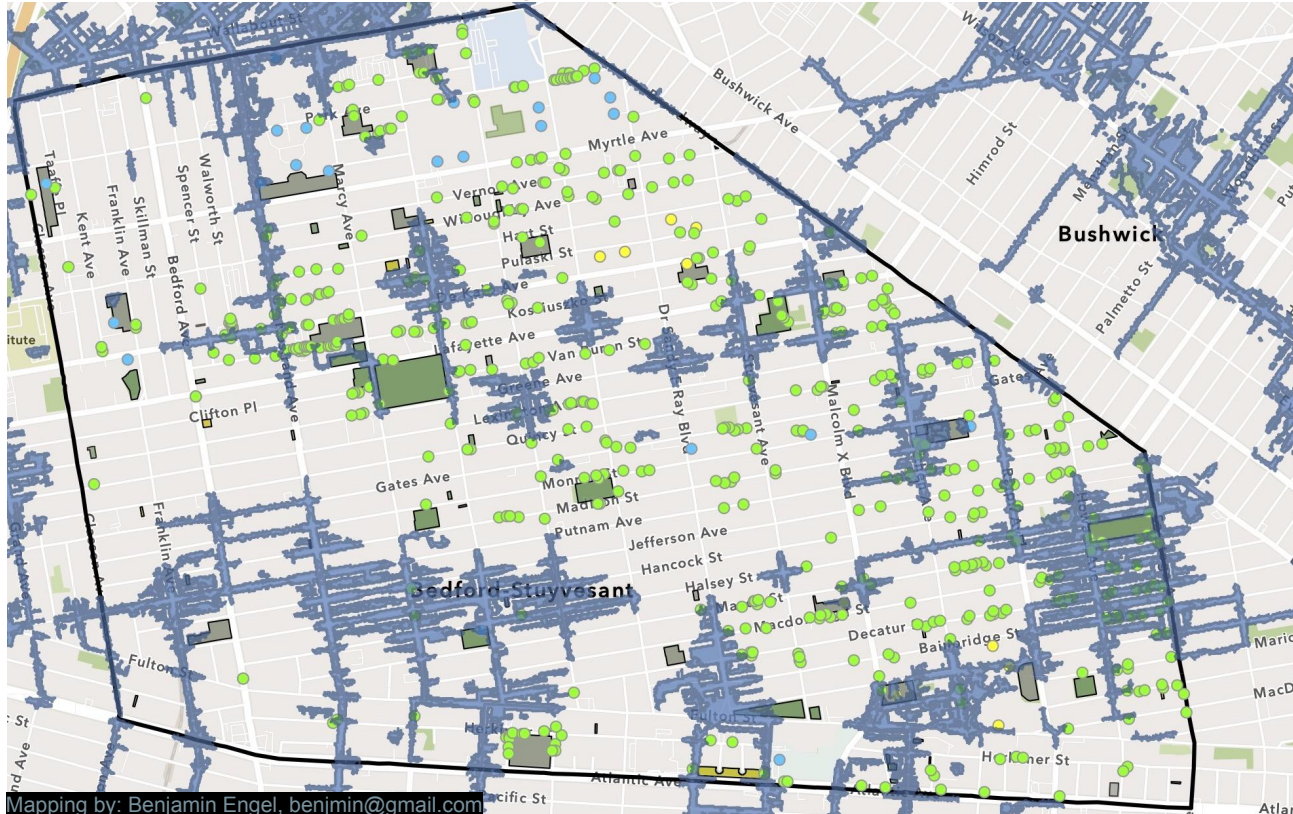
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Parks surfaces

