



# RED HOOK, BROOKLYN: EQUITABLE RESILIENCE THROUGH PRESERVATION

Historic Preservation Studio II  
Spring 2020

Columbia University Graduate School of  
Architecture, Planning, and Preservation



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PortSide NewYork

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NO SMOKING

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# INTRODUCTION

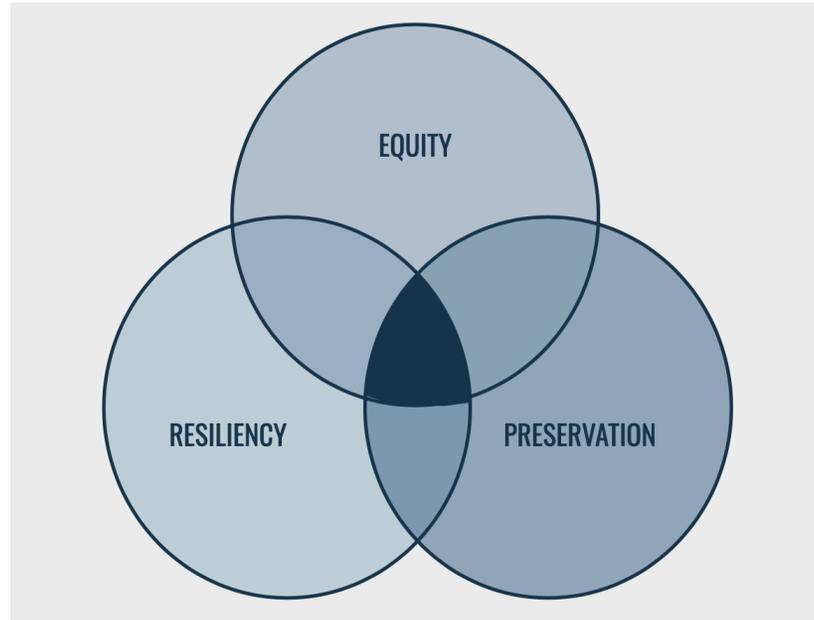
# INTRODUCTION

The work of preservation is not simply about protecting historic fabric and values; cultural heritage can serve as a potential catalyst for positive social and environmental change. This Spring 2020 Historic Preservation Studio II explored the role of preservation in promoting equitable resilience.

New York City – with more than 500 miles of coastline – faces significant challenges due to climate-related sea level rise and storm surges. While municipal, state, and federal agencies are advancing efforts to enhance resilience and promote flood adaptation in vulnerable areas of the city, very little attention is afforded to historic resources and cultural heritage in resilience plans and adaptation schemes. Likewise, financial resources for adaptation are often focused on areas of the city through which there are significant capital flows, as these are critical to New York’s economy. Communities with less economic, and thus political, power often face the threats of climate change with more uneven investment and fewer resources. Statistically, such communities are also underrepresented with regard to their built heritage resources, as NYC historic districts skew older, whiter, wealthier, and better educated.

To better understand these challenges and explore the positive role preservation might play in addressing them, this studio focused on the neighborhood of Red Hook, Brooklyn, and directed its inquiry at the intersection of resilience, equity, and preservation.

For the purposes of this studio, resilience was defined as the capacity to recover from disasters and to adapt in the face of climate change. Equity centered on understanding the social dynamics and needs of those who are disadvantaged by relations of power and inequities of opportunity. Preservation was defined as not only protecting historic fabric, but also preserving community values and telling the stories of the neighborhood. In this sense, the studio took a liberal view of what is conventionally considered heritage. Moving beyond architecturally and historically significant buildings, the studio sought to recognize the ways in which multiple publics ascribe values and narratives to Red Hook, and to better understand how those values and narratives are encountered spatially within the neighborhood.



Venn diagram of the studio concepts. The intersection of this venn diagram served as the core of this studio



Map of Study Area

The following questions guided students in their inquiry:

- How are diverse histories, narratives, and multiple publics represented in the built environment of Red Hook?
- In what ways have the community values and heritage resources of Red Hook evolved and been challenged - historically and more recently - by environmental factors as well as socio-economic and political factors?
- How can the preservation enterprise intervene, so as to instrumentalize heritage toward equitable resilience in Red Hook?

This studio and its findings were developed through extensive student-led collaborative work. Students delved deeply into Red Hook's social and physical history as well as contemporary dynamics to better understand the Red Hook community, its heritage, and its priorities. Research began with a survey of primary and secondary literature, media, and visual resources to understand the historic context of Red Hook. This was augmented by analyses of historic and contemporary studies and plans, demographics, and urban form and environmental conditions to understand changes in Red Hook over time. An analysis of community stakeholders was conducted and was followed by a study to understand community perspectives, including engagement with community organizations, attending events and meetings in Red Hook, personal interviews with fifteen stakeholders from community organizations, and the development of a digital survey for community members. Concurrent with the community data collection, a survey of the physical environment of Red Hook was conducted to understand spatial relationships and the built environment in Red Hook.

After data collection was complete, an analysis of the historic and contemporary evidence was conducted at a studio-wide level to discern key issues impacting Red Hook. To identify these key issues, the studio undertook an in-class SWOC analysis in which the strengths, weaknesses, opportunities and challenges of the neighborhood were explored. From these key issues, students developed project proposals that sought to answer the studio questions while serving the neighborhood of Red Hook.

This report presents summaries of the studio findings in the following four sections: Red Hook Geography, Red Hook Community, Red Hook Physical Environment, and Key Issues. These are followed by two proposals that build upon these findings by instrumentalizing heritage toward equitable resilience. The report appendices include supporting research and additional details about the community and physical data collection.

This studio builds upon work done by past Columbia Historic Preservation studios, as well as the efforts of local community organizations and city and state agencies. Due to the outbreak of COVID-19 and the transition to online classes, the studio faced an unexpected and constantly-evolving situation during the second half of the semester. Students had to rely on data collected during the early weeks of the term, as they were unable to continue work in the field or to physically access libraries and archives. They demonstrated true dedication to the studio and the inquiry as they continued to find alternative means of collaboration and data sharing. Students and faculty alike are indebted to members of the Red Hook community who remained engaged with the studio despite the challenges of the pandemic and offered continued support and guidance. It is hoped that this report serves as a useful resource to all those who work towards equity, resilience, and preservation in Red Hook.

## RED HOOK GEOGRAPHY

The boundaries of the study area include the entire neighborhood of Red Hook from the Brooklyn Queens Expressway (BQE) to the waterfront.

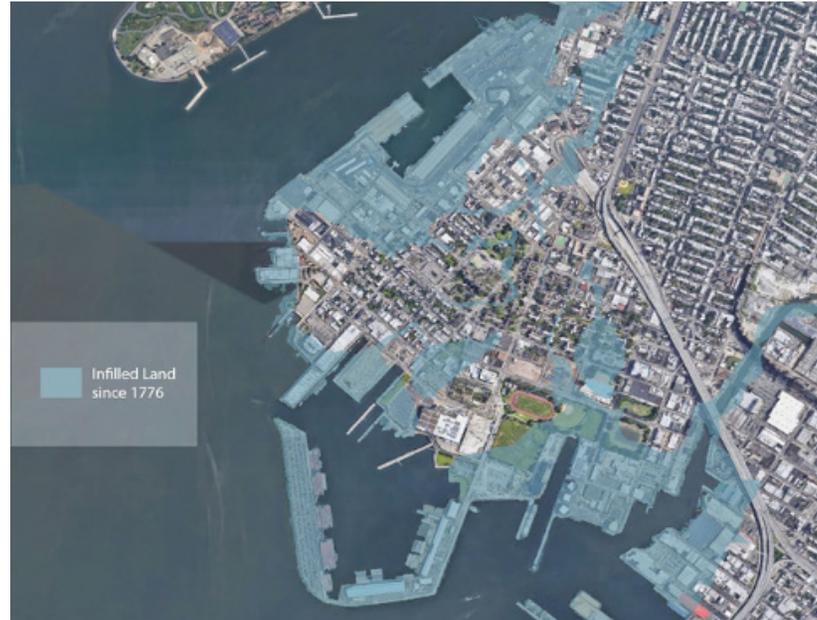
Some prominent features include the Atlantic Basin, the Erie Basin, the Gowanus Canal, and a large New York City Housing Authority project called the Red Hook Houses, in which 70 percent of the neighborhood's population resides.

The development of Red Hook's shoreline is one of artificial expansion, mirroring the growth of the maritime industry in Red Hook. The footprint of Red Hook was much smaller in the eighteenth century when the most prominent feature was the peninsula connected to the mainland through many low-lying wetlands, marshes, and tidal estuaries.

In the latter half of the nineteenth century, Red Hook's coastline largely assumed the form that it has today. These changes completed a process of transformation from a natural to an artificial shoreline.

All of this infill has created a topography that is largely manmade and vulnerable to flooding. The topography has highly influenced the urban form of the neighborhood.

This influence traces back to the early farms and fortifications on the former Red Hook peninsula in the westernmost corner of Red Hook. As development proceeded, the naturally higher and drier ground of former islands was developed first, often becoming row houses, while the more low-lying land later featured warehouses and factories. Most of Red Hook is located less than ten feet above sea level, making the neighborhood particularly vulnerable as sea level rises and flooding events increase in the coming years. The topography presents a challenge to preservation efforts in the neighborhood and is important to consider in examining the built environment.



Map illustrates the changes to the coastline on a contemporary map, showing how much of the developed land in Red Hook today is infill



Topography of Red Hook, present day

## RED HOOK COMMUNITY

Red Hook has a long and complex social history characterized by changing populations. To understand the neighborhood's past, as well as its contemporary dynamics, students undertook a review of historical and contemporary sources, analyzed demographic change over time, and engaged with local stakeholders to collect firsthand data. An understanding of the Red Hook community emerged, which is summarized here. Supporting research and additional information is included in the appendices.

### **Brief History**

The earliest known settlers of the area that is now Red Hook were the Indigenous Lenape people, who used the land seasonally.

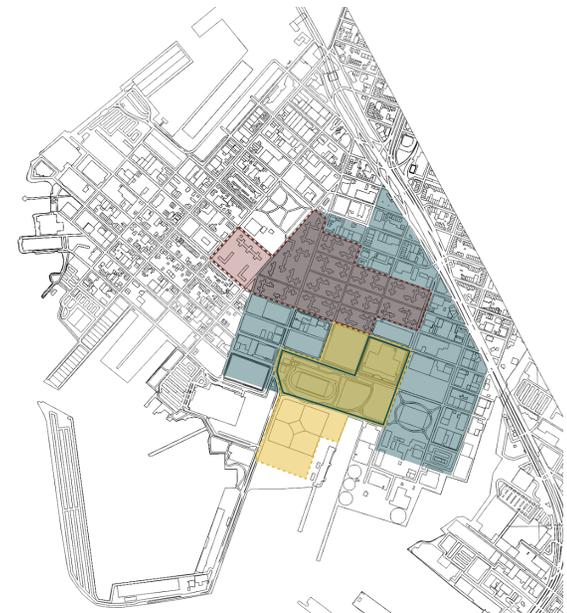
The Dutch colonized the area in the seventeenth century and continued the use of the waterways for the transport of goods. The earliest census data, from 1790, indicated that there were 405 enslaved persons in Brooklyn or about 33 percent of the population (U.S. Census Bureau 1770). While there is no quantitative data for the population of enslaved people in Red Hook, it can be assumed that the early Dutch farms and waterfront trade involved slave labor. Even after the abolishment of slavery in NY, the ports in Red Hook transported and traded in products and goods produced by enslaved people, such as sugar.

As the port gained prominence and size from the mid-nineteenth through the early twentieth century, the populations of various immigrant groups in Red Hook fluctuated. In the 1920s and 1930s, the population was predominantly Italian, Irish, Norwegian, German, and Russian immigrants (Moore 1994). This immigrant population was significantly higher than in Brooklyn overall. However, in the next two decades, the immigrant profile in Red Hook shifted significantly: by 1950, the population was 85 percent native-born.

Housing for these immigrant workers took the form of informal settlements in inland Red Hook. In the 1800s, these were called shantytowns, and in addition to the economic divisions there were also cultural and ethnic divisions (Spellen 2018). During the Great Depression, a "Hooverville" camp, where homeless and unemployed people gathered and lived, was located at the southeast corner of Red Hook (Spellen 2018).



Illustration of Lenape Fishing



Map overlays historic areas of Shanty Towns (green), Hoovervilles (yellow) and contemporary New York City Housing Authority Housing Development (red) on current Red Hook Street grid

The Red Hook Houses were built in the late 1930s, at the beginning of the public housing movement, to provide affordable housing for dock workers and their families (Ferré-Sadurní 2018). The building of the Houses was a significant alteration to the built environment of Red Hook, putting the majority of the economically disadvantaged residents of Red Hook in the same small, inland area, and formalizing a socio-spatial boundary around income and wealth that persists to today.

### ***Demographics and Spatial Divisions***

As the waterfront trade faltered in the mid-20th century and white residents moved out of Red Hook en masse, the racial make-up of the population changed as well, with Red Hook becoming primarily a community of color by 1960 (Sadurni 2018).

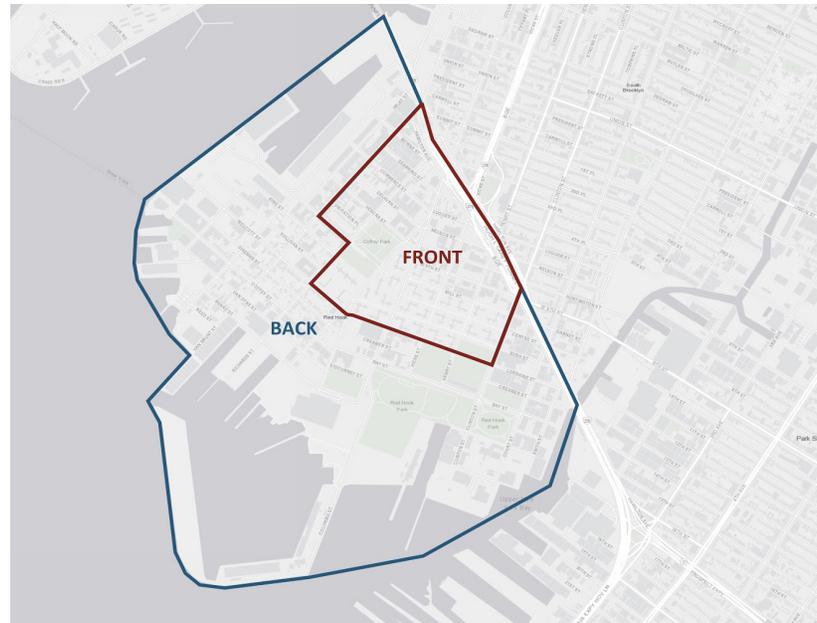
Today, more than 70 percent of Red Hook’s population lives in the central census tract containing the Red Hook Houses, and that area continues to be the most economically disadvantaged and racially diverse part of the community.

Most stakeholders reference and understand these contemporary differences between the waterfront and inland communities as “front” and “back” areas within Red Hook. The “back” is more closely associated with the waterfront area - including the industrial properties along the waterfront, the commercial corridor on Van Brunt Street, and the residential areas that surround it. The “front” is associated with the inland areas where the Red Hook Houses are located, served by the commercial corridor on Lorraine Street. areas where the Red Hook Houses are located, served by the commercial corridor on Lorraine Street.

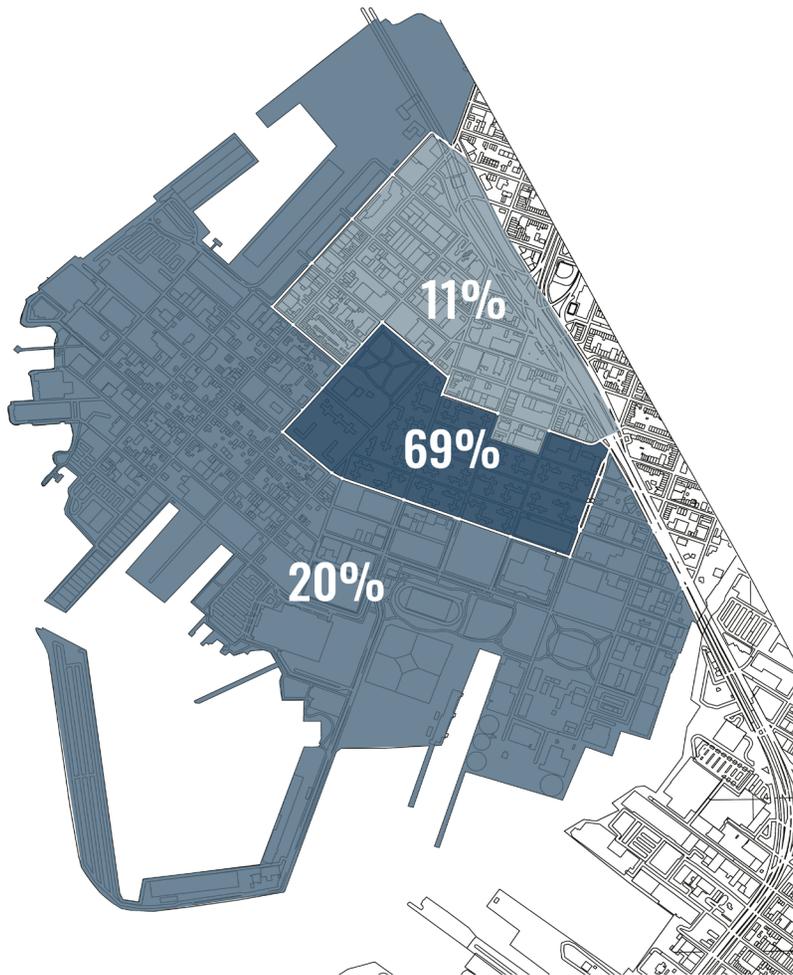
Since 2010, the overall population in Red Hook has grown modestly. The growth has included increases in employment rates, education levels, income, and home ownership, but that growth is isolated to the “back,” exacerbating extant racial and income disparities. The community is also facing significant challenges from environmental factors and development forces. A further analysis of the existing conditions and context follows.



Red Hook Houses, c.1939



Contemporary map of Red Hook with areas commonly understood as the “back” and “front” indicated



Population distribution in Red Hook according to census tract; percentage of total population living within each census tract

*“A small fishing village on the edge of gotham”  
-Dustin Yellin, Founder of Pioneer Works,  
describing Red Hook*

## Stakeholder Engagement and Community Data Collection

To understand how social histories, values, and interests manifest themselves within the community today, the team examined stakeholder groups and conducted informational interviews with fifteen community members representing a wide breadth of stakeholder organizations, design and planning professions, and viewpoints from Red Hook.

Identifying Stakeholder groups in Red Hook involved researching the neighborhood and understanding who - in terms of individuals as well as collective groups - forms the multiple publics, and thus social fabric, of the neighborhood. Nine key stakeholder groups emerged:

1. Residents of Red Hook
2. Nonprofits and Community Organizations
3. Schools & Religious Institutions
4. Property Owners within Red Hook
5. Small-business Owners/Operators
6. Artists & Makers
7. Large Commercial Companies
8. Waterfront Industrial Operators
9. Professionals and Academics working in Red Hook

Given the aims of equity, resilience, and preservation in this studio, the team focused further on organizations and groups working on these topics within Red Hook. More than a dozen Red Hook organizations have been working for over a decade in related focus areas: equity and social justice, economic development and jobs training, and arts and education. Several organizations focused on resiliency and sustainability issues have been created since Hurricane Sandy, some at community-wide levels and some serving specific subsets of the community. These organizations - along with their stated missions or focus areas - are represented in the chart on the facing page. While not exhaustive, the chart seeks to illustrate those most active and present within the community and served as a foundation for soliciting community interviews.

In addition to people working with the identified community organizations, it was important to engage those working on housing in the community and those working in commercial sectors, at the waterfront and within the maker/artist communities. The Red Hook Houses, split by NYCHA into two developments - “East” and “West” - are represented by their respective Tenant Associations. The Carroll Gardens Association was identified as another organization providing significant numbers of affordable housing units in Red Hook. There are also many artists, artisan makers, and industries working in Red Hook. In addition to those organizations included for their broader organizational aims, interviewees included the Vice-President of Red Hook Terminals, the owner of Deligh Industries, and Andy Vernon-Jones, a photographer who worked in Red Hook for several years prior to Hurricane Sandy. Among interviewees for various community organizations were architects, urban planners, and academics who brought the viewpoint of design and planning trades to Red Hook. The full list of interviewees can be found in Appendix D.

The interviews were developed around understanding the social and spatial priorities in Red Hook through core lenses of resiliency,

equity, and preservation. Environmental justice also emerged as a critical lens; understanding what places were most vulnerable after Hurricane Sandy, what needed protection, and what was the focus of preservation efforts offered insights into what places and spaces reflect community values. The goal of this effort was to clarify the key issues affecting the community and to understand how critical organizations are addressing them and how they would like to see them addressed in the future. Questions were also designed with the goal of finding intersections amongst these lenses. A synopsis of the development of the questions follows and the full question set can be found in Appendix D.

Questions investigating preservation focused on the stakeholder’s spatial relationship with Red Hook and social histories within the community and sought connections to the legacy of social resilience. This included inquiring about the condition of the stakeholders’ spaces before and after Sandy as well as what spaces in Red Hook were integral to the short and long term recovery efforts after Sandy to understand the spatial relationships between the stakeholder group and the community.

Red Hook Community Groups			
Sustainability & Resilience	Equity & Social Justice	Economic Development	Arts & Education
<i>Resilient Red Hook</i> Resiliency planning (environment, infrastructure, economy) for Red Hook	Red Hook Community Justice Center Creates and tests new ideas and conducts research to expand justice reforms at the community level	Red Hook Initiative (RHI) Youth empowerment organization working to overcome systemic inequities in Red Hook public housing community	Red Hook Arts Project Non-profit providing free visual art, music, academic and stress management instruction to youth in Red Hook
<i>Turning the Tide (T3)</i> Ensure low-income residents are equitably represented in NYC resiliency planning	FUREE (Families United for Racial and Economic Equality) Multi-racial organization of women dedicated to helping low-income families build power	Southwest Brooklyn Industrial Development Corporation Advocacy and services to support businesses in South Brooklyn neighborhoods	Hook Arts Media Unites artists and community members in dynamic cultural activities
<i>Red Hook Local Leaders (RHI Initiative)</i> Improve preparedness and strengthen social resiliency of public housing residents	Red Hook Farms (RHI Initiative) Youth-centered urban farming and food justice program	Powerhouse Arts Non-profit for arts production, education, employment, and public engagement	<i>Pioneer Works</i> Non-profit workshop and performance space for artists to promote the creation of and participation in arts and sciences
	Alex House Project Provides comprehensive support to young mothers as they transition to parenthood	Local 1814 Local branch of Longshoremen’s Assoc. Union supporting Red Hook Terminal workers	Portside NY Connects NY to potential of the waterfront through education and advocacy

Community Organizations Active in Red Hook in 2020

Questions investigating equity focused on understanding connections and divisions within Red Hook and how they impacted the work and experience of stakeholder organizations. Queries about what communities or neighborhoods the stakeholder's organization worked with allowed for a further understanding of the relationships between stakeholders and communities. Questions exploring what spaces were important to the stakeholder groups, both before and after Sandy, as well as what areas benefited most after Sandy sought to spatialize community divisions.

Questions investigating resilience focused on the response of stakeholders to Hurricane Sandy and their perceptions of the community in the immediate aftermath and in the years following Sandy. Inquiring about the impact of hurricane Sandy on their organization, how they responded to it, as well as their role in Red Hook's recovery after Sandy informed how stakeholders met or did not meet the challenges presented in Red Hook. Their perceptions of how other stakeholders and organizations coped with Sandy helped to qualify its continued impact. Finally, inquiring about whether stakeholders felt they were better equipped for an extreme weather event like Sandy today offered clarity on perceptions of resiliency efforts in the community and indicated if more needed to be done to make the community resilient on a social or physical level.

Finally, several questions directly addressed environmental justice issues in Red Hook, including where environmental clean-up, as well as other resiliency efforts, had taken place after Sandy. Further questions aimed to determine spaces that were vulnerable to new or continued environmental justices. Understanding environmental justice issues further developed an understanding of where equity and resiliency issues overlapped and how the industrial past of Red Hook is still contaminating its present.

"The 'back' ...thinks they know what we need. They don't live our lives. They think we can't make decisions, are easily influenced, will fall for anything. You know what your [own] community needs rather than what we need."  
*-Anonymous, when asked about community divisions in Red Hook*

## **Key Findings**

Five key findings emerged from this community data collection:

1. The extent of the social and spatial divisions between the waterfront and inland Red Hook communities results in and perpetuates systemic inequalities;
2. the lack of preparedness for another extreme weather event like Hurricane Sandy impacts the community on physical, social, and psychological levels;
3. the need for long-term local employment is one of the most urgent needs in the community;
4. the center for community culture is considered Van Brunt Street and the space most vulnerable to development is the Lorraine Street Corridor; and
5. there is less attachment to physical structures in Red Hook than to social histories and narratives, suggesting that intangible heritage is a priority for the community.

In addition, several themes were threaded throughout the community responses that informed the studio's inquiry:

## **Equity**

Historically and contemporaneously there have been differences between the communities connected to the waterfront and the communities connected to inland areas. In a historic sense, the waterfront was dominated by industrial structures and inland areas were where those working on the waterfront lived. Today, the communities associated with the waterfront and inland areas are still disconnected: spatially, socially, and economically.

A majority of the stakeholders agreed that there were systemic inequities between the "front" and the "back," and the communities associated with them. They also referenced a desire to bridge the gap between these two communities.

Inequities are apparent when comparing the initiatives of stakeholders working in the "front" versus those working in the "back." Inland initiatives focus on job training and youth

empowerment. Waterfront initiatives focus on environmental issues such as the pollution associated with an increase in truck traffic in the neighborhood, adding green space to the neighborhood, and sea level rise planning. Both also focus on resiliency plans related to emergency preparedness. The distinction between the focus of initiatives highlights how the community in the “front” does not have the same set of resources and must be more concerned about meeting fundamental needs – employment, raising incomes, and inspiring and educating the youth. Unlike the waterfront communities, these needs are not being met, and thus community members from the “front” are less able to focus resources on pressing environmental issues or on vision planning for a future that is much less clear and stable for them. This division is one of the most critical key issues impacting the Red Hook community and must be robustly and directly addressed if Red Hook is to have an equitable future.

### *Environmental Justice*

Environmental justice issues mainly center around the lasting environmental impacts of Red Hook’s former heavy industry, the contemporary challenges resulting from economic development, and the threats associated with a changing climate. Heavy industry in Red Hook’s past produced lead contamination, brownfields, and other subgrade threats like buried oil tanks on the waterfront. These issues are of concern for stakeholders but the fiscal resources required to address them are substantial and stakeholders must wait for local, state, or federal funding, and in many cases programming, for cleanup to occur.

“I don’t want a lawsuit if it’s going to take my limbs, my life... I don’t want the money, I want to live good.”

*-Anonymous, discussing how to address environmental justice issues in Red Hook*

Development currently taking place in Red Hook has also resulted in environmental justice issues. Stakeholders voiced concern over the proposed rezoning of Gowanus and the Urban Heat Island effect that it could produce, the possible development of the BQX, and endangerment of remaining marshes and wetlands that may house endangered species by new construction. These issues are driven by the development in Red Hook, centered along the area most closely associated with the waterfront, and in the areas immediately adjacent to Red Hook, particularly Gowanus, but also along the Gowanus Expressway.

The contemporary challenges resulting from climate change are also a concern among stakeholders. Planning for sea level rise requires structural changes, including converting buildings into more flood-ready structures. Further, dealing with the effects of past flooding, such as mold, is an ongoing issue. Resolving these issues is harder for stakeholders who do not have the resources to build new buildings or take on costly renovations. These challenges lead to the almost universal belief that Red Hook is physically not any more prepared for an extreme weather event like Sandy.

### *Resilience*

Resilience was examined in the context of both social and spatial spheres. Spatially, at the level of physical infrastructure, more than 80 percent of interviewees felt that Red Hook was no more prepared for a severe weather event today than they had been in 2012 before Hurricane Sandy struck. The waterfront industrial buildings, along the piers and at the basins, were noted by many as particularly vulnerable because they are outside of the boundaries of the flood-proofing measures currently in place. While most felt that the limited efforts towards physical preparation had been evenly applied across the neighborhood, several noted that NYCHA, as a large government agency, had been able to move more quickly to activate plans for floodproofing measures at the Red Hook Houses. This discrepancy has also raised concerns for community organizations working in that area, who cited the plan to elevate grade level around the Houses as potentially putting the Lorraine and Columbia Street commercial corridors - which directly serve Houses residents - at greater risk of more flooding. One Red Hook Houses resident responded to this issue with the comment: “What good is it to survive if everything around you is gone?” While all of the stakeholders acknowledged

that planning is underway and protective measures will eventually be put in place, it was clear that more work will be required before there is a sense of physical security for community members and organizations.

Many interviewees felt that social resilience was stronger in Red Hook than physical resilience. Nearly 40 percent expressed that at a socio-organizational and preparation level, the community was more prepared for an emergency or extreme weather event than it had been in 2012. This preparedness, however, is siloed within the “front” and “back” of Red Hook. Several organizations were created in the wake of Hurricane Sandy with missions focused on increasing community preparedness and planning, and their work demonstrates this isolation. Resilient Red Hook, for example, represents all of Red Hook in planning efforts and coordination with the government, but its members are exclusively from the “back” of Red Hook and from academia. Serving the “front” are organizations like Turning the Tide and Red Hook Local Leaders, a preparedness training program of Red Hook Initiative - the community organization most cited by others for its efforts in both the immediate aftermath and long-term recovery efforts after Sandy. As discussed through the lens of equity above, all but one of the fifteen interviewees felt that there were divisions between community groups, and only a third of the organizations expressed that they actively work to engage both sides of the community. Their efforts are an attempt at creating a more complete social cohesion in Red Hook, across internal divides.

Social cohesion was queried through the interviews in two ways: the first explicitly, asking whether the community in and around the Red Hook Houses functioned separately or cohesively with the community around the waterfront, and the second more implicitly, asking about events and memorials important to the community around Hurricane Sandy. Interviewees acknowledged the difficulty of functioning across the communities and noted that there are very few people who bridge that divide, at least through participation in organizations working in both the “front” and the “back.” One interviewee went as far as to say that they felt the Red Hook Houses were not really part of the Red Hook community, an idea decried by those we spoke to who live or work in the Houses. Red Hook Houses residents instead expressed feeling that people had the tendency to come into their community and tell them what was needed, ignoring the work that community members had done and overriding their



Map of Flooding After Hurricane Sandy, 2012



Red Hook Barnacle Parade in 2019

own concerns. Of all the points discussed during the course of interviews, this was made the most clear: more work is required for Red Hook to function as a cohesive community and to benefit from the social resiliency that cohesiveness could offer. One annual event was mentioned as an important intangible marker for the community that has the potential to span divides, even temporarily - the Barnacle Parade, a Sandy remembrance held on its anniversary each year. The experience of Sandy and its aftereffects are something much of Red Hook has in common, and the community building that it compelled may be an opportunity for strengthening cohesiveness in both tangible and intangible ways.

### *Preservation*

We encountered varying opinions on the role of preservation from interviewees. Only one-third of those with whom we spoke believed it could be used to impact community resiliency. Many involved in social and community-based work in Red Hook felt there were more immediate challenges that needed to be addressed and preservation was not a priority for their organization. However, when asked about spaces within the community that they felt were vulnerable today several mentioned waterfront buildings, the commercial corridors around the Red Hook Houses, and the overall character of the community, indicating that the potential for loss was understood, even if it wasn't an immediate priority.

An important element of historic preservation is the act of marking historic structures or spaces to denote their importance or association with significant figures or events. In the case of Red Hook, we were specifically interested in markers regarding Hurricane Sandy, such as high water line plaques, or spaces that served to connect the community during and after Sandy, such as Coffey Park. Our interviews revealed, however, that generally intangible heritage seemed more dominant in Red Hook. The Barnacle Parade, an annual commemoration of Sandy, was one community-wide event, although it was noted that participation was more robust in the "back" of Red Hook. Red Hook Family Days is an important annual event for Red Hook Houses residents that brings together the present and past residents for a weekend in Red Hook. Red Hook Fest, a multi-disciplinary arts festival, was another annual event serving the sub-community of artists and makers in Red Hook.

While only a third of respondents already believed preservation had a significant role to play in Red Hook, another third were unsure or said they had not thought about it. This means there is an opportunity to develop preservation efforts in a way that stakeholders and community members alike recognize as valuable to Red Hook and its future. Given the discussion with interviewees, it seems that this potential is particularly strong in the realm of intangible heritage, recognizing the unique sub-communities in Red Hook as well as their shared experiences and connecting histories. The challenges and opportunities of preservation in Red Hook are perhaps best summarized in a quote from Architect Deborah Gans, Founder of Red Hook-based architecture firm Gans & Company and member of Resilient Red Hook, "Red Hook uniquely combines preservation with social equity issues, partly because what is culturally trying to be preserved is a new form of industrial heritage and an idea of working heritage."







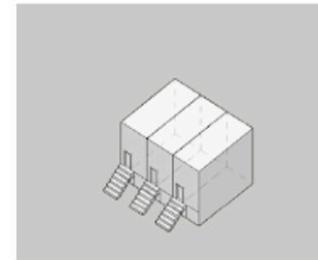
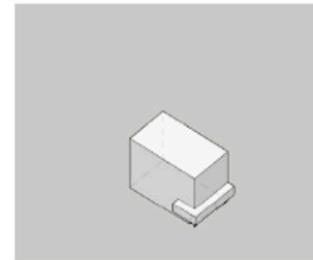
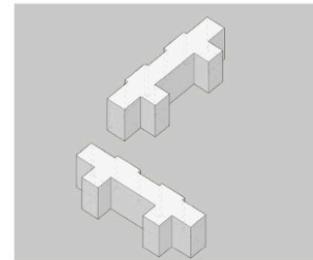
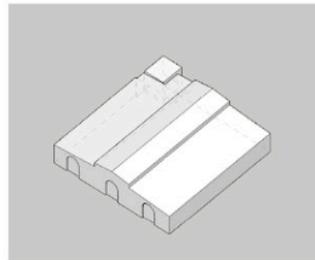
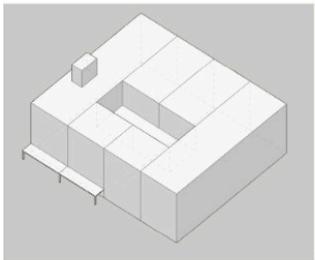
# RED HOOK BUILT ENVIRONMENT

# BUILT ENVIRONMENT

Red Hook's built environment has evolved along with its changing inhabitants and uses, particularly over the past century with the implementation of containerization at the port and the construction of the Red Hook Houses. Today, the neighborhood is characterized by many key physical resources, including its historic fabric, open spaces, and waterfront access. The studio analyzed the existing conditions of Red Hook's built environment using imagery, Pluto and other open data, and a student-collected physical resource survey as evidence. A summary of findings is included here; supporting research and additional information is included in Appendix B.

# NEIGHBORHOOD CHARACTERIZATION

Red Hook has a hybrid neighborhood character, defined by its gritty industrial buildings and small town feel. This character, praised by residents interviewed in the community data survey, is a product of the neighborhood's urban form and architecture. The neighborhood's built environment is a mosaic of architectural styles, typologies, uses, and physical resources reflective of the diverse community that resides within. The studio identified five major building typologies that help characterize the neighborhood today: warehouses, factories, public housing, storefronts, and rowhouses.



Warehouse

Factory

Public Housing

Storefront

Row house

Main building typologies in Red Hook

Red Hook's built environment is heterogeneous, and the major building typologies are not equally distributed across the neighborhood. Several sub-areas within Red Hook illustrate the neighborhood's eclectic and distinct character. These are the Red Hook Houses and Lorraine Street; South Waterfront: Industrial, North Waterfront: Warehouses; and Residential Adjacent to Van Brunt Street. The physical resources present in each sub-area will influence how these portions of the neighborhood are flood retrofitted as well as which areas present the highest risk for insensitive redevelopment.

### *Red Hook Houses and Lorraine Street*

The Red Hook Houses dominate this sub-area of the neighborhood with their common-bond red brick facades reaching six or nine stories in height. Small playgrounds are scattered amongst the towers and shaded by many half-century-old trees. Public facilities such as the Red Hook Recreation Center and ballfields also define this section of the neighborhood. The commercial corridor along Lorraine Street, bound by Columbia Street and Hitch Street, features one story commercial buildings easily accessible from the Red Hook Houses.

### *South Waterfront: Industrial*

As evidenced in the form of the built environment, the main groups who utilize this sub-area are people who work along the waterfront as well as residents and non-residents alike who enjoy the public parks and retail opportunities. There are long stretches of one story brick or aluminum-sided warehouses, a concrete esplanade lined with metal benches stretching out into the basin, all punctuated by the Red Hook Grain Terminal. The esplanade leads way to IKEA and the Erie Basin Park where Belgian block pavers are incorporated into the walkway. Historic gantry cranes frame this vista and ensure that, despite the abutting vacant lot where the Revere Sugar Factory once stood, the history of heavy industry remains visible.



Aerial View of Red Hook Houses



301 Columbia Street

### *North Waterfront: Warehouses*

Similar to the South Waterfront: Industrial sub-area, the demographic that frequents this sub-area are those who work or spend their leisure time on the waterfront. However, businesses here cater more to the leisure visitor and many non-residents come to this area for its parks, dining, and entertainment, much of which is housed in nineteenth century brick warehouses. These warehouses are one to four stories in height and feature common-bond red brick facades. Windows are rectangular or arched and are typically framed by black shutters. A concrete boardwalk weaves around the waterfront passing small, grassy parks and additional nineteenth century warehouses. The scale of the buildings shifts as the Atlantic Basin looms into view and six story warehouses, such as the New York Dock Company, become more common.

### *Residential Adjacent to Van Brunt Street*

The community north of Coffey Park and adjacent to Van Brunt Street is defined by residential pockets that feature two to three story row houses with interspersed vacant lots and tree-lined streets. Building facades are clad with aluminum siding, wood, and common-bond red or brown brick. Many of these buildings feature stone or cast iron lintels, and wood or sheet metal cornices. These architectural features continue along the Van Brunt Street commercial corridor with commercial businesses on the ground floor of two- to three-story masonry or wood-clad buildings with entrances set one or two steps above the sidewalk. Most of Red Hook's surviving historic paving materials are located on or around Coffey Street.



510 Van Brunt Street

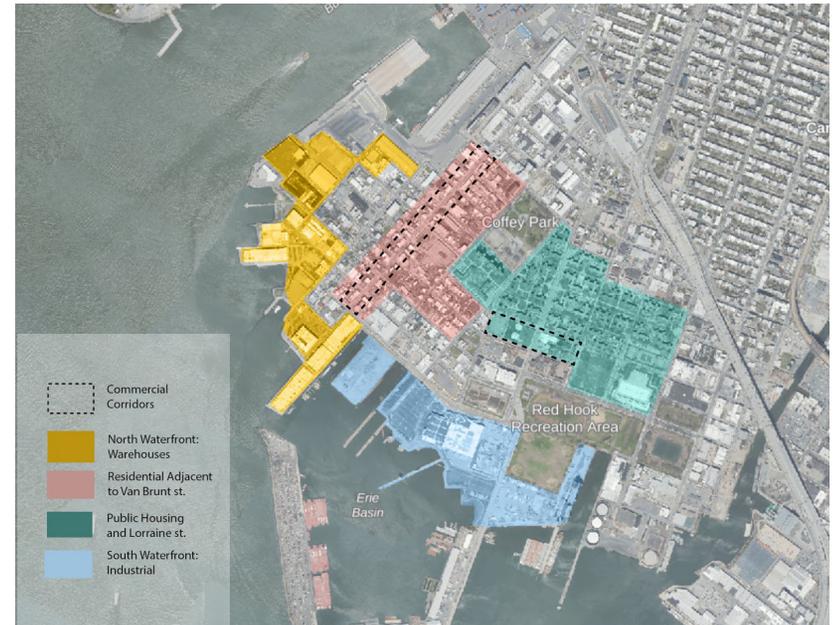


361 Van Brunt Street

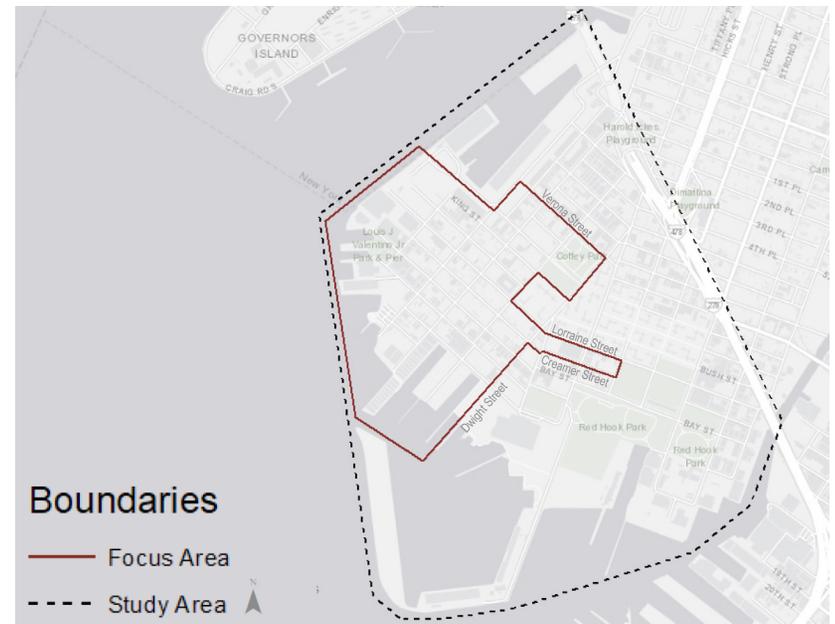
## PHYSICAL RESOURCE SURVEY

On-the-ground data collection was not feasible for each sub-area of the neighborhood; therefore, the studio selected a smaller focus area of approximately 620 buildings for ground-truthing existing data and compiling additional data. The focus area roughly spanned the area north of Dwight Street, east of the waterfront, and west of Verona Street with the addition of a corridor between Creamer Street and Lorraine Street. This area was selected as a representative collection of the diverse physical resources in Red Hook and serves as a cross-section of many of the sub-areas. These resources include, but are not limited to, varied building typologies, open and recreational spaces, and commercial and residential areas. The focus area involves a large number of stakeholders, as it borders the Red Hook Houses and encompasses Van Brunt Street and new residential developments. The Red Hook Houses were not included in the on-the-ground data collection and focus area due to their architectural homogeneity.

The survey sought to address some overarching questions - whether the built environment is equipped to respond to another Sandy-level storm, which areas are the most vulnerable to redevelopment, and whether there is an equitable distribution of resources. To answer these questions, students deployed to the focus area over a week in February 2020. In order to survey the existing physical conditions of the neighborhood, the focus area was broken into five separate zones with land area and building density fairly evenly distributed among the zones. The studio was then divided into five teams of two, and each team was assigned to a specific zone. The teams conducted the physical survey in the field by logging data for each individual building on Collector, a data collection application based on the Geographic Information System (GIS). Survey questions covered subjects including structural system, building use, entry level, public access, vacancy, and more.



Studio-identified sub-areas of Red Hook



Study Area and Focus Area Boundaries

## KEY FINDINGS

Red Hook has many valuable physical resources, including public parks, historic buildings, and waterfront access, which warrant preservation and protection. Yet these resources currently are not addressing issues of equity as well as they could be. They also are threatened by flooding and insensitive redevelopment. Just as Red Hook's physical resources drastically changed in the past century, Red Hook will continue to adapt and evolve in the coming century. The neighborhood's physical resources can help to manage this change in ways that balance preservation and development interests, meet community needs and bridge community divides, and protect against further flood damage.