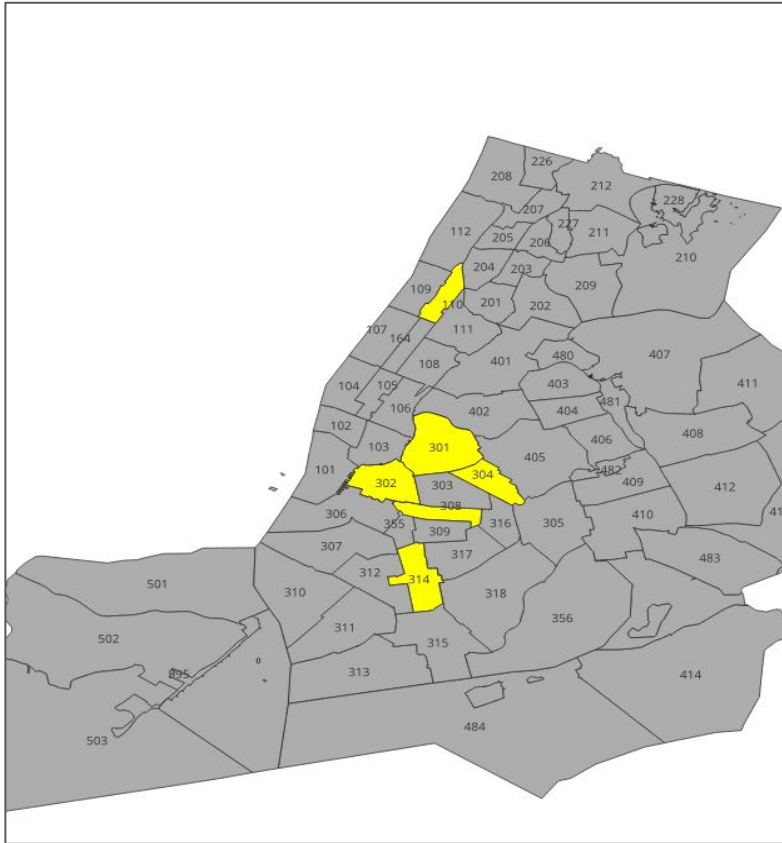
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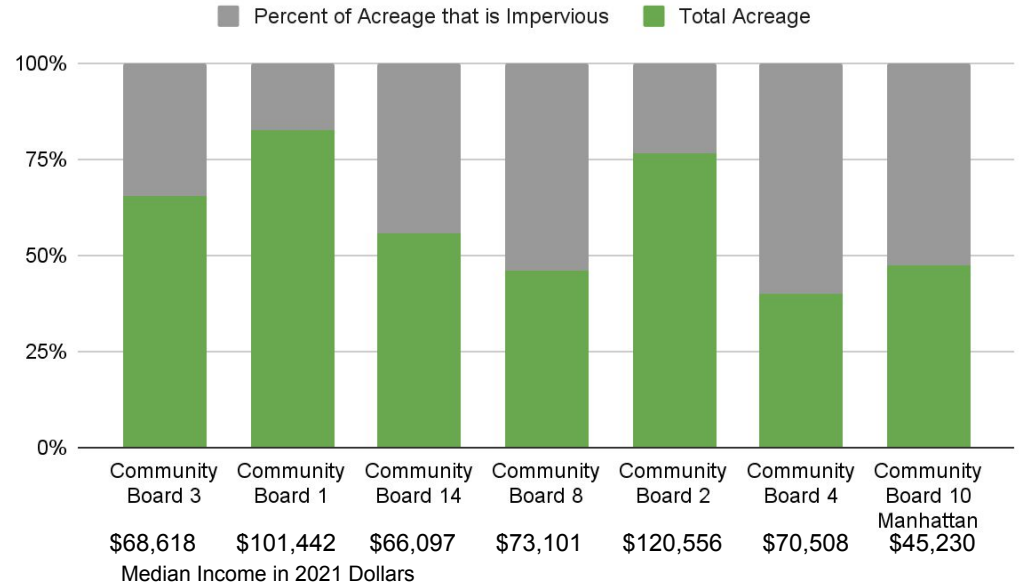