Four key findings emerged through the survey and data analysis:

1. Many buildings are highly vulnerable to flooding
2. Physical Resources are not distributed equitably in Red Hook
3. Red Hook is very susceptible to redevelopment (especially industrial sites)
4. Red Hook's vibrant neighborhood character could be lost to flooding or insensitive redevelopment

These themes were explored in detail to shed light on how Red Hook's environment can both contribute to issues of and be a tool for promoting equity and resilience. Each theme is supported by maps, many of which were created in ArcGIS to spatialize patterns in Red Hook's built environment.



6-60 Sullivan Street c. June 25, 1931



6-60 Sullivan Street on March 3, 2020

## Flood Vulnerability

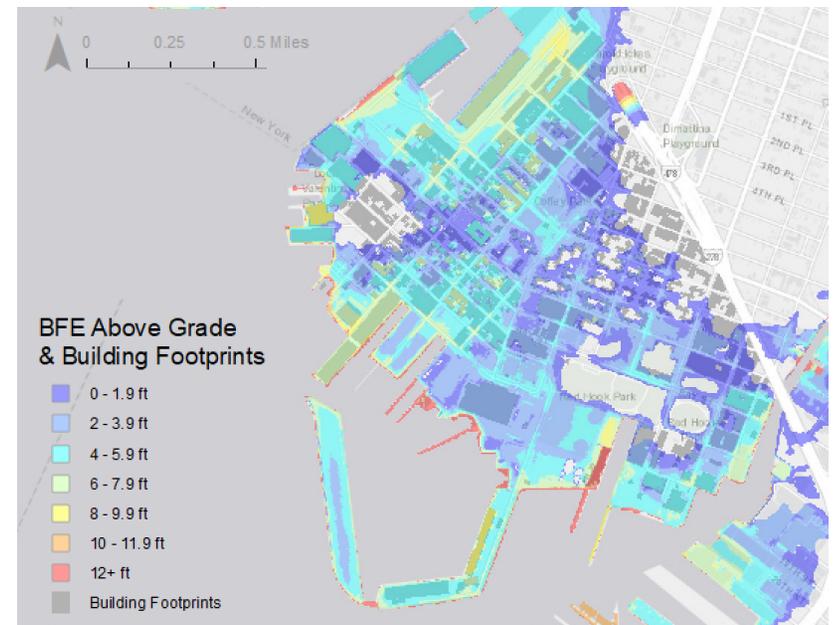
Due to Red Hook's proximity to the water and relatively low elevation, flooding is one of the greatest challenges the neighborhood has faced in the past and will continue to face in the future. The majority of the neighborhood is located less than ten feet above sea level, making it particularly vulnerable as flood elevations are expected to rise in the coming years.

Mapping the base flood elevation (BFE) above grade demonstrates how Red Hook's topography contributes to flood vulnerability. Based on the Federal Emergency Management Association's (FEMA) predicted height of a "100-year-flood," the BFE is the regulatory requirement to determine the elevation for floodproofing of structures. FEMA determines a building's flood insurance premium based on the relationship between BFE and elevation (FEMA 2019). Within the next century, it is probable that flood levels will reach similar levels as estimated in FEMA's map, although the federal and state government have at times questioned the accuracy of FEMA's flood estimates. As expected, areas around the waterfront are at a high flood risk. According to FEMA's data, certain waterfront areas have a one percent chance per annum of flooding more than twelve feet above grade, and the majority of waterfront sites are predicted to flood between four and 9.9 feet above grade. Notably, compared to other areas of the neighborhood, the Red Hook Houses with a BFE above grade between 0 and 1.9 feet pose less of a flood risk (FEMA 2015). Therefore, since the NYC Building Code requires floodproofed buildings to be raised up to an additional two feet above the BFE, the Red Hook Houses would not need to be raised as much as other buildings to meet flood adaptation standards (NYC Planning, n.d.).

FEMA has translated BFE above grade into flood zones. Almost all of Red Hook is encompassed in Zone AE, an area with a one percent annual chance of flooding and a 26 percent chance of flooding over the course of a 30-year mortgage, or Zone VE, coastal areas with a one percent annual chance of flooding plus additional hazards from storm waves (FEMA 2015). Notably, the parts of Red Hook in low-to-moderate flood risk zones are located among the highest elevations of Red Hook. This map illuminates that, although BFE varies in Red Hook, almost the whole neighborhood is at a high flood risk.



Topography of Red Hook



BFE above grade in Red Hook

Several other factors influence flood vulnerability within Red Hood, including building entry levels and structural systems.

### *Building Entry Levels*

Entry levels help demonstrate how vulnerable buildings are to flooding. They give a generalized idea as to how the neighborhood may fare if a storm of the same ferocity as Hurricane Sandy hit again. During the survey, teams noted the height of a building's primary and secondary (if applicable) entrances. Teams marked if buildings had entrances at, below, 1-3 steps (+8.25-24.75 inches) above, 4-6 steps (+33.0-49.5 inches) above, or 7+ steps (+57.75 inches) above sidewalk height. Of the 605 buildings in the focus area for which we were able to record entry-level data, 41.4 percent had primary entry levels at sidewalk. 400 of these buildings also had secondary entrances, were predominantly at or below the sidewalk.

Breaking down the entry level by the three major building uses in Red Hook (residential, commercial, and industrial) highlights what types of buildings are at a higher flood risk. When looking at the primary entrance level, industrial and commercial buildings appear to present a higher flood, as they have a greater proportion of low entry levels. However, in over 80 percent of residential structures with secondary entry levels, those entries were at or below sidewalk, so residential buildings are not more protected from flooding. This finding is especially notable since Hurricane Sandy disproportionately effected smaller residential buildings with secondary entrances.

From the survey, it is apparent that major residential pockets including Coffey Street, Dikeman Street, Pioneer Street, and Visitation Place have large numbers of secondary entrances at or below street level. This data reiterates that, while there may be specific streets that are harder-hit, flooding remains a neighborhood-wide issue.

It is important to keep in mind that some buildings at or below sidewalk levels could pose a limited flood risk. Likewise, some buildings with entries 7+ steps above the sidewalk could still be at high risk for flood damage, especially since mechanical equipment is often located in basements. Other factors, such as BFE above grade and structural systems, must also be taken in account when determining overall flood vulnerability.



At sidewalk level, 293 Van Brunt Street



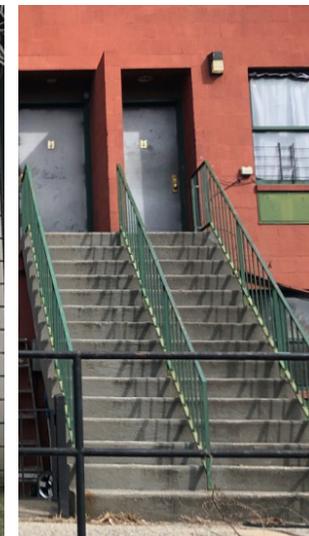
Below Sidewalk Level, 112 Pioneer Street



1-3 Steps Above Sidewalk at 327 Van Brunt Street



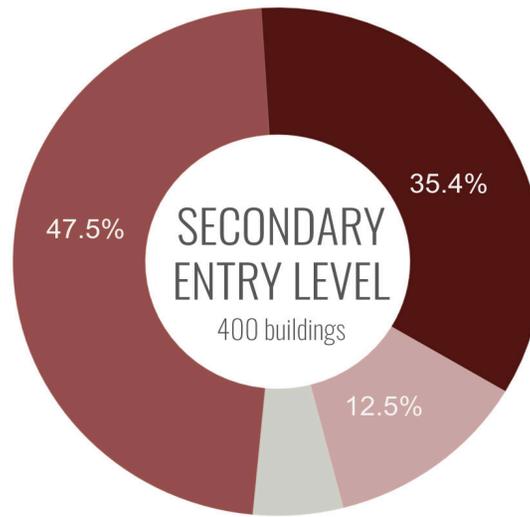
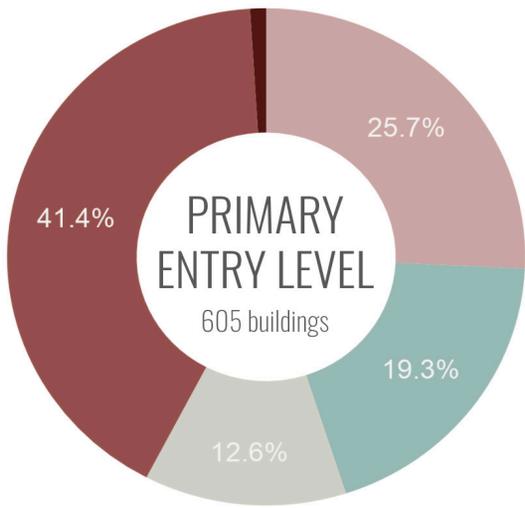
4-6 Steps at 121 King Street



7+ Steps at 81 Visitation Place

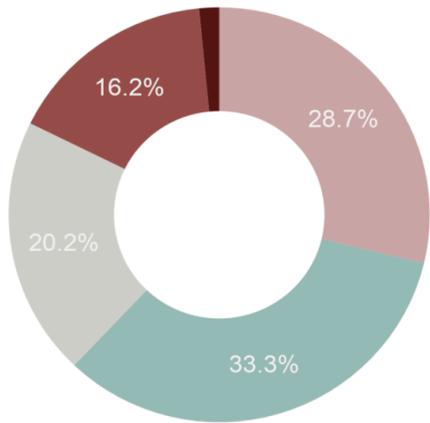


Main and secondary entry levels in Red Hook



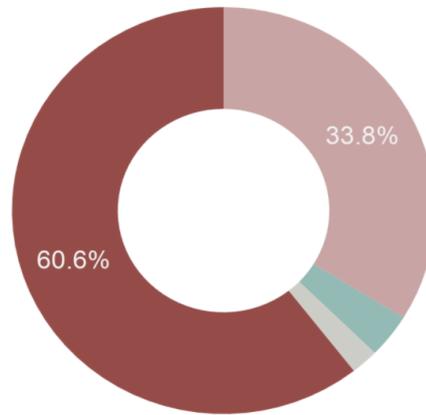
● At Sidewalk 
 ● Below Sidewalk 
 ● 1-3 Steps Above Sidewalk 
 ● 4-6 Steps Above Sidewalk 
 ● 7+ Steps Above Sidewalk

Analysis of primary and secondary entrance levels surveyed



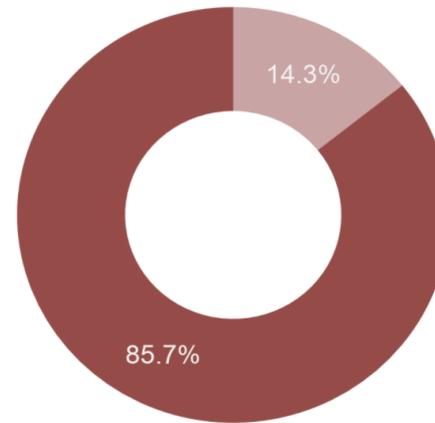
### RESIDENTIAL

197 Buildings



### COMMERCIAL + MIXED USE

105 Buildings

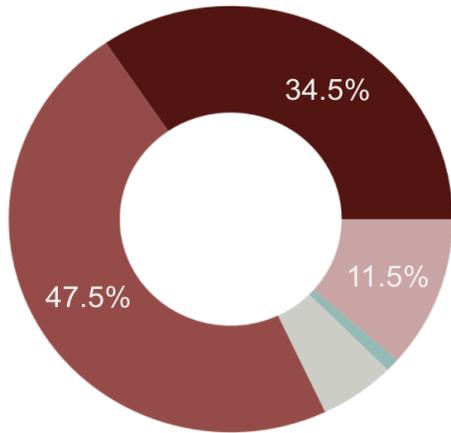


### INDUSTRIAL

35 Buildings

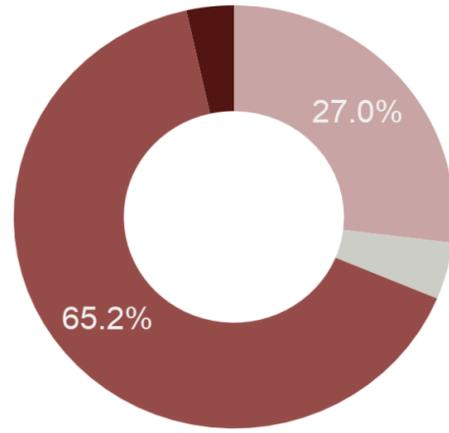
● At Sidewalk 
 ● Below Sidewalk 
 ● 1-3 Steps Above Sidewalk 
 ● 4-6 Steps Above Sidewalk 
 ● 7+ Steps Above Sidewalk

Analysis of primary entrance levels by building use



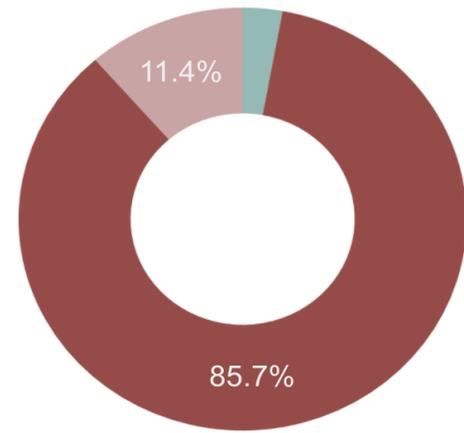
### RESIDENTIAL

197 Buildings



### COMMERCIAL + MIXED USE

105 Buildings



### INDUSTRIAL

35 Buildings

- At Sidewalk
- Below Sidewalk
- 1-3 Steps Above Sidewalk
- 4-6 Steps Above Sidewalk
- 7+ Steps Above Sidewalk

Analysis of secondary entry levels by building use



### Structural Systems

Structural systems overview in survey area

Evaluating the structural system of buildings provides insight into which structures may be more susceptible to flood damage and if these buildings are congregated in a specific section or dispersed throughout the neighborhood. The survey teams identified four major structural materials: load-bearing masonry, concrete frame, wood frame, and steel frame. The majority of buildings in Red Hook have a load-bearing masonry frame, but many of these buildings have drywall interior walls that would incur significant damage during a flood. Building components of wood and steel framed buildings are susceptible to water damage, such as rotting or accelerated corrosion, respectively. Since wood and steel frame buildings tend to be clustered in commercial and residential areas (e.g. Van Dyke Street to Dikeman Street), their deterioration could greatly harm quotidian life in Red Hook. Some of the wood frame buildings are among the oldest structures in the neighborhood, and their loss would alter the neighborhood's character.



Load Bearing Masonry at 68 Dikeman Street

Wood Frame at 190 Coffey Street



Locations of buildings with masonry structural systems in survey area



Locations of buildings with wood and steel structural systems in survey area

## ***Inequitable Distribution of Resources***

Red Hook is filled with restaurants, shops, and parks. Yet the spatial distribution of most of these public-facing resources does not align with where the majority of Red Hook's population lives, furthering inequities within the neighborhood.

## ***Building Use***

Understanding building use can help to delineate where key resources are and who has access to them. As expected, the majority of the industrial sites and storage facilities are located on or near the waterfront. There are residential pockets throughout the area, namely between Sullivan Street and Pioneer Street above Coffey Park and between Coffey and Wolcott Streets. Religious properties are most concentrated immediately northwest of Coffey Park.

Significantly, the data confirmed that there are two main commercial corridors: one along Van Brunt Street and the other along Lorraine Street. The Van Brunt Street corridor is larger and includes a greater range of stores than the Lorraine Street corridor, suggesting that residents of the “back” of Red Hook have better access to essential resources than residents of the “front.”

Sensitive redevelopment of the Lorraine Street corridor could provide residents of the Red Hook Houses with greater access to food, amenities, community spaces, and other essential resources.

## ***Building Access***

Determining where the majority of public access buildings are located in Red Hook can help us understand not only who has access to a site but who would feel comfortable visiting or travelling to a site. The survey identified whether a building had public, semi-public, or private access. The studio defined public access buildings as any commercial building that can be entered during normal business hours without an appointment; semi-public access buildings are defined as spaces that require appointments and other pre-scheduled visits to enter; and private access buildings are buildings that are inaccessible without permission of the owner or tenant (e.g. residences and offices).

Private buildings dominate Red Hook, and buildings with public or semi-public access are concentrated around Van Brunt Street and the waterfront. Residents of the front of Red Hook would have to walk over half a mile to visit public resources in a part of the neighborhood socially and economically divided from where they live.



Van Brunt Street commercial corridor

## *Public Open Space*

Open and green spaces foster community and provide space for recreation and exercise. Red Hook has a significant amount of public open spaces and, unlike with other physical resources, many of them are clustered near the Red Hook Houses. Coffey Park and the Red Hook Recreation Center surround the Red Hook Houses, and there are many basketball courts, playgrounds, and other open spaces on the complex grounds.

Still, due to remediation attempts in the ballfields, many of these public spaces around Red Hook are currently closed to the majority of the population. Additionally, all public waterfront access points are located about half a mile from the Red Hook Houses.

This geographic distance contributes to a divide between the back and the front. Moving forward, it is critical to find ways to better distribute other resources across the community.



Coffey Park



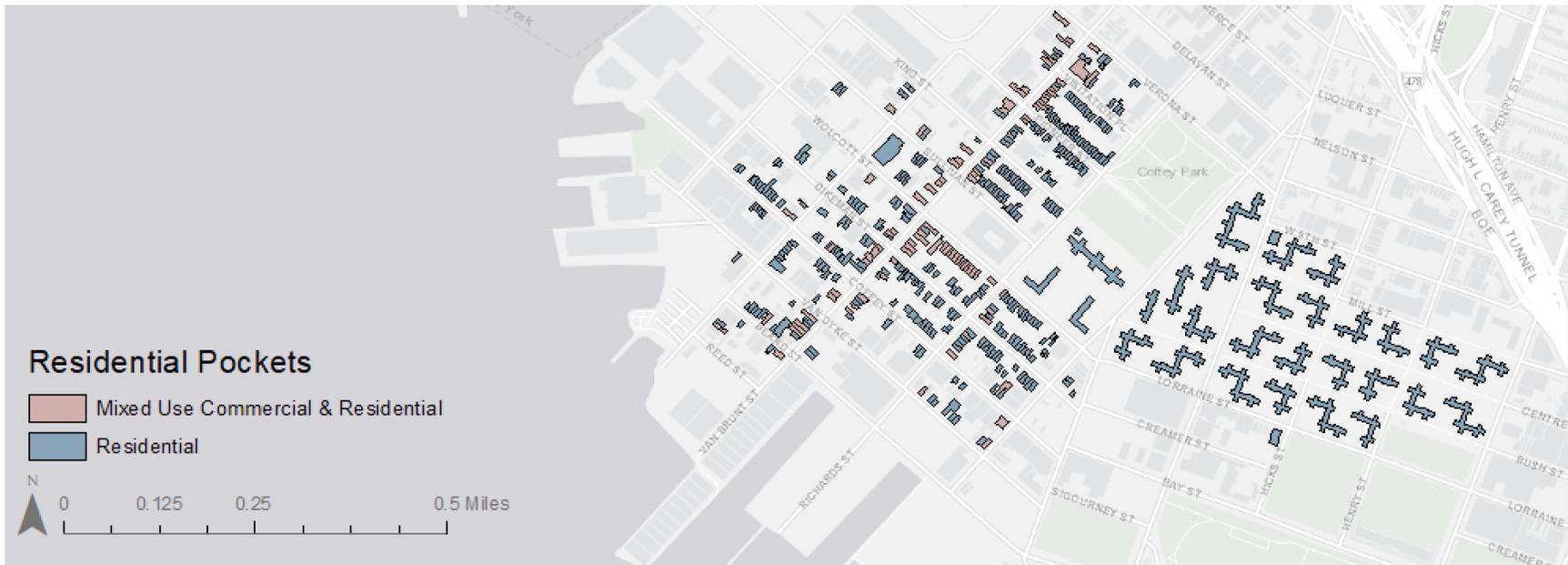
Lorraine Street commercial corridor



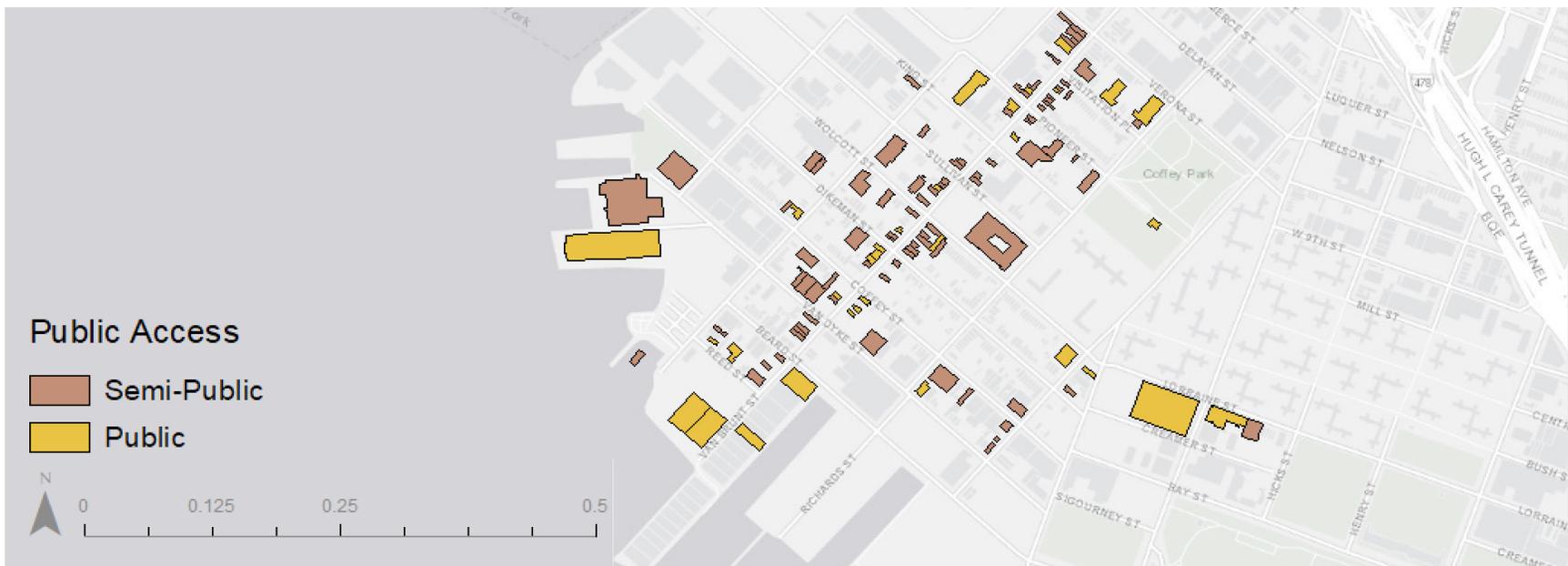
Building use in focus area



Commercial corridors in focus area (shown in green) primarily center on VanBrunt Street and Lorraine Street



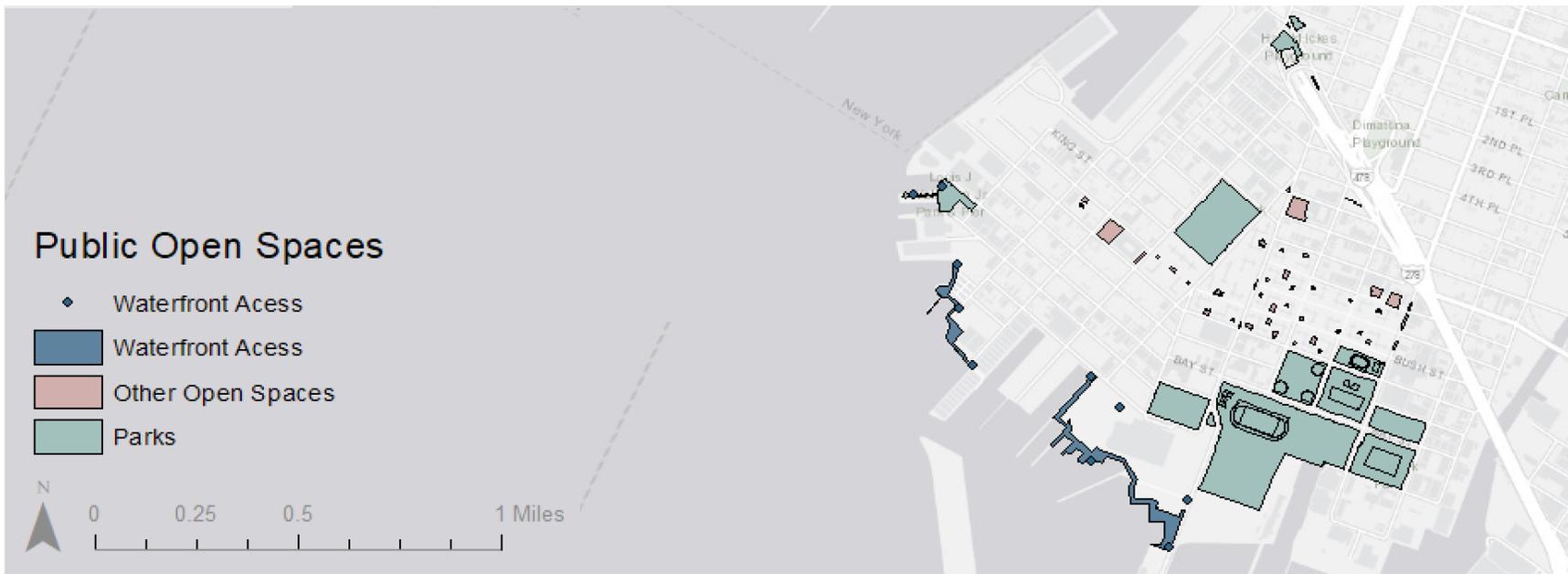
Residential Pockets in Red Hook



Publicly accessible buildings in Red Hook



Buildings with private access only in Red Hook



Public open space in Red Hook

## ***Susceptibility to Redevelopment***

Red Hook has significant quantities of soft sites and available floor-area ratio (FAR), making it a prime location for further development in New York City. Industrial sites are especially vulnerable to redevelopment since they often overlap with soft sites and, over the past fifteen years, there has been a precedent for demolishing and redeveloping industrial buildings in Red Hook. Many residents welcome redevelopment in the neighborhood, but it is important to promote sensitive development that meets community needs and preserves the neighborhood's historic fabric.

### ***Soft Sites***

Soft sites, including parking lots and vacant lots, help us to understand the neighborhood's vulnerability to change. These sites currently are not being used to their full potential, making them an easy target for development. Interestingly, the parks, recreation spaces, and public housing sites have helped to shield the area of and around the Red Hook Houses from major redevelopment risk. However, outside of this area, Red Hook is spotted with soft sites, particularly along the perimeter of the waterfront. According to Pluto (and ground-truthed in the focus area and with contemporary Google Maps aerials), there are over a hundred parking lots in the neighborhood. The focus area additionally has many vacant lots. Even without factoring in vacant lots outside of the focus area, at least sixteen percent of lots in Red Hook are soft sites.

### ***Available Floor-Area Ratio (FAR)***

In addition to soft sites, the available FAR can serve as a way to predict where and how redevelopment could occur. Red Hook's waterfront does not have any available FAR for industrial buildings. It has a large amount of available commercial FAR since many of these inland blocks are not zoned as commercial areas. Thus it could be possible for the historic industrial area to transform into a commercial area. In terms of available residential FAR, the majority of the Red Hook Houses and several blocks around Van Brunt Street and Richard Street have not used all of their FAR and remain possible sites for future redevelopment.



Vacant lot on Ferris Street adjacent to former Le Comte and Co. warehouse



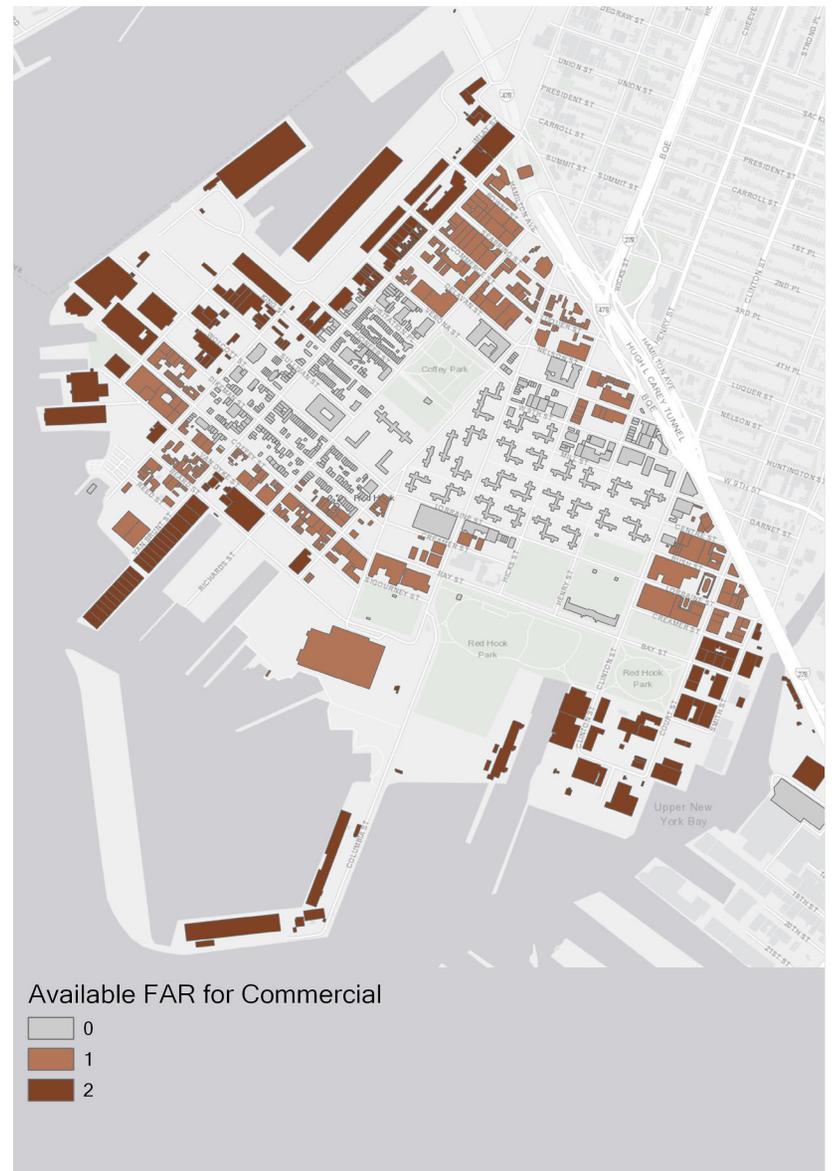
Underutilized parking lot near Atlantic Basin



Soft Sites in Red Hook



Available FAR for Industrial Uses



Available FAR for Commercial Uses



Available FAR for Residential Uses



Land Ownership in Red Hook



Public Ownership in Red Hook



Largest Corporate Owners in Red Hook

## Ownership

Analyzing land ownership in Red Hook further supports the findings of the physical resource survey. The majority of land in Red Hook is either owned by the government or by private citizens. Most privately-owned property is located in residential pockets around Van Brunt Street, some of which has already been redeveloped. The majority of city-owned land is located at or around the Red Hook Houses, directly overlapping with the low development risk area highlighted in the soft sites map. The City's ownership gives this area some protection from private developers and corporations. Corporations own most of their land around the waterfront, furthering the probability that waterfront soft sites and industrial buildings could be redeveloped for commercial use.

## Loss of Neighborhood Character

As aforementioned, Red Hook's historic fabric contributes to its residents' connection to the neighborhood. The neighborhood character could be at risk if insensitive development or another Sandy-level storm were to occur.

## Historic Designation Status

Red Hook only has two landmarks designated by the New York City Landmarks Preservation Commission (LPC): the Red Hook Recreation Center and the Clay Retort and Fire Brick Works Storehouse. This municipal designation provides the highest degree of protection against demolition and insensitive alteration. Red Hook also has two National Register-listed structures: the Lehigh Valley No. 79 Barge and the Mary A. Whalen ship. Currently, there are also over eighty properties deemed "eligible" for the National Register in Red Hook.

It is important to note that National Register eligibility is a formal recognition by the State Historic Preservation Office that allows properties to benefit from certain incentives and procedural reviews, such as Historic Tax Credits and Section 106 Review, without having full listing status. However, neither National Register listing nor eligibility provides legal protection against demolition by property owners.



The Red Hook Recreation Center, built in 1936 by Robert Moses, is designated as a LPC landmark due its significance in bringing relief to the poor and improving public health



The Lehigh Valley No. 79 Barge, home to the Waterfront Museum, is listed on the National Register of Historic Places

National Register-eligible properties in Red Hook include row houses on Pioneer Street, both LPC landmarks, the Red Hook Houses, and many waterfront industrial properties, some of which are located in the eligible Gowanus Canal Historic District which extends outside of Red Hook.

The prevalence of waterfront sites listed on or eligible for the National Register is a result of the Brooklyn waterfront's inclusion on the National Trust for Historic Preservation's 2007 list of the eleven most endangered historic places (Pogrebin 2007). Red Hook's industrial heritage is a valuable resource in need of preservation; however, the increased visibility of industrial sites has contributed to other types of sites being overlooked.

Despite the eligibility of the Red Hook Houses and designation of the Red Hook Recreation Center, municipal and national designation has not recognized smaller community sites in the neighborhood. The Red Hook Community Justice Center, located in a rehabilitated church, is of great significance to the community due to its success in combating crime. As the first multi-jurisdictional court in the nation, it is also of great national significance. Yet the Red Hook Community Justice Center's National Register eligibility is undetermined. The Christ Church Chapel, also known as the Red Hook Pentecostal Holiness Church, at 110 Wolcott Street has not been recognized either. Dating to 1899, this Romanesque Revival church designed by the Audsley brothers is not only architecturally significant, but also has served as a community gathering space for over a century (Spellen 2019).

It is important to note that designation cannot necessarily protect historic buildings from redevelopment or flooding. Unlike LPC landmarks, as noted above, listing and eligibility on the National Register does not provide buildings with legislative protection against demolition or insensitive alterations. Additionally, many historic buildings in Red Hook have entrances below flood levels and, if not retrofitted, could continue to suffer from flood damage. Nevertheless, adding additional landmarks and National Register listings in Red Hook could afford the community increased visibility and access to grants. If additional sites are recognized, it is critical that they better represent the neighborhood character and community moving forward.



The Mary A. Whalen ship, from which PortSide NewYork operates, is listed on the National Register as a rare surviving example of a bell boat -- a ship controlled from the engine room by telegraph signals



Historic designation status in Red Hook



Intact row houses on Pioneer Street are eligible for the National Register, forming what could become part of a historic district



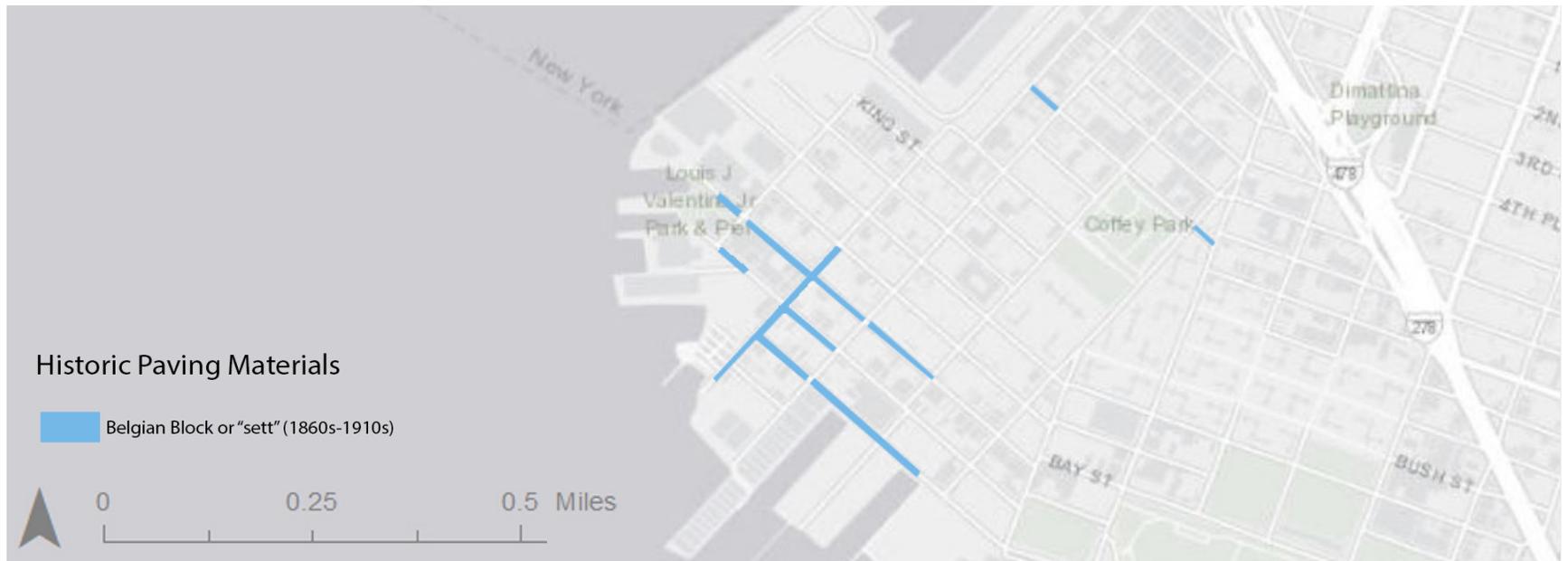
Christ Church Chapel has architectural and cultural significance but is not eligible for or listed on the National Register

## Historic Paving Materials

Red Hook has at-risk historic resources beyond buildings and structures that contribute to the neighborhood's character. A key example is historic paving materials. This map shows streets paved with Belgian blocks and sett pavers within Red Hook. These paving materials were used from the 1860s until the 1910s, when they were replaced by concrete and asphalt. Red Hook is one of only a few neighborhoods with intact Belgian block paved streets left in New York City. The neighborhood's surviving historic pavers are concentrated in the area that did not flood during Hurricane Sandy. Their location on higher elevated ground seems to have made them less vulnerable to flooding, and thus to past street repaving efforts, and will hopefully protect them into the future. The pavers in Red Hook are unique among surviving historic paved streets in New York City in that they are not currently protected by municipal or national designation legislation (Pieper 2020).



Close-up of Belgian blocks (left) and sett pavers (right) on the corner of Conover Street and Van Dyke Street



Streets with historic pavers in Red Hook



Surviving Belgian blocks near Sunny's Bar, Red Hook



Public art in Red Hook

### *Public Art*

Public art is a key element in understanding a neighborhood's sense of self, as well as serving as a visual representation for the sense of community and its history within the area. Given that the concept of art is broad, the survey question remained open-ended and allocated categories for wall art, free-standing art, and "other." In the case of the focus area, the largest category of art observed was wall art, with free-standing and "other" categories still being widely represented throughout the neighborhood. Interestingly, much of the art documented is located on privately-owned buildings, implying that it may be private individuals who are being proactive in working towards how they would like their neighborhood to be represented and are using the space provided by their buildings to do so.



"Widow Jane" mural at 157 Coffey Street, depicting the supply chain of the whiskey process



Wall Mural at 215 Van Dyke Street



## KEY ISSUES

# KEY ISSUES

Studying the historic and social context of Red Hook presented a picture of a diverse community that has grown out of the waterfront. Accessibility and opportunity, however, have been cut off as the city has expanded, leading to isolation and disparity within the community. Through research, collection of community data, and the physical resource survey, the studio identified six key issues and themes:

1. Hybrid Nature of the Neighborhood and Competing Land Use Interests
2. Community Issues Impacting Social Cohesion
3. Access to Public Space
4. Loss and Vulnerability of the Built Environment
5. Susceptibility to Flooding and Environmental Vulnerability
6. History of Resilience and Activism

These issues continue to impact resiliency, equity, and preservation in Red Hook today and must be addressed in plans for Red Hook's future. The lens of historic preservation is critical in understanding contemporary conditions. Preservation is not simply about protecting historic fabric and values; cultural heritage can serve as a potential catalyst for positive social and environmental change.

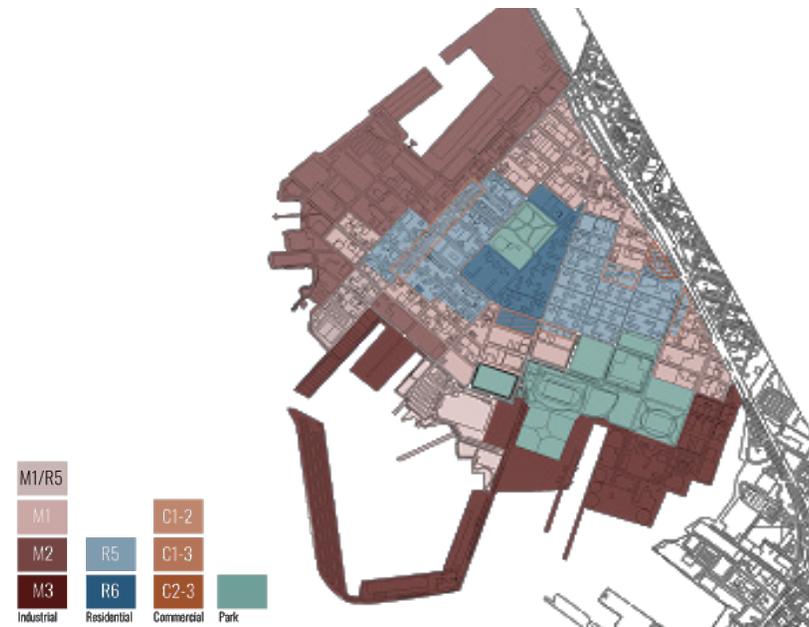
## HYBRID NATURE OF THE NEIGHBORHOOD AND COMPETING LAND USE INTERESTS

Contemporary competing land use interests in Red Hook are primarily influenced by the neighborhood's legacy of industrial and residential uses, modern zoning that reinforces the duality of uses, and contemporary ownership.

The opening of the Erie Canal in 1825 led to New York's prominence as a trading port, which in turn led to Red Hook's economic boom (Spellen 2012). With expanding trade in New York Harbor, Red Hook's port facilities also began to expand -- first with the Atlantic Basin and Gowanus Canal in the 1840s and later with the Erie Basin in the 1860s (Pollara 1997; Red Hook Gowanus Neighborhood 2000). The development of the ports in Red Hook brought an influx of individuals seeking to work in the industry, which led to an increase in residential needs in the neighborhood. As a consequence, numerous shantytowns emerged in the neighborhood in the 1880s (Spellen 2018).



Map of Pink's Plan 1933



Zoning Codified in 1961

Today the neighborhood still maintains a mixed character with close adjacency of residential and heavy industrial uses. While this mixed character was longstanding in the neighborhood, it was codified through industrial and residential zoning with commercial overlays (NYC Planning, n.d.). The tension is also reflected by building use and available FAR in the neighborhood.