FINDINGS

Comparison Snapshot



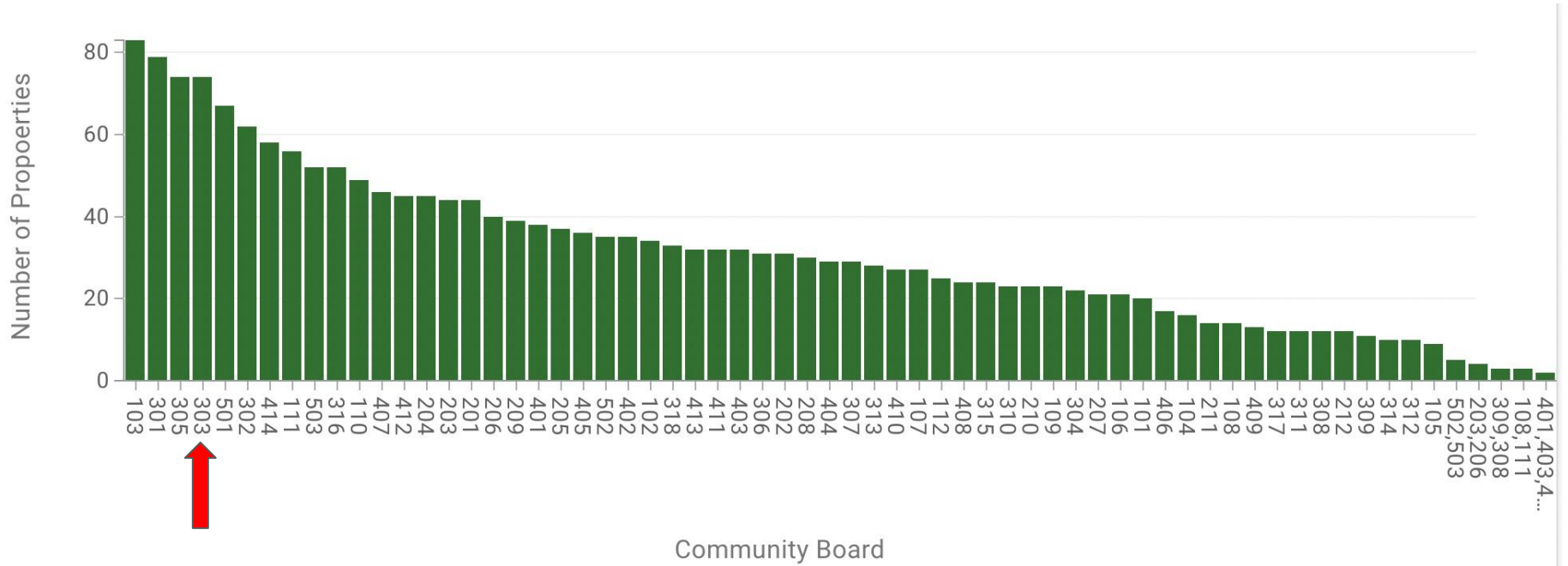
Total Acreage and Percent of Acreage that is Impervious



INCOME SOURCE: CITIZENS' COMMITTEE FOR CHILDREN OF NEW YORK,
<https://data.ccnnyork.org/data/map/66/median-incomes#66/39/3/107/127/110/a>