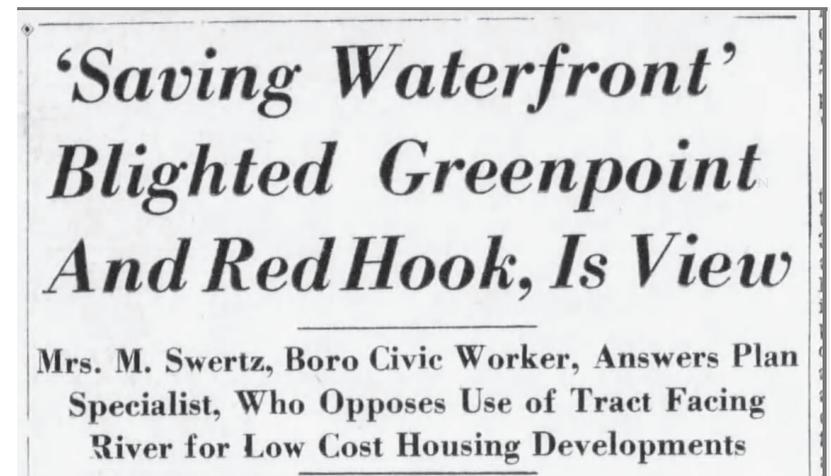
Despite minimal commercial zoning, commerce is a major use in the neighborhood. The neighborhood still maintains large areas used for industry, but the commerce is increasingly blending industrial and residential areas. The available FAR for commercial use in Red Hook is concentrated along the waterfront, Atlantic and Erie Basins, and Gowanus Bay, in the same areas that are currently being used for commercial purposes but are zoned for manufacturing purposes. Commercial developers, though, may seek to pursue rezoning to maximally utilize this space. Meanwhile, available industrial FAR is concentrated in residential areas of the neighborhood. These areas also have significant available residential FAR, suggesting a vulnerability to redevelopment (NYC Planning n.d.).

The distribution of use and available FAR in Red Hook - which is itself a result of historic competing uses - poses a variety of development possibilities. According to NYC Pluto data, neighborhood ownership is split between private and government owners. While government-owned property's susceptibility to redevelopment is unclear, private owners may be eager to take advantage of the financial opportunities provided by redevelopment. Individual private owners, who own the majority of the residential area that has significant available FAR, may be interested in selling their property to developers seeking to build high-density residences.

Meanwhile, corporate private owners own the majority of the waterfront, which is currently underdeveloped, and may also seek to develop the property further. Consequently, development proposals that are enacted in the neighborhood could significantly alter its character.

The dichotomy of possible futures for Red Hook is depicted by a comparison of the AECOM redevelopment proposal and Alex Washburn's Red Hook Island proposal. While AECOM's plan claims to include affordable housing, flood protection measures, and increased transportation, it would not protect the waterfront's industrial uses. It also prioritizes high-end residential interests in

the neighborhood (AECOM 2016). Conversely, Alex Washburn's Red Hook Island proposal would protect the neighborhood from storm surge while adding developable land, claiming to protect both industrial and residential uses (Washburn 2017). These proposals illustrate just two of the varying hopes for the neighborhood: that it may become a residential community for Manhattan, or that it may retain its quaint industrial character while become a center for development in New York City. Either way, Red Hook's future development will be informed by its historic uses.



Efforts to save the industrial, working waterfront were viewed by some as a factor in Red Hook's disinvestment

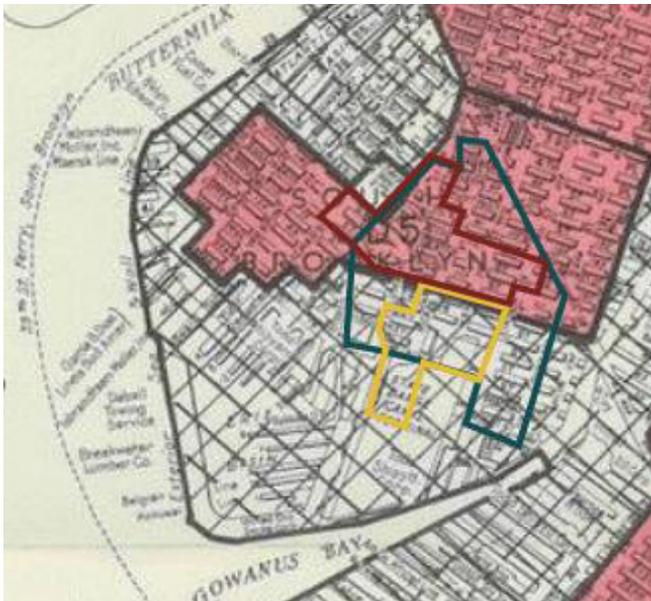
## COMMUNITY ISSUES IMPACTING SOCIAL COHESION

Historic divisions within Red Hook and Red Hook's isolation from greater New York City have been perpetuated in contemporary times, affecting the ability for social cohesion and impacting resiliency in Red Hook. According to FEMA, social cohesion is a key indicator of resilient communities (FEMA 2020). Resilient communities are more capable of absorbing, rebounding from and adapting to hazard risks such as extreme weather events.

Socio-economic and cultural divisions within Red Hook have had a spatial impact on the neighborhood since the early-nineteenth century. Historically, low income housing took the form of informal settlements. Late-nineteenth century shantytowns and Great Depression-era Hoovervilles created cultural, ethnic, and spatial divisions (Spellen 2017 & 2018).



Informal housing at the future site of the Red Hook Recreation Area, September 12, 1934



Detail of Red Hook from 1938 Home Owners' Loan Corporation Map of Brooklyn. White areas indicate industrial areas and bright red areas are D-rated residential areas

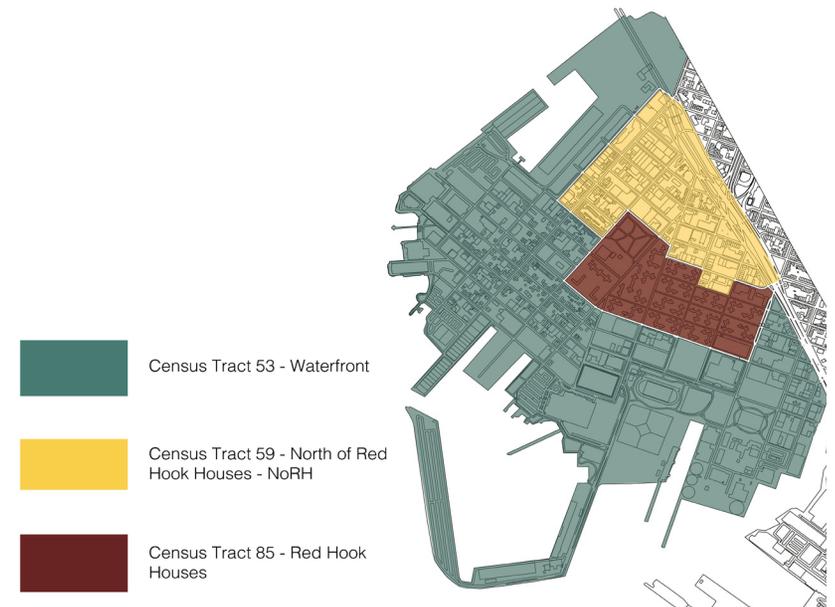


Map of present-day Red Hook with shantytown areas outlined in green, the Hooverville in yellow, and current Red Hook Houses in red

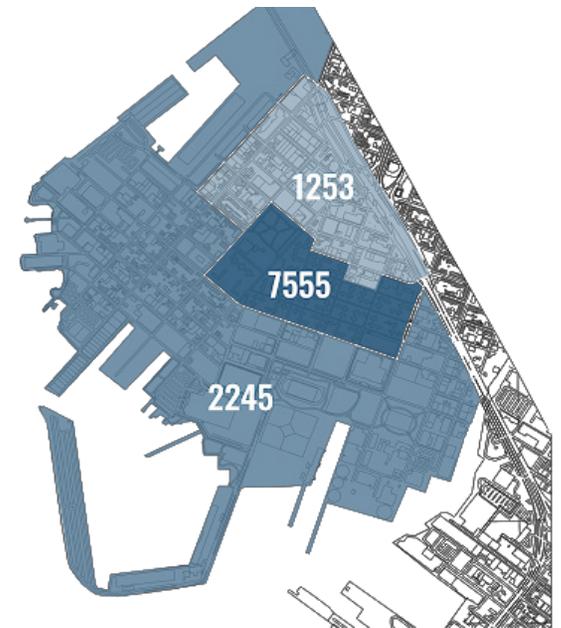
Redlining also impacted Red Hook, along with much of waterfront Brooklyn, by poorly rating the residential areas that were built up around the industrial waterfront. Red Hook was primarily industrial and the remaining areas were red - or D-rated - zones. The informal settlements largely fell within the “industrial zone” (Home Owners’ Loan Corporation 1938). Despite the high quantity of people living there, these settlements were not classified as residential, furthering the divide between formal and informal housing in the neighborhood.

The division between the “front” and “back” is linked to this history of informal housing in Red Hook. In 1927, author H.P. Lovecraft juxtaposed the “alluring antique flavor” of historic homes near the waterfront with the “leprous and cancerous” informal housing settlements in Red Hook (Lovecraft 1927). That same year, Louis H. Pink attempted to dispel the negative perceptions of this area by stating that “giving a dog a bad name won’t cure the dog...giving Red Hook a criminal record will not make this section a better place to live in.” Yet, by using the word “section,” and implying it was a poor place to live, Pink continued to present spatial divisions. Despite the negative perceptions of the site of the Red Hook Houses, the Houses themselves originally were perceived as a positive addition to the neighborhood, briefly posing the possibility that spatial divisions could be reduced.

Despite the internal divisions within Red Hook, the community was interconnected with Manhattan and greater Brooklyn historically. As early as the seventeenth century, ferry service made Red Hook a viable residential area and Hamilton Avenue served as a conduit from the ferry to Brooklyn, Long Island, and beyond (Simon 2010). This changed by the 1940s when ferry service was discontinued, historic streetcars were replaced with minimal bus service, and the Gowanus Expressway and Brooklyn-Battery Tunnel cut across Hamilton Avenue, creating a physical barrier between Red Hook and the rest of Brooklyn (Campbell-Dollaghan 2016; Caro 1974). The geographical isolation of Red Hook for over 70 years has coincided with a steady decline in population (U.S. Census Bureau 2020). In stakeholder interviews, some community members expressed that they felt the geographic isolation maintains the small-town character of Red Hook; however, this isolation also creates challenges of job and resource accessibility.



Census Tracts within Red Hook



Population distribution in Red Hook. Population numbers in absolute values for each census tract

An examination of demographic data provides insight into changes in Red Hook’s community over the last century. Red Hook encompasses three census tracts: the Red Hook Houses and their immediate vicinity (tract 85), the waterfront (tract 53), and the northern part of the neighborhood (tract 59).

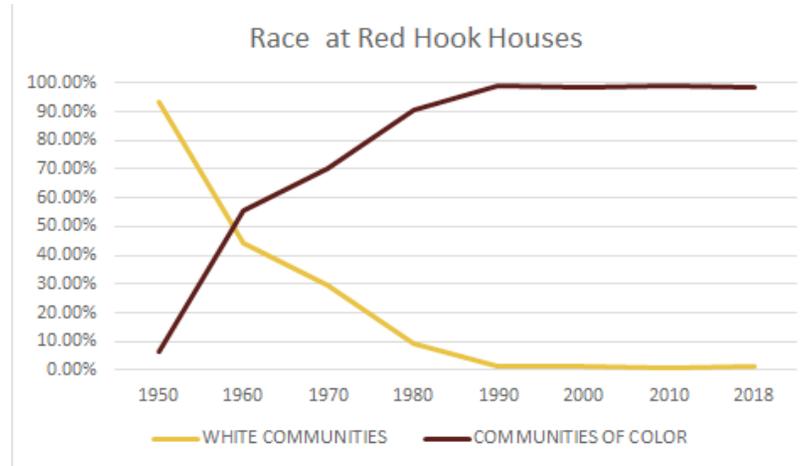
The construction of the Houses formalized a socio-spatial boundary around income and wealth that persists to today. It also made a substantial impact on the density of Red Hook. Despite moderate population growth since 2010, more than 70 percent of Red Hook’s population still live in the central census tract containing the Red Hook Houses, and that area continues to be the most economically disadvantaged part of the community.

Historic divisions in Red Hook primarily were along economic lines, as the Red Hook Houses were originally home to predominantly white dockworkers. In the 1940s and 1950s, those divisions became racialized as drastic changes in racial demographics occurred. By the 1980s, the population of Red Hook had shifted from 99 percent white to primarily a community of color. At a community level, this distribution has remained largely unchanged for the last three decades. However, at the waterfront (tract 53) and in North Red Hook (tract 59) the population has rebounded to a predominantly white population in the last decade, whereas the area around the Red Hook Houses remains a heterogenous population that is 99 percent people of color.

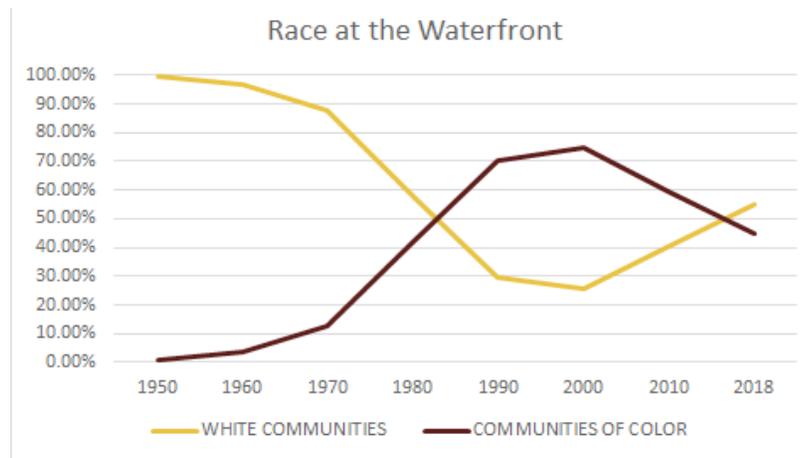
Racialized divisions extend beyond Red Hook and connect to hundreds of years of programmatic and systemic inequities along racial lines in America. These systematic inequities impact additional FEMA resilience indicators such as educational opportunity and attainment, social mobility, and employment opportunities. The growing spatialized racial disparity in Red Hook has challenged social cohesion and contributed to inequitable obstacles to resiliency.

Examining employment data over the last 40 years provides information on another FEMA community resilience indicator. In the last half of the decade, the unemployment rates of both New York City and Brooklyn have fallen and income levels generally have risen, but this trend did not benefit all populations equally. In Red Hook there is a significant income disparity among the census tracts. While the waterfront and North Red Hook have experienced an upward trend in income, residents of the Red Hook Houses

have faced above average unemployment rates and below average median incomes since the early 2000s. The impact of this disparity is critical as the areas that have more resources can better afford to adapt in place and recover from both environmental and social disasters.



Race at Red Hook Houses: 1950 - Present



Race on the Red Hook waterfront: 1950 - Present

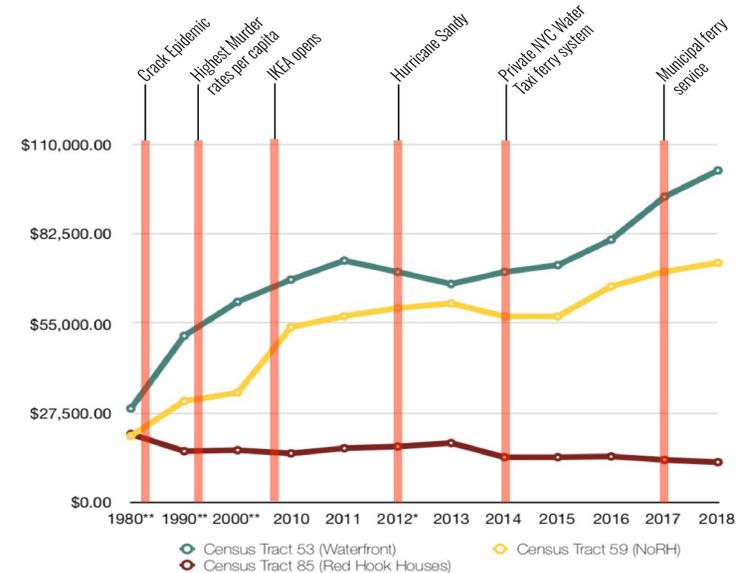
## Median Household Income x Red Hook Milestones

Red Hook’s demographic data and the disparities and divisions it illuminates contributes to the socio-spatial divide between the “front” and the “back.” It appears that this division was formalized - and publicized - in the 1970s and 1980s with the crack industry and its related media coverage. The Red Hook Houses have often been reduced to drugs, violence, and crime. In 1988, Life Magazine hyperbolically stated that that crack and its related violence “victimizes nearly all the Hook’s residents” (Colt, 1988). Yet this article portrayed all of Red Hook except for the Red Hook Houses as immune to the crack epidemic. It presented a racialized version of the crack industry, falsely attributing drug usage and violence exclusively to a predominantly Black and Latinx community.

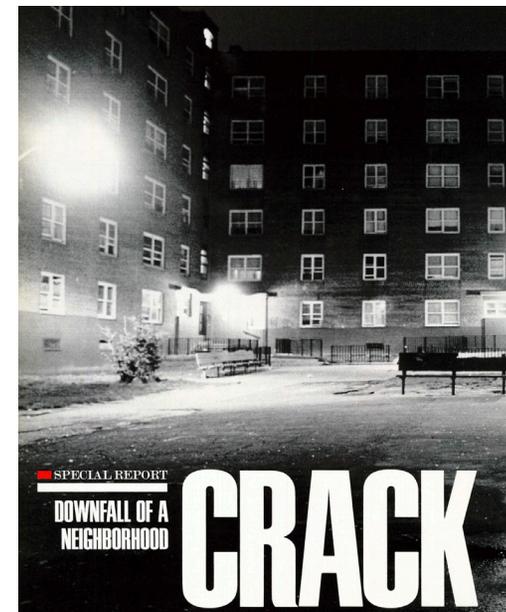
That division carries into the contemporary era and contemporary media coverage as well. The media presents two dueling narratives: crime and lack of opportunity in the Red Hook Houses and trendiness in the “back” of the neighborhood. In the controversial movie Red Hook Summer, Spike Lee commented that the Red Hook Houses were “dead” (Lee 2012). This statement contrasts greatly with newspaper articles praising the vibrant restaurant scene and quirkiness of Van Brunt Street and the waterfront. This selective praise has increased visitors and investments in areas that the media favors, contributing to growing disparities across Red Hook and impacting social cohesion.

The growing disparities of wealth and opportunity in the neighborhood are now being reflected in rising residential property values. This increase is illustrated in the figure on the following page, highlighting examples of homes recently listed or sold in Red Hook with value increases from previous sales in the thousands of percent. Several Red Hook stakeholders raised this issue, noting that even when people overcame negative employment and income trajectories in the Red Hook Houses and became economically successful, many could not afford to remain in Red Hook due to housing costs. The possibility of succeeding in place did not exist regardless of the long-standing social ties residents had to the community.

The Center for Neighborhood Technology’s Housing and Transportation (H+T) Affordability Index quantifies these affordability findings. This index “offers an expanded view of affordability, one that combines housing and transportation costs and sets the benchmark at no more than 45 percent of total household income” to



Median income in Red Hook census tracts, 1980 - 2018, overlaid with key historic events



Media reinforced perceptions of extensive crime and drug use in Red Hook

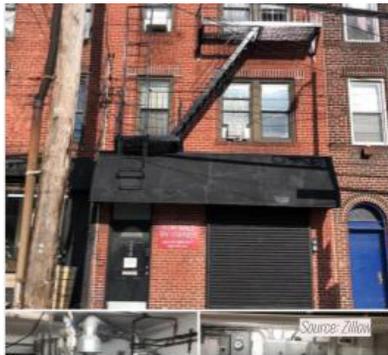
remain affordable (CNT 2018). As a percent of income, the housing and transportation costs in the Red Hook Houses are under 25 percent. Yet the housing and transportation costs relative to income in the area north of the Houses is around 36-45 percent and in the waterfront ranges from 54-78 percent. The variation of these percentages across the neighborhood demonstrates how difficult it is to jump over this affordability gap and shows how the affordability gap divides the neighborhood even further.

The displacement that has accompanied rising real estate costs and the loss of affordability in the residential sector also impacts the commercial sector. As documented in the physical resource survey, Van Brunt Street's commercial corridor has almost no vacancies. In contrast, the Lorraine Street commercial corridor, which primarily serves the Red Hook Houses community, has lost half of their commercial spaces and many essential businesses. This displacement is due to the planned development of high-income housing, which required a developer to purchase a full block of commercial real estate and remove tenants.

Stakeholders brought up the issue of social division along “front”/ “back” lines often in interviews. One of the primary concerns that stakeholders highlighted was that residents of the front of Red Hook feel that they lack autonomy. Many organizations working in the

“front” focus on meeting the resident’s fundamental needs, such as food security, job training, youth empowerment, and environmental disaster preparedness. On the other hand, organizations working in the “back” present initiatives for issues including climate change, vision planning, and managing real estate development in the neighborhood. The broader focus of the organizations in the “back” allows them to envision and plan for Red Hook’s future as a community on a larger scale, but this agenda is problematic since representatives of the “front” of the neighborhood rarely are represented in these organizations. Thus residents of the “back” feel disenfranchised from their community’s future and worry that plans that affect their livelihood are often thrust upon them without their input.

Social cohesion in Red Hook will be improved if stakeholders can coalesce around shared issues, such as but not limited to environmental threats and environmental justice. Nearly half of all interviewees expressed that their organizations actively work to engage residents of both the “front” and the “back” in their community-centered missions. Concern over issues that diffuse across the “front” and the “back” presents an opportunity to link these communities and address issues of inequitable resources and disparity as a cohesive community instead of as isolated groups.