FINDINGS

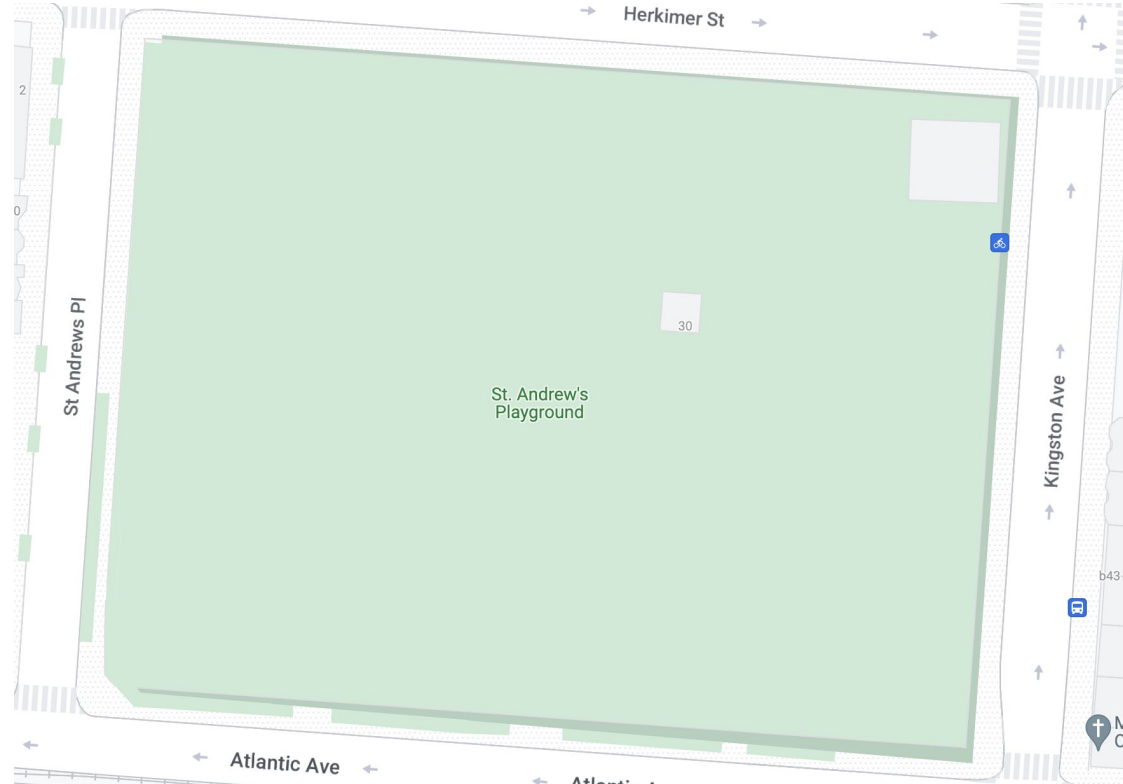
Comparison Snapshot



FINDINGS

Example

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



SOURCE: GOOGLE MAPS

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

Collaboration Among Stakeholders



SUGGESTIONS

Green Infrastructure Examples



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

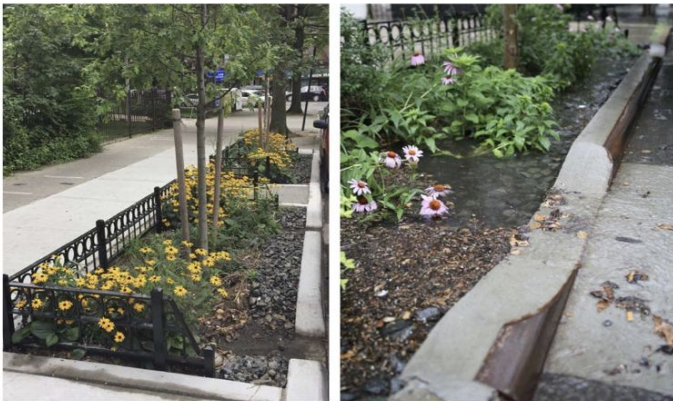


Figure A1: DEP Rain Gardens

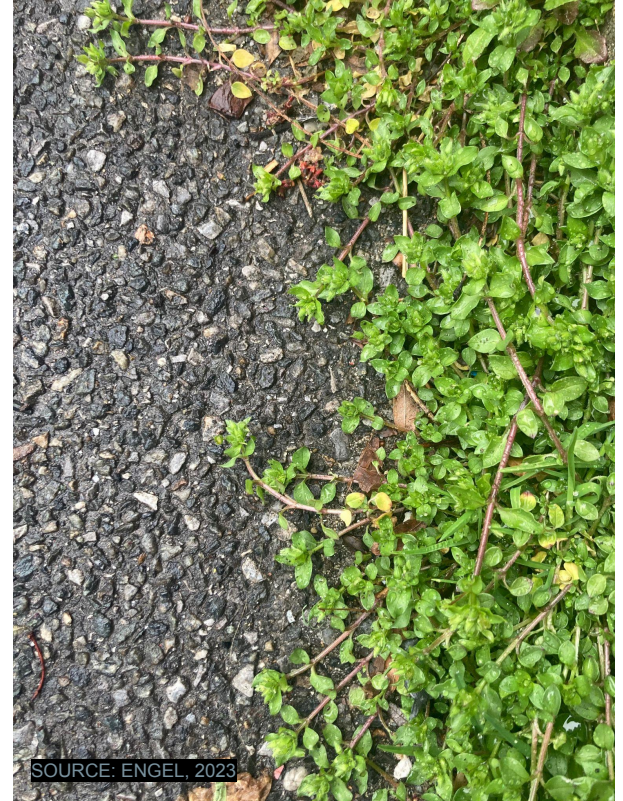


Figure A2: NYC Greenstreets Plaza

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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