**250 Van Brunt Street**  
5 Bedroom | 2 Bath | 3,425 sq. ft.  
Sold in 1995 for \$135,000  
For sale in 2020 for \$2,350,000



**127 Pioneer Street**  
3 Bedroom | 5 Bath | 2,210 sq. ft.  
Sold in 1995 for \$98,000  
For sale in 2020 for \$2,095,000



**181 Richards Street**  
4 Bedroom | 3 Bath | 3,081 sq.ft.  
Sold in 2009 for \$322,500  
Sold in 2020 for \$3,150,000

Housing and real estate prices continue to rise on an upward trend that started in the early 2000s

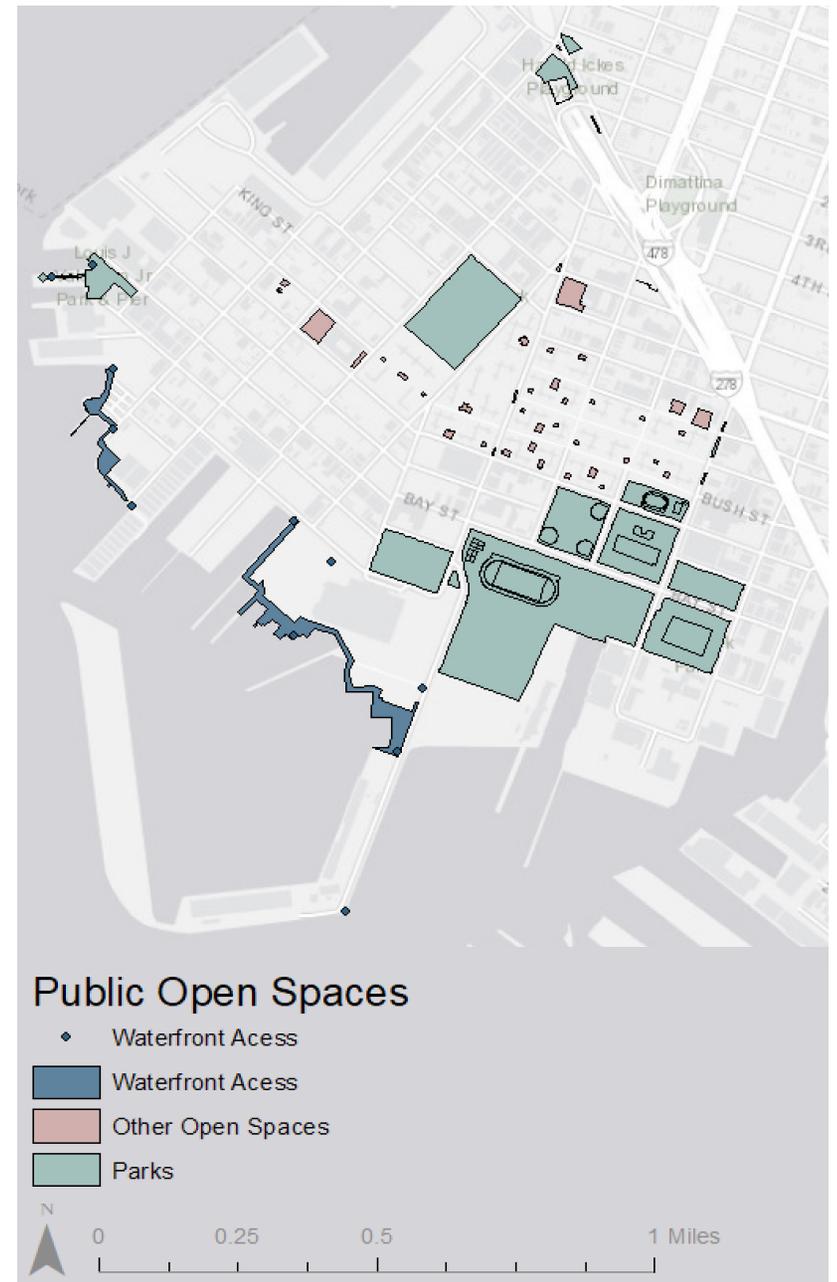
## ACCESS TO PUBLIC SPACE

As found in the physical resource survey, Red Hook's public parks and buildings are not equitably distributed and most public resources are located away from where the majority of residents live. These spatial inequities limit interactions among the diverse communities present in Red Hook. By having opportunities to interact, citizens are more likely to empathize with each other and come together in times of crisis. Community cohesion and interaction is vital in building a resilient community prepared for another extreme weather event.

Access to desirable spaces of interaction in Red Hook, such as waterfront public space, has historically posed challenges for the neighborhood. The dichotomy of power between residents needing jobs (predominantly available through waterfront industries) and wanting desirable spaces to interact has increased the importance of "third spaces." Third spaces have been defined in our studio as semi-public spaces that allow for community members to interact organically. Examples include places of worship and public-facing retail and commercial establishments, such as restaurants and stores. The relationship between purely public spaces and "third spaces" in Red Hook is complex and contributes to the isolation of communities within the greater Red Hook community.

Public open spaces in Red Hook includes accessible waterfront space and parks, such as Coffey Park. Commercial corridors along Lorraine Street and Van Brunt Street also act as "third space" arteries, although they serve different publics.

As seen in the accompanying figure, Red Hook is home to a large number of public open spaces relative to its footprint. Coffey Park, Red Hook Park, and the Red Hook Recreation Center are the largest public open spaces in the neighborhood. Their location makes them the most convenient public spaces for residents of the Red Hook Houses to interact and socialize. However, access to Red Hook Park is currently compromised. The park sits atop the site of the former Columbia Smelting plant which has resulted in the need to remediate the soil and remove lead that has contaminated the majority of its fields (Stapinski 2018). Many fields have been closed since 2012 and will remain so until 2023 (Stapinski 2018). This temporary but prolonged loss, especially given the park's critical location near the Red Hook Houses, further complicates public access in Red Hook.



Public open space in Red Hook

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The waterfront, shown in dark blue in the figure at left, is also a source of public space in Red Hook. Areas that were once heavily industrial have now been reclaimed and provide the community access to a desirable outdoor space. Parts of the waterfront are accessible to all residents and visitors. However, waterfront access is more accessible for residents of the "front," reducing the possibility for stakeholders from the "front" and "back" to interact along the waterfront.

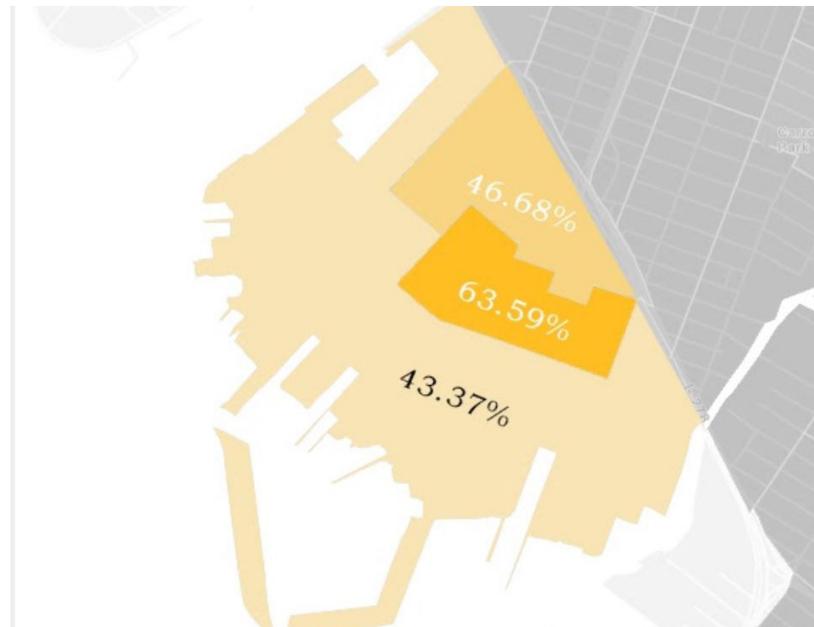
In urban environments, public transit can also serve as a space for informal social interaction among members of a neighborhood. However, public transportation is limited in Red Hook, and also is not equitably distributed in terms of geography. While some posit that this lack of public transit has contributed to Red Hook's small-town feel, it has likewise contributed to its isolation from the rest of the city, and the separation of "front" and "back."

Historically, public transportation in Red Hook provided critical access along third space commercial corridors and to the public areas of the waterfront. The map above shows both historic and modern transportation in Red Hook with historic transit lines (in blue) overlaid with current transit lines (in red). The early development of transportation, including ferry lines, horsecars, and later streetcar lines, drew people to the waterfront, resulting in the emergence of commercial corridors and numerous third spaces. However, starting in the 1930s with the construction of the Brooklyn-Battery Tunnel and Gowanus Expressway transportation created a physical, architectural, and visual barrier among Red Hook, the rest of Brooklyn, and greater NYC (Caro 1974).

Residents of the Red Hook Houses are more dependent upon public transportation for commuting than the rest of the neighborhood. This

is also reflected in car ownership within Red Hook. According to the H+T Index, residents near the waterfront have a range of .85 to 1.16 cars per household. In the Red Hook Houses census tract, there are .69 cars per household, aligning with the average number of cars per household in New York City. This data suggests that there is a further socioeconomic disparity between "front" and "back" regarding those who commute by car versus those who are more dependent upon public transit.

In Red Hook, buses are the most important inland mode of public transportation since they connect the neighborhood to downtown Brooklyn and Manhattan. However, those who live in the Red Hook Houses need to walk at least 1,000 feet to get to a bus stop. Furthermore, wait time between buses is approximately 15-25 minutes. Wait time coupled with the stop's distance from the Red Hook Houses makes the service a less reliable way to commute, and creates longer commutes for residents of the "front" compared to residents of the "back."



Percentage of population that regularly uses public transportation in Red Hook's three primary areas



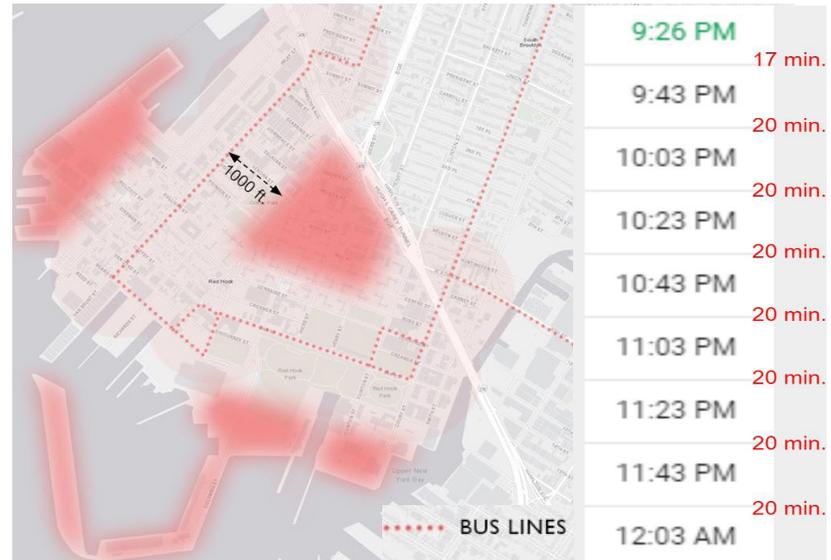
Map of Current and Historic Transportation in Red Hook

Commercial spaces, including stores, restaurants, laundromats, and the like, are a type of semi-public, “third” space supporting community interaction. Furthermore, these establishment may serve as important resources during extreme weather events. For example, IKEA served as a meeting ground and center for emergency services during Hurricane Sandy, providing food and supplies to members of the community. Understanding the opportunities that these third spaces create for community members to interact could help channel energy and perhaps funding into filling vacancies in the economic corridors like Lorraine Street that are experiencing a loss of vibrancy. Understanding how commercial spaces, public transportation, and public spaces function together in Red Hook provides the opportunity for innovative approaches in utilizing spaces to generate community cohesiveness. The importance of third spaces should not be overlooked, as they can create organic interactions among all residents in the neighborhood. These organic interactions are the first step in developing relationships that strengthen social cohesion and increase resilience.

## LOSS AND VULNERABILITY OF THE BUILT ENVIRONMENT

Red Hook has a history of loss in the built environment and remains vulnerable on two fronts: flooding, which will be discussed in the following key issue, and insensitive demolition and development. Loss of the built environment threatens the physical manifestation of critical narratives from Red Hook’s history and the character of the community, which many interviewed stakeholders deemed valuable.

Government-sponsored destruction of Red Hook’s built fabric was particularly devastating in the late-1930s. The construction of the Red Hook Houses required the demolition of fifteen blocks of low-income housing. While this demolition replaced housing in kind, other interventions, such as the Red Hook Recreation Center, demolished another fifteen blocks of housing further south. The construction of the Gowanus Expressway, starting in 1939, further showed how Red Hook has been vulnerable to the City claiming and developing its land. The Gowanus Expressway required the demolition of several blocks on either side of its route and the displacement of thousands of people (Caro 1974).



Access to public transportation in Red Hook. Bus routes shown dashed in red and areas outside of 1000 foot buffer from bus line shown in red

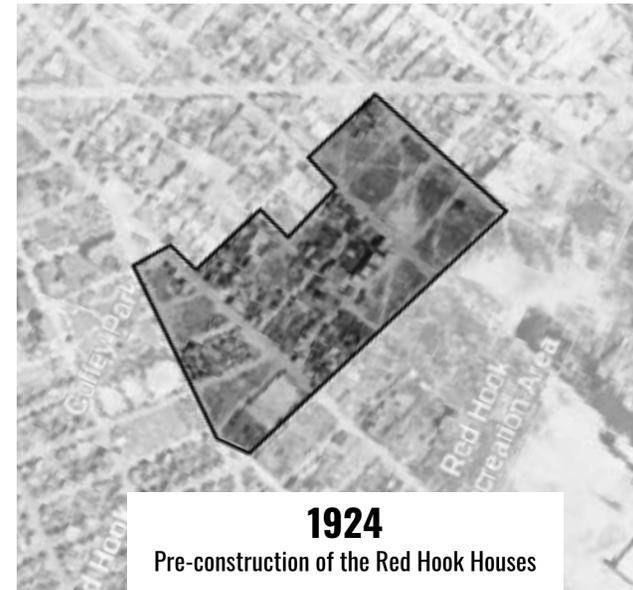


Semi-public and public businesses in Red Hook

Certain building typologies have been especially vulnerable to loss, particularly public and residential buildings. Sullivan Street illustrates this phenomenon. A vacant lot is now located where the nineteenth century Saint Paul's Methodist Episcopal Church once stood. The loss of the building illuminates a shift in the neighborhood fabric and character. Sullivan Street also shows how newer residential buildings have replaced historic residences. While the contemporary row houses on Sullivan Street respect the scale of the neighborhood, the loss of an entire streetscape altered the material character of the street. If large-scale losses of streetscapes continue, Red Hook's overall character will change drastically.

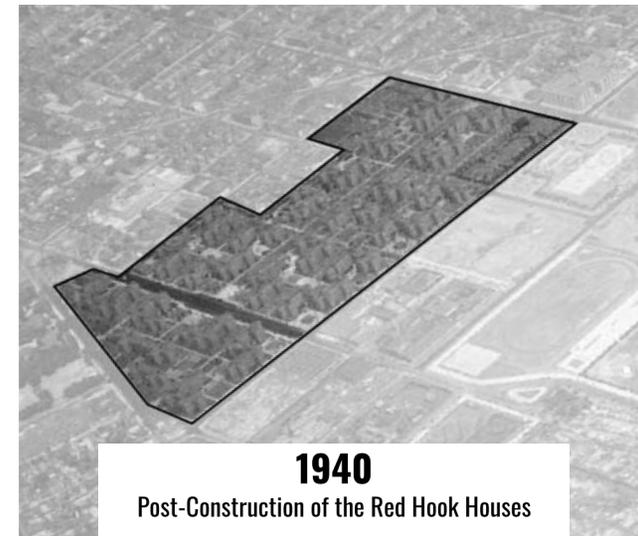
Industrial buildings are the most at-risk typology in Red Hook. Due to the decline of waterfront industry, many industrial buildings in Red Hook were abandoned, leading to deterioration and ultimately demolition. As discussed in the "Red Hook Built Environment" section, this loss of waterfront industrial buildings led to the inclusion of the Brooklyn waterfront on the National Trust for Historic Preservation's 2007 list of the eleven most endangered historic places (Pogrebin 2007). Although this inclusion resulted in National Register listing or eligibility for some industrial buildings, many important historic sites in Red Hook had already been and continued to be lost. These sites include the Todd Shipyard, destroyed to make way for IKEA; the Revere Sugar Factory, which was leveled and has been left as a vacant lot for over a decade; and the Lidgerwood Manufacturing Plant, which was almost entirely demolished by UPS despite community opposition, as will be discussed briefly in the "History of Resilience and Activism" key issue.

When evaluating what has been and what could be lost, it is important to consider what types of heritage is valorized. One way to look at what resources are valorized is historic designation status. Even though industrial buildings are at risk, they make up three of the four designated historic resources in Red Hook: the Mary A. Whalen ship (National Register-listed), Lehigh Valley Barge (National Register-listed), and the Clay Retort and Fire Bricks Work (NYC LPC landmark). The Red Hook Recreation Center, an LPC landmark and National Register-eligible site, is the only non-industrial designated structure in Red Hook. Thus a tension arises: industrial resources are valorized but not necessarily preserved. Designation, including National Register eligibility, in Red Hook notably has not recognized many buildings that reflect the diversity of Red Hook's history.



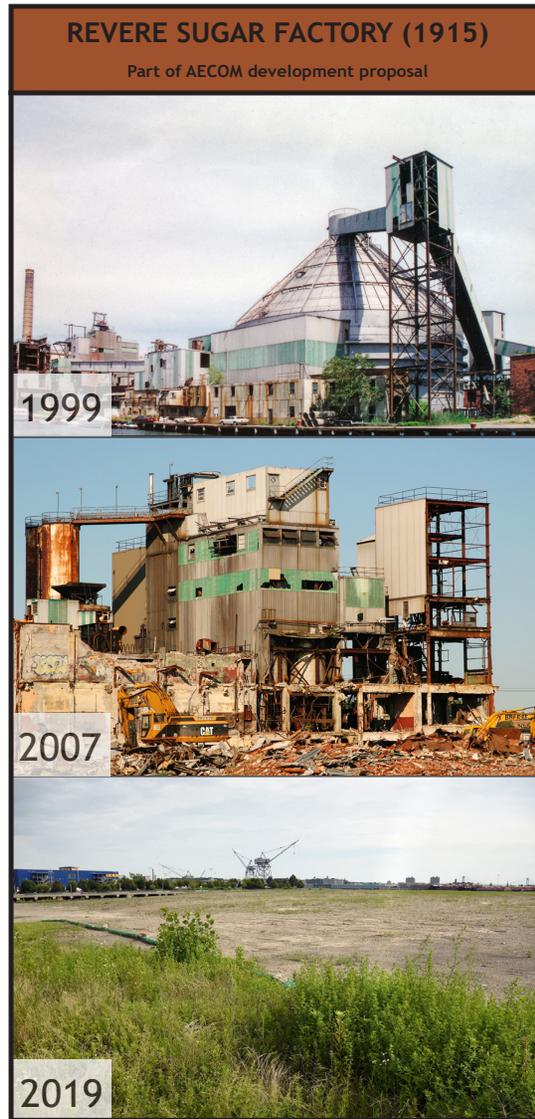
**1924**  
Pre-construction of the Red Hook Houses

Aerial photos of the site of the Red Hook Houses pre-construction



**1940**  
Post-Construction of the Red Hook Houses

Aerial photos of the site of the Red Hook Houses post-construction



**Top:** "Todd Shipyards Corporation," Red Hook Water Stories, <https://redhookwaterstories.org/items/show/105>  
**Middle:** "Todd Shipyard, Red Hook, Brooklyn, NYC," LTV Squad, April 4, 2006, <https://ltsquad.com/2006/04/04/todd-shipyards-red-hook-brooklyn-nyc/>  
**Bottom:** Zoe Rosenberg, "Ikea's First Manhattan Store will Open on April 15," Curbed, March 19, 2019, <https://ny.curbed.com/2019/3/19/18272779/ikea-manhattan-new-york-locations>

**Top:** Susan De Vries, 1999, "The Story of Revere Sugar in Red Hook and Fall of Big Sugar in Brooklyn," *Brownstoner*, December 10, 2018, <https://www.brownstoner.com/sponsored/brooklyn-manufacturing-revere-sugar-red-hook-history-270-richards-street/>  
**Middle:** "Remains of the Revere Sugar Factory," Bluejake, August 12, 2007, <https://www.bluejake.com/2007/08/remains-of-the-revere-sugar-refinery.html>  
**Bottom:** Nathan Kensinger, "As Red Hook's Industrial History is Demolished, What Comes Next for the Neighborhood?" *Curbed*, June 27, 2019, <https://ny.curbed.com/2019/6/27/18761177/brooklyn-red-hook-industrial-history-preservation-photo-essay>

**Top:** Susan De Vries, 1999, "The Story of Revere Sugar in Red Hook and Fall of Big Sugar in Brooklyn," *Brownstoner*, December 10, 2018, <https://www.brownstoner.com/sponsored/brooklyn-manufacturing-revere-sugar-red-hook-history-270-richards-street/>  
**Middle:** "Protect Lidgerwood, Protect Red Hook History," PortSide New York, May 30 2019, <https://portsidenewyork.org/portsidetanke/2019/5/30/protect-lidgerwood-protect-red-hook-history-developing-story>  
**Bottom:** Anna Quinn, "Red Hook Still Skeptical of Plan for Historic Waterfront Site," May 30, 2019, <https://portsidenewyork.org/portsidetanke/2019/5/30/protect-lidgerwood-protect-red-hook-history-developing-story>

Examples of loss of industrial heritage in Red Hook

A couple of key factors leave Red Hook vulnerable to future losses. One is the lack of designated buildings. The two LPC landmarks are the only buildings in Red Hook with legislative protection against demolition or insensitive development. Additionally, there are a plethora of soft sites. Many developers have already proposed insensitive development at these sites while other owners are holding onto their soft sites in the hopes of zoning changes from industrial to mixed-use, as the return on investments is higher for residential than industrial sites (Van Veelen 2017, 204). Overall, the soft sites in Red Hook indicate that there is a vulnerability for loss of additional historic buildings, archaeological sites, and neighborhood character.

It is critical to note that some communities, sites, and buildings have never had the chance for official designation or public recognition. Red Hook is a site of historic injustices, leaving the histories of marginalized communities inequitably represented -- if represented at all. There are no buildings or sites that explicitly represent the histories of the Lenape or enslaved populations in Red Hook. The physical manifestation of some of these narratives has been depicted recently through public art, as seen in the "Some Walls Are Invisible" mural on Valentino Pier, which recognized barriers to equality and justice on the 400th anniversary of Dutch settlement in NYC. Preservation is a privilege that depends upon spatial representation and recognized land claims. What is preserved directly correlates to whose stories are valorized in contemporary Red Hook. Further involving the stakeholders and residents can help ensure future designations and preservation battles best reflect what the diverse Red Hook community valorizes themselves.

## SUSCEPTIBILITY TO FLOODING AND ENVIRONMENTAL VULNERABILITY

Red Hook today is particularly susceptible to flooding, which is a consequence of three issues: first, the infilled land and hardened coastline; second, the existing sewage infrastructure; and third, sea level rise. Flooding is the consequence of several factors: precipitation, storm surge (a consequence of high winds and pressure changes during storms), or a combination of the two. Post-precipitation flooding may be exacerbated by a low elevation, as water will run to low elevation areas from high elevation areas during and after precipitation events (NYC Dept. of Design 2019).

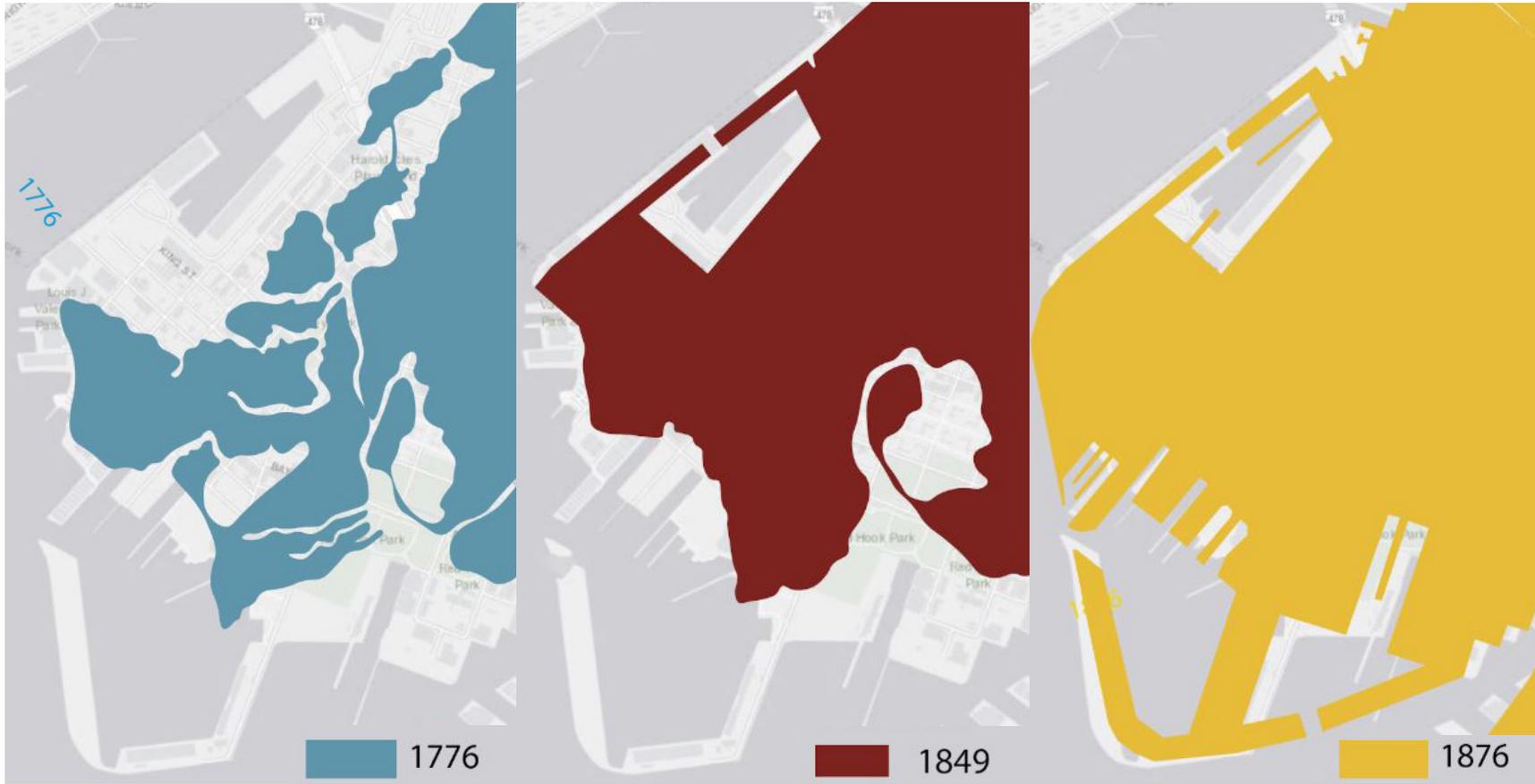
In addition to issues with precipitation and storm surge, Red Hook experiences groundwater rise due to its high water table, which sits just five to ten feet below the surface (Walsh 2017). During storm events, this groundwater rises and seeps onto the land above, resulting in flooding (NYC Dept. of Design 2019).

Susceptibility to flooding in Red Hook is largely due to its infilled land and hardened coast. Red Hook's natural ecology is that of a marshland, which is capable of absorbing a significant amount of water. Originally inhabited by the Lenape and colonized by the Dutch in 1636, the neighborhood remained a wetland until the mid-17th century (Montalbano 2019). In the 1840s the Atlantic Basin opened as Red Hook's first major port facility with forty acres of wharves. The Erie Basin, with 135 acres of wharves and breakwaters, was constructed soon after in the 1860s (Red Hook Gowanus Neighborhood 2000).

Additionally, the low, watery areas inland of the shore were infilled, largely with refuse that accumulated or was dumped in the neighborhood. This infilled area of the neighborhood, as well as the waste used to fill it, was also used for the construction of informal housing in Red Hook (The Red Hook Star Revue 2015). The infilled region of the neighborhood later became home to the Red Hook Houses, which experienced extensive damage due to Hurricane Sandy (Schmeltz et al.

2013). Thus, as Red Hook's shoreline and marshland ardened, the neighborhood became more vulnerable to flooding. This vulnerability was due to its loss of natural resistance to storm surges as well as through the creation of land on a high water table which later became home to a vulnerable population.

Red Hook's history of sewage infrastructure, or lack thereof, also contributed to flooding in the neighborhood. Though the City of Brooklyn established the Board of Sewer Commissions in 1857, shared outhouses in 1866 Red Hook were described by the New York Medical Journal as having "close vaults, which, during the summer, were mostly found full, and in many instances overflowing" (Thayer 1866; Etherington 2016). These unsanitary conditions contributed to New York City's 1866 cholera outbreak, of which Red Hook was the epicenter (Thayer 1866). By 1885, most of the streets east of Dwight Street were still not connected to the main sewer line.



Changes in the shoreline (1776-1849)

The completion of an underground, combined sewage system throughout Brooklyn did not occur until the twentieth century (Colwell 2015). The Red Hook sewage treatment plant, located in the Brooklyn Navy Yard, was not completed until 1987, marking “the first time in the city’s history [that] virtually no raw sewage will spill routinely into the city’s waters” (Neuffer 1987). Today, a combined sewage system is still in use, meaning that rain water and waste flow into the same sewer. When this system is overwhelmed by precipitation and runoff water, though, the sewers overflow, resulting in street-level flooding.

Finally, the existing problems with flooding in Red Hook will be exacerbated by climate change, which has resulted in sea level rise as well as an increased frequency of hurricanes. As the sea level rises, storm surges will likely increase proportionally in size, and the water table will likely also rise, causing flood events to become even more frequent and severe (NYC Dept. of Design and Construction 2019). This gradual change is reflected by the effect of

Hurricane Sandy, which made landfall in 2012, on the neighborhood. Hurricane Sandy flooded over 75 percent of the neighborhood, which was more than 1.5 times the area predicted in FEMA’s 1983 flood maps (Hewes 2015; NYC Dept. of Design and Construction 2019). As a consequence, small businesses and the Red Hook Houses experienced significant damage (Wong 2017).

These issues are spatialized through a map of base flood elevation, discussed in depth in the physical resource subsection earlier in the report, which shows that the front of the neighborhood features a lower expected flood height than the back (FEMA 2019).



Map of informal trash/low lying Area (1850-1900) & known shantytowns (1872)

This data demonstrates significant variation in flood risk throughout the neighborhood, particularly when entry level height is considered. While building entrances are not the only source of water infiltration during flood events, entry level heights provide insight into the risk of individual properties. Residential buildings, for example, may lose basement mechanical systems or secondary living areas during a flood, but raised entrances may prevent the flooding of a primary living space. Commercial and mixed use buildings may experience significant costs in terms of damages, lost inventory, or revenue as a consequence of sidewalk-level entrances. Finally, industrial buildings, which overwhelmingly have sidewalk-level entrances, may also experience inventory losses.

The neighborhood's flood issues are now being addressed through relaxed zoning regulations that allow communities located in floodplains to adapt in place. Loosened regulations for features such as height, yard size, and building envelope are being relaxed to allow the retrofitting of existing buildings, as well as for new construction buildings to feature adaptations for flood height predictions (NYC Planning 2019). Development plans that incorporate adaptations are also underway in the neighborhood. For example, NYCHA and Kohn Pederson Fox (KPF) are working to increase the resiliency of the Red Hook Houses through several design adaptations, including the movement of mechanical equipments to permanent above-grade structures, an adaptation allowed by NYC Planning's relaxed regulations (NYC Planning 2019; AIA New York 2017). Additionally, the Red Hook Coastal Resiliency (RHCR) Project, which is still in the design phase, is seeking to increase resiliency along Beard Street and the Atlantic Basin through FEMA-approved flood adaptations and interventions (NYC Dept. of Design and Construction 2019).



Map of sewerless streets in 1886

 Sewerless Streets



Map of flooding in Red Hook after Hurricane Sandy, 2012

## HISTORY OF RESILIENCE AND ACTIVISM

Red Hook has a robust history of resilience and activism in the face of challenges and injustice. This history, and current activism, will inform future progress and adaptation, as activism is a direct way to identify issues the community values, witness the community's dedication to their neighborhood, and demonstrate the resistance of Red Hook's population to social and environmental injustices.

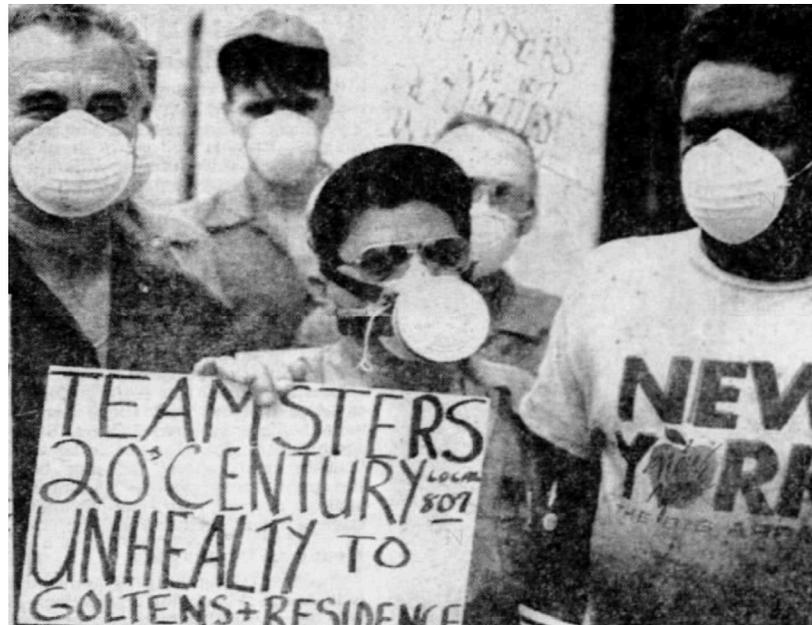
The roots of activism in Red Hook lie in residents and workers' anti-racketeering efforts in response to heavy mafia activity in the neighborhood in the early- to mid-twentieth century. People stood in frequent public opposition to racketeering despite the threat of mafia retaliation, violence, and even death (New York Herald Tribune 1931; New York Times 1941). Residents continued to push back against crime decades later. Throughout the local and national crack epidemic from the late-1970s until the 1990s, grassroots activists and residents mobilized to patrol the neighborhood in the hopes of creating a safer environment. Women spearheaded a neighborhood tenant patrol and teenagers formed a youth patrol (Colt 1988).

In addition to resisting crime and social injustices, the Red Hook community has a history of activism in response to environmental injustices. In the mid-twentieth century, numerous polluters, including multiple garbage incinerators and a lead-refining factory, were located within Red Hook. As a consequence, many residents suffered from health issues. In an effort to advocate for the neighborhood, one resident wrote a letter to the editor of the Brooklyn Daily Eagle in 1951, explaining that residents "are deluged in smoke right now, an oil smoke that gives one a choking, suffocating feeling" (Brooklyn Daily Eagle 1951). Privately-run garbage transfer stations later replaced these polluters; however, local organizations successfully fought to eliminate these transfer stations from the neighborhood during the 1980s (Farrell 2000; Shin 1999a and 1999b).

Neighborhood activism transitioned into resilience with the opening of the Red Hook Community Justice Center in 2000, largely in response to public distress and uproar over the 1992 murder of P.S.15 Principal Patrick Daly (McFadden 1992; Donnelly, n.d.). By emphasizing common sense and compassion for offender rehabilitation, the court fosters reciprocal respect and accountability between defendants and the justice center. The Community Justice



Anti-racketeering protest in Brooklyn in 1954



Anti-transfer station protestors set up an informational picket line in Red Hook

Center also encourages engagement with community members not involved with the justice system through community meetings and programs, such as a court-sponsored baseball league (Lee et al. 2013, 5; Spadola et al. 2004). Even after the establishment of the Community Justice Center, grassroots efforts to reduce violence and crime within Red Hook remain strong. For example, youth of color recently published a report in collaboration with the Red Hook Initiative that called for better leadership and mentorship opportunities for youth rather than over-policing to minimize violence in the neighborhood (Real Rites 2019).

Recently, the neighborhood has seen a rise in preservation activism with stakeholders mobilizing against the loss of the historic built environment. Last year, community members and local non-profits launched a petition to save the Lidgerwood Manufacturing Building from demolition in favor of adaptive reuse, garnering over 2,000 signatures (Croghan 2019; Nandan 2019). Although all but the facade was demolished, these protests demonstrated the neighborhood's role in challenging ideas that go against their beliefs.

Recent community activism has also sought to address environmental justice issues in the neighborhood. Since Hurricane Sandy in 2012, multiple Red Hook nonprofit organizations, such as Red Hook WaterStories and Resilient Red Hook, have taken the initiative to gather data about Sandy's effects on the neighborhood and help residents prepare for another Sandy-level storm. With the help of the Red Hook Coalition and numerous recovery organizations, Resilient Red Hook developed Ready Red Hook, a community Emergency Readiness plan intended to increase resilience during the next environmental disaster (Ready Red Hook n.d.). Local school children followed climate activist Greta Thunberg's lead in holding a climate strike (Weiser 2019).

Red Hook residents have been demonstrating resilience through activism for a century and will likely continue to do so in the future. Future activism may continue to highlight social injustices that inequitably affect the "front" of the community; by following their own precedent of speaking out against these injustices, residents can become empowered to push for change that will balance opportunities and representation in Red Hook. Future activism against environmental injustices is a shared interest between the "front" and the "back" and forming new partnerships could increase social cohesion and thereby neighborhood resiliency overall.



Red Hook residents oppose demolition of Lidgerwood Manufacturing Building at UPS public meeting



Local students participate in climate strike, c. 2019

## CONCLUSION

The key issues identified in this studio reflect over three centuries of history and development in Red Hook. Currently, these issues highlight tensions between the “front” and the “back” of the neighborhood including income, educational opportunities, and other indicators of community resiliency. They also illuminate a clash between preserving Red Hook’s vibrant historic character and redeveloping the neighborhood, as well as an uncertain future regarding flooding and other environmental concerns. Yet, through analyzing these issues, the resiliency of Red Hook’s community and opportunities for forging a more equitable future become apparent.

These key issues and themes can guide future proposals for Red Hook which aim to unite these competing issues through common goals, such as understanding and combating environmental challenges and creating mechanisms for greater community collaboration. Planning for Red Hook’s future should not require the displacement of residents or widespread loss of the built environment. In some cases, acknowledging the history of the waterfront, the neighborhood, and its historical divides and inequalities may be required for Red Hook to move forward as a more united community.

With these key issues in mind, the studio developed two evidence-based proposals for action and intervention in Red Hook: the Red Hook Center for Adaptation, Resilience, and the Environment (CARE), and the Red Hook Business Improvement District. The need to address the key issues through the use and preservation of heritage drove the development of these proposals. Each proposal recommends introducing a comprehensive program into the neighborhood that seeks to promote equitable resilience through spatializing and addressing Red Hook’s key issues. These programs will be accomplished through physical interventions in the built environment and the promotion of collaboration among Red Hook’s diverse stakeholders.



**PROPOSAL 1: THE RED HOOK CENTER FOR  
ADAPTATION, RESILIENCE AND THE ENVIRONMENT**

**BRUNO ELIAS, RACHEL ERICKSEN, KATIE FOSTER,  
EMILY KAHN, CAROLINE PETERS, MADISON STORY**

# MISSION

The Red Hook Center for Adaptation, Resilience, and the Environment (CARE) aims to increase resiliency and equity by creating a space for equal access use by key community stakeholders and resilience organizations to increase the physical and social preparedness of all Red Hook publics while encouraging environmental interaction and awareness through community engagement. CARE's key goals will be established in the preliminary stages of the center through a series of community meetings and focus groups seeking to engage all stakeholders equally, following the precedent set by the Red Hook Community Justice Center. However, we propose the following key goals:

- 1. Stakeholder and Community Education:** Inform stakeholders of key environmental and social factors that have created Red Hook's multifaceted vulnerability. Provide education and technical support to property owners seeking to increase the resilience of their properties.
- 2. Disaster Preparedness:** Inform Red Hook community members about the tools they can use to prepare for disaster and take control of their environmental future. Educate property owners and provide technical assistance on steps they can take to increase the resiliency of their homes and businesses.
- 3. Community Cohesion:** Provide an enclosed community gathering space that can be utilized by multiple Red Hook nonprofits to engage with residents and serve as a physical response headquarters during future disasters.
- 4. Modeling Preservation:** Model the potential for the sustainable preservation of historic structures in Red Hook, both industrial and residential, through adaptive reuse of a historic industrial building with renewable energy and sustainable technology integration.

CARE's goals are structured as such to address several key issues that have been identified in Red Hook, including: community issues impacting social cohesion, access to public space and urban accessibility, loss and vulnerability of the built environment, susceptibility to flooding and physical vulnerability, and the neighborhood's history of resilience and activism. As such, CARE will incorporate and educate residents on adaptation methods, provide an enclosed and secular community space where residents can learn and interact, and provide an additional disaster response space while preserving a historic structure. We have proposed numerous

components to CARE as potential avenues for addressing Red Hook's key issues. These components will be discussed in-depth below, and are summarized by the following table:

CARE is proposed as a community education space and workplace to be used by neighborhood nonprofit organizations. Though cross-organization collaboration in an enclosed community space is unusual, the mission and programming of CARE is largely based on the City of Berkeley's Community Resilience Center (CRC) Program which seeks "to enhance the resilience of the people of Berkeley by strengthening the organizations they depend on day-to-day and providing disaster preparedness outreach and training through organizations they know and trust." The CRC Program is based out of many Berkeley organizations, including churches and youth centers, but coordinated by the city's "Berkeley Ready" team, which consists of staff from the Office of Emergency Services, Public Health Division, and City Manager's Office (City of Berkeley Fire Department, n.d.). CARE will similarly combine the efforts of multiple community organizations but primarily be based out of a single location. Should CARE successfully complete its mission, it may serve as a flagship center for a city-wide resiliency initiative, using the CRC Program as a structural model (rather than as a model simply for the mission and programming).

While Red Hook's Community Emergency Readiness Plan, developed by Ready Red Hook (now Resilient Red Hook), has been developed to address the 72 hours before and during a disaster, it does not educate community members regarding property adaptation or the neighborhood's environmental past. Additionally, it encompasses Support Services at various locations throughout the neighborhood, some of which may experience flooding or inaccessibility during a superstorm (Ready Red Hook n.d.); therefore, CARE will unite the missions of numerous nonprofits to provide citizens with a full understanding of the neighborhood's unique physical vulnerability while creating an accessible response headquarters during an emergency.

		Community Issues	Access & Accessibility	Built Environment Loss	Flooding	Resilience & Activism
<b>Capital Improvements</b>	Adaptive Reuse		X	X	X	
	Sustainability Features				X	X
<b>Exterior Programming</b>	Garden			X	X	
	<i>Hàki</i> Garden	X				
	Daylighted River				X	
	Mural	X				
<b>Interior Programming</b>	Permanent Exhibit				X	X
	Temporary Exhibits	X				X
	Multi-Purpose Space	X	X			X
	Workshops, Lectures, & Forums	X			X	
<b>Offsite Programming</b>	Public Art & Watermarks				X	X
	Pop-Up Exhibits & Gardens	X			X	X
	Educational Programming	X			X	X

Red Hook key issues to be addressed by CARE proposal.

## OWNERSHIP, OPERATIONS AND GOVERNANCE

CARE's ownership model will be a public-private partnership with the aim of addressing the key issue of community issues impacting social cohesion. Ownership and operations will be modeled after the Red Hook Community Justice Center. The Community Justice Center is a part of the New York State Court System, but its unique approach to criminal justice is the product of a multi-organization public-private partnership that includes the New York State Court System, the Brooklyn District Attorney's Office, and numerous city agencies and nonprofit organizations (Lee et al. 2013).

CARE itself - which would handle operational management of the Center - would be registered as a non-profit entity, forming the private arm of the partnership. New York City and New York State agencies would form the public arm. Depending on interest, public agencies could include the Mayor's Office of Resiliency, NYC Office of Emergency Management, NYC Parks, the New York State Division of Homeland Security & Emergency Management, New York State Governor's Office of Storm Recovery, and/or the New York State Department of Housing and Urban Development.

The public arm would be responsible for the initial land purchase of the building and adjacent vacant site, which CARE would then lease from the city in a long-term lease arrangement. The city would also provide annual funding for the Center through city and agency budget line items. CARE would be responsible for fundraising for and completing the restoration and adaptation of the site and building. CARE would then lease from the city in a long-term lease arrangement.

CARE represents an experimental model of large-scale community engagement in resiliency and adaptation at the hyper-local level. Having the community actively direct the focus, aims, and research of the Center gives them true agency in the decisions that pertain to their community. It is critical to have both the city and the state involved because there is often conflict between resiliency initiatives at the city and state level. The community can discuss these initiatives at CARE so that they can be used in the manner most effective for Red Hook. The use of open dialogue among many entities will allow Red Hook to navigate the city-state conflicts over

time and serve as an example for other communities in the future. Through collaborating with the municipal and state governments, CARE could help set a precedent for success in place rather than planned retreat for other communities who are not ready to leave their homes in the wake of a flood crisis.

CARE's operations would be handled through their nonprofit entity with 2-3 full-time staff and community volunteers. The governance structure of the Center would be a separate hierarchy, headed by a Community Steering Committee (CSC) that would act as an executive board. The CSC would elevate the needs and voices of community members while contributing to CARE's planning and goals.

The board would be responsible for making planning decisions related to programming and exhibitions, master calendars, fundraising and budgets priorities. Community engagement being a critical issue, the majority of board members would be invited from community organizations and nonprofits - critically representing both the back and front of Red Hook - with select professionals and

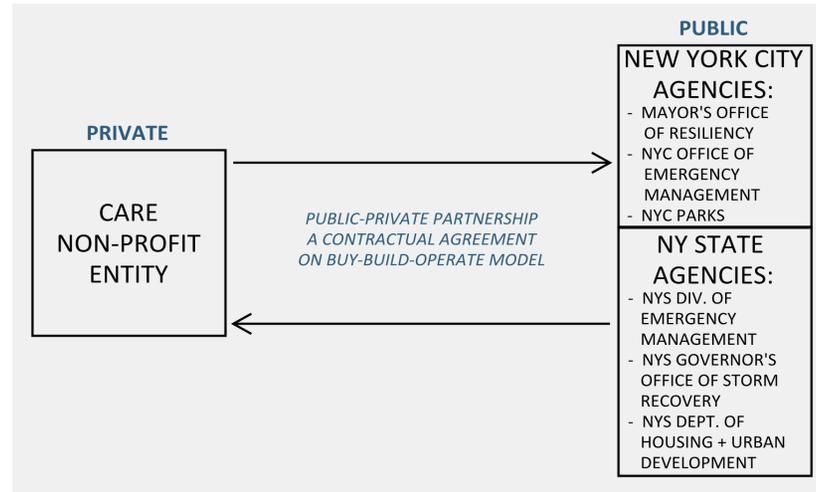


Diagram of CARE's Ownership Model

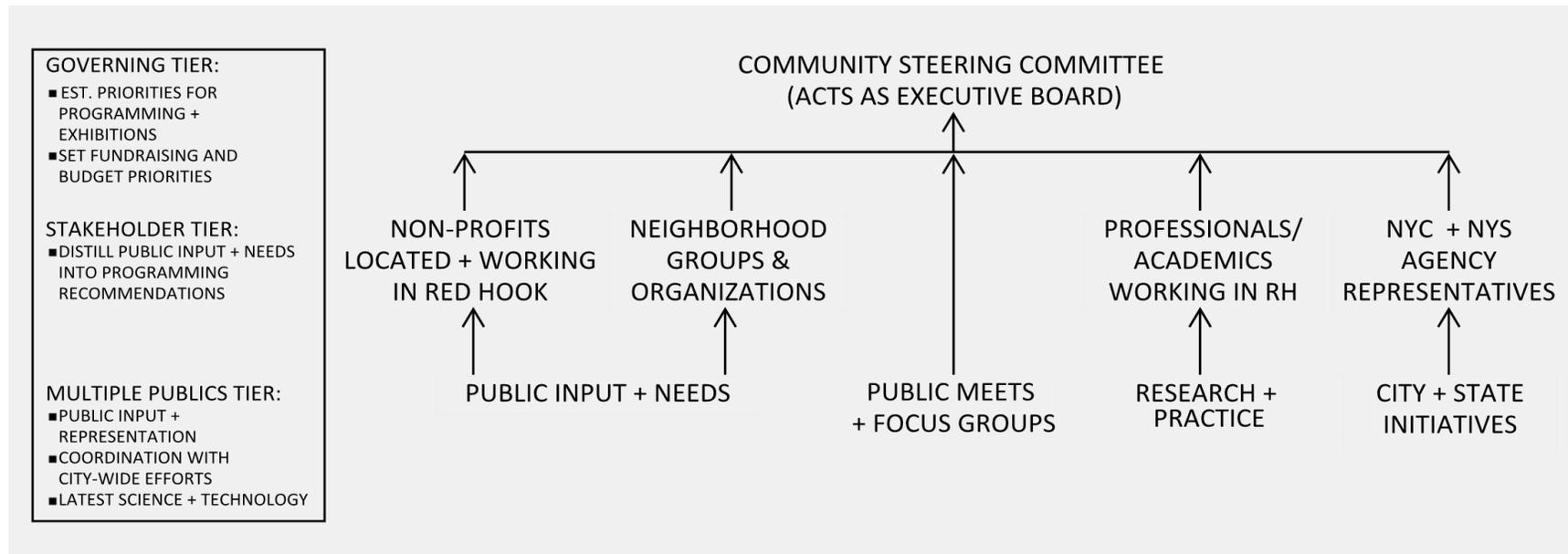


Diagram of CARE's Governance Structure

academic members who work in the neighborhood and can bring the specific scientific and technical lenses required for certain exhibits. A city agency member would be included on the board only as required by the PPP agreement. A potential, non-exhaustive list of organizations from which CSC members may be invited is as follows:

- Red Hook Initiative
- Resilient Red Hook
- Red Hook Art Project
- Fifth Avenue Committee
- PortSide NewYork
- Red Hook Houses West Residents Association
- Red Hook Houses East Tenants Association

Members of the CSC would be determined through consultation with Red Hook community members as part of the initial planning and community buy-in process. These planning and visioning events will ensure that organizations and individuals involved with CARE are seeking, willing, and able to work together to develop collaborative solutions to neighborhood issues. Communication with community members throughout CARE's establishment process will be critical in ensuring that Red Hook residents are able to take charge of and become equitable decision makers in their environmental future.

Since the board members will be part of and represent various publics within Red Hook, they would be responsible for presenting the public's narratives, ideas, and needs. This governance structure would allow CARE to achieve community-led, grassroots programming. Beyond the board, CARE would continue to engage with the community and adjust the governance structure over time as necessary to continue to meet the community's needs.

The CSC would be able to meet in and utilize offices within CARE, allowing for meaningful collaboration among neighborhood nonprofits. As of now, there is no known, permanent, public or semi-public space that can be utilized to facilitate collaboration among the numerous organizations headquartered in and seeking to serve Red Hook. CARE will become this space, and it will serve as a tool for creating equitable opportunities and representation for leadership within Red Hook's community.

## FOUNDATIONAL FUNDING

A center of this caliber will be a large financial undertaking; to that end, we have devised a preliminary plan for funding. This would be expanded on at a later, more finite point in the project's implementation. Public funding should be available for development. For example, the Center for Court Innovation, the founders of the Red Hook Community Justice Center, receives a significant amount of funding from various government agencies. However, many public-private partnerships require additional grant funding. We anticipate CARE would as well (Center for Court Innovation 2018; MacDonald & Cheong 2018). To this end, we have investigated avenues for environmental and resilience-specific grants.

The New York State Office of Environmental Justice offers "competitive grants to support and empower communities as they develop and implement solutions that significantly address environmental issues, harms, and health hazards, build community consensus, set priorities, and improve public outreach and education" (New York State Department, n.d.). CARE's proposal fits within the grant guidelines, making this a possible means of funding.

Similarly, the New York City Environmental Fund is "an environmental grant program created by the New York State Department of Environmental Conservation (DEC) to foster community stewardship of waterways, shorelines, parklands and open spaces in New York City." This grant could be used to rehabilitate the vacant site adjacent to our proposed building (National Fish and Wildlife Foundation 2019). Past projects using this grant have been awarded \$100,000. The Environmental Protection Agency (EPA) offers a large variety of grants for funding environmental groups and nonprofits similar to the proposed CSC. Programs such as the Environmental Justice Collaborative Problem-Solving Cooperative Agreement Program typically give grants of around \$120,000 (EPA 2019). Finally, FEMA offers preparedness grants to governments and nonprofit organizations to support the start-up and maintenance of life-saving capabilities in advance of disasters, whether natural or man-made (FEMA 2020). These are only a few examples of the grants available for CARE, and the intention is for federal, state, and private foundation grants to constitute a component of the foundational funding for CARE's initial start-up, adaptive reuse, and construction costs.

In addition to grant funding, which likely would not cover the multi-million dollar budget required for the building and implementation of CARE, private donation funding would be pursued. Fundraising would include reaching out to developers already working in the neighborhood, as well as private individuals, to seek donations. When CARE is opened, we hope to implement voluntary suggested donations for using the space, as well as renting out the space, which will be discussed within our proposed programming.

## LOCATION

CARE will be based at a historic warehouse at 28 Verona Street with additional on-site programming occurring on the adjacent vacant lot at 35 Delavan Street. Built around the 1930s, this building originally served as the boiler room of Arthur Tickle Engineering Works which was based at 21 Delavan Street (Sanborn Map Company 1939). Arthur Tickle Engineering Works first arrived in Red Hook in the early-1900s and was an important ship repair workshop, rehabilitating boats from Red Hook's shipyards as well as battleships during the Second World War (Sanborn Map Company 1915; Brooklyn Daily Eagle 1946). The vacant lot also served an industrial purpose, although the warehouses on the site were demolished by 1950 to create space for steel plate storage (Sanborn Map Company 1915, 1939, & 1950). Today the lot is a soft site used for parking.

Beyond its historic significance to the industrial waterfront, this site was selected due to its current vacancy, geographic location, and historic character. It is located across from Coffey Park - a resource that stakeholders identified as a bridge between the "front" and the "back" of the neighborhood - and in the vicinity of the Red Hook Community Justice Center and multiple churches. Therefore, CARE's location will make it accessible to numerous stakeholders, allowing new connections to form between formerly divided communities. The building is situated on a relatively high elevation in Red Hook at about 10 feet above sea level, making it a suitable location for a disaster response center and relatively easy to retrofit according to the base flood elevation (BFE). Ultimately, the use of 28 Verona Street and 35 Delavan Street to house CARE will address the key issues of social issues impacting social cohesion, access to public space and urban accessibility, and loss of the built environment.



Red Hook Center for Adaptation, Resilience, and the Environment (CARE)

Location of Red Hook CARE within neighborhood

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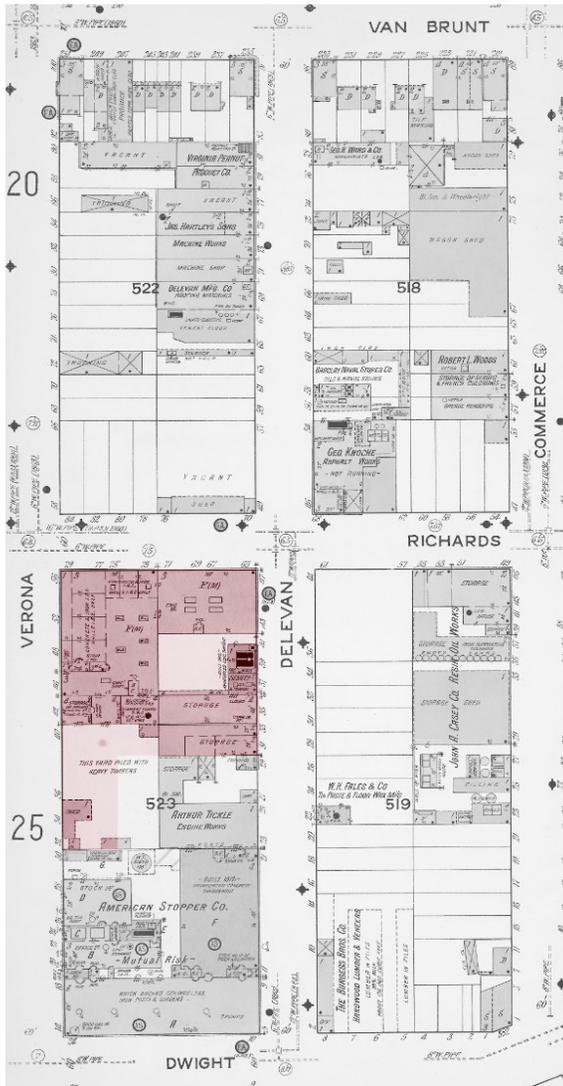
It is important to note that this site has been proposed as the location for the Harbor Middle School (Torrence 2017). However, there has been limited to no coverage of this project since 2017, and it is on record that the organizers have been looking for alternative sites. Additionally, the construction of the middle school would require the historic warehouse to be demolished. In the aftermath of the loss of the Lidgerwood Building, preservation activism has risen in Red Hook and community members have expressed concern over losing another industrial building. CARE could serve as another example of residents advocating for adaptive reuse. Still, given that there are many vacant structures next to soft sites in Red Hook, the design could be modified if CARE were unable to obtain its proposed building.



Vacant lot next to 28 Verona Street

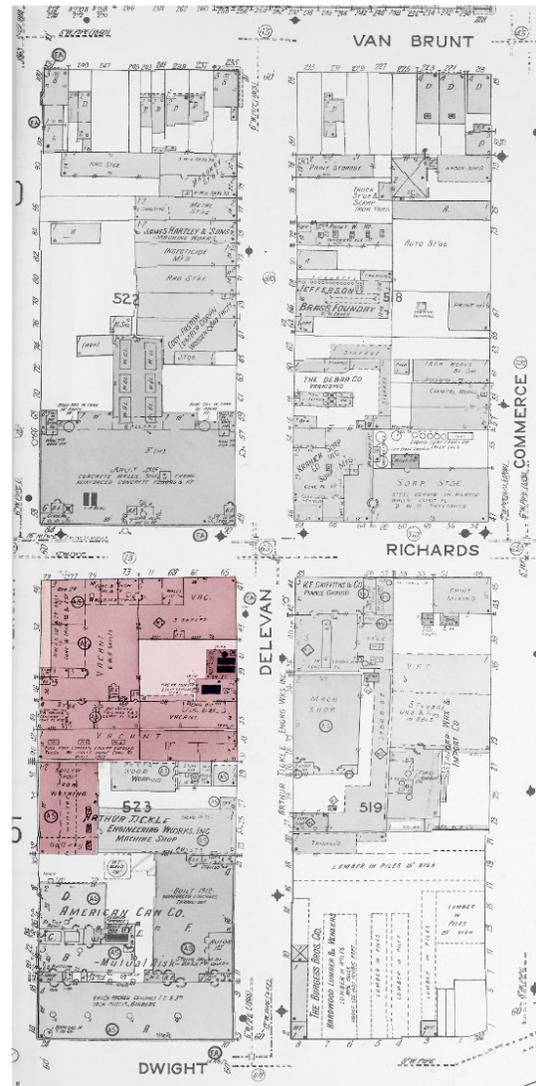


Interior of Arthur Tickle Engineering Works at 21 Delavan Street, c. 1955



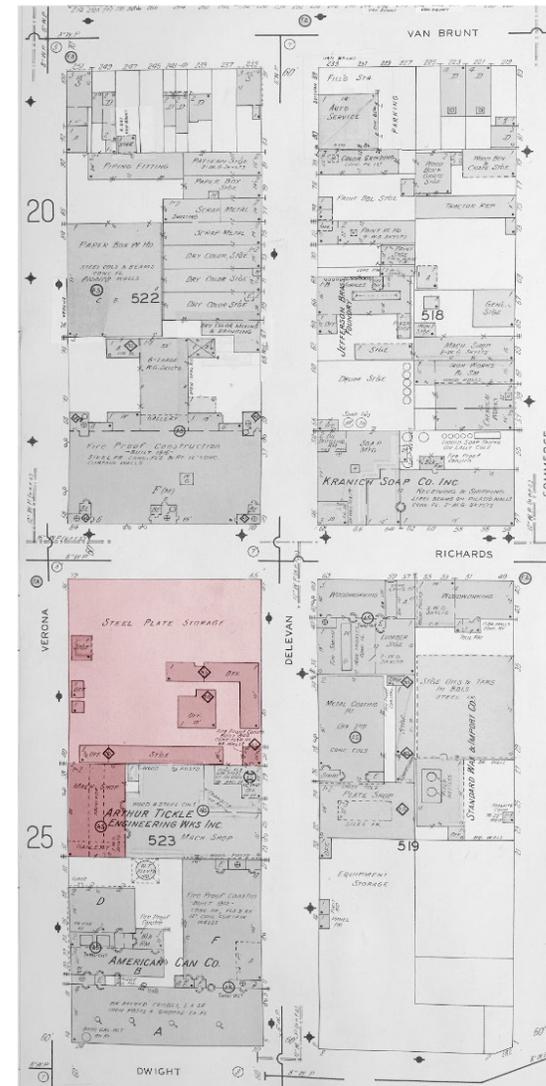
**1915**

Small shed at 28 Verona Street and industrial buildings west of site



**1939**

Arthur Tickle Engineering Works boiler room constructed at 28 Verona Street



**1950**

Industrial buildings demolished west of Arthur Tickle Engineering Works boiler room

Development of the site of CARE over time



1. REBUILD PARAPET W/ REINFORCED MASONRY



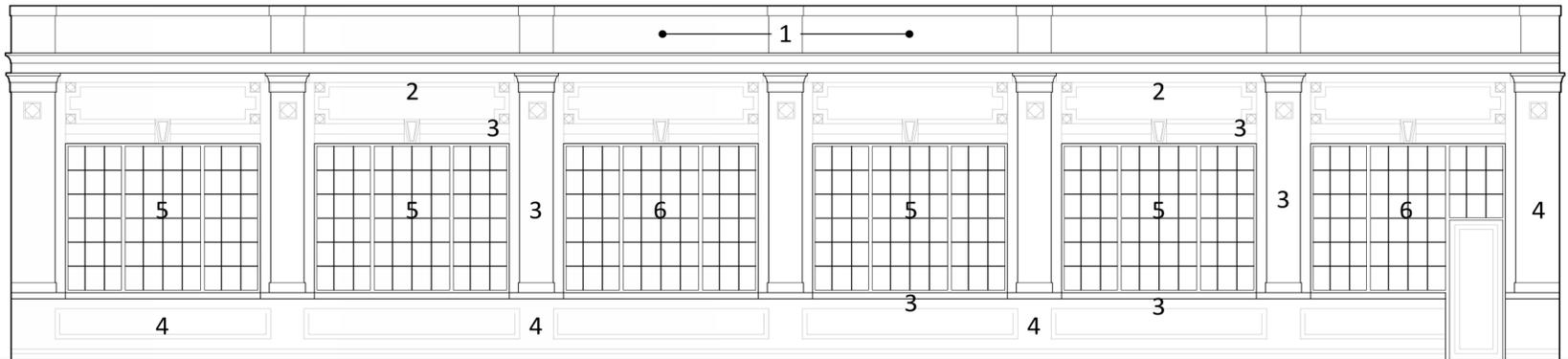
2. INTERNALIZE EXPOSED DRAINAGE W/ BLUE ROOF



3. MASONRY RESTORATION AND SELECT AREA REPOINTING



4. MASONRY CLEANING



5. IN-KIND REPLACEMENT OF STEEL CASEMENT WINDOWS



6. NEW STEEL CASEMENT WINDOW AND DOOR AT MODIFIED BAYS



VERONA STREET FACADE

SCALE: 1/8" = 1'-0"

PROPOSED RESTORATION PLAN

RED HOOK CENTER FOR ADAPTATION, RESILIENCE, AND THE ENVIRONMENT

IMAGE CREDITS - PHOTOS: ZACH RICE, 2020 | STEEL CASEMENT: DIAMOND WINDOWS

## ADAPTIVE REUSE

Historic industrial buildings are a character-defining feature of Red Hook, but the vacancy and loss of these buildings is resulting in the inequitable loss of Red Hook's blue-collar built heritage. The adaptive reuse of the Arthur Tickle Engineering Works boiler room can serve as an example of how to maintain character-defining features while adapting historic industrial buildings for future flood events and for more sustainable operation, addressing the key issue of susceptibility to flooding and physical vulnerability.

Based on our review of this building and of similar industrial buildings in Red Hook, we identified the following character-defining features:

- High single-story facade at the road (Verona Street)
- Venting steel casement windows in triple configuration with 9-over-9 windows framing central 16-over-16 windows.
- Geometric brick patterning using header, row lock, and soldier brick arrangements
- Cast stone details inlaid into brick patterns
- Roof shape - Monitor above the pitched roof

The character-defining features are present on the Verona Street facade, the primary facade to the south. The north and west facades historically abutted neighboring buildings, since demolished except to the north. As such, the exposed west facade was not determined to have character-defining features and the new primary entrance to CARE was inserted into that facade which will also become part of the public art programming.

Several adaptation measures will be taken to floodproof the structure. The most notable would be the elevation of the interior slab by 4'-0". Currently, the floor slab is 2'-0" below the BFE for this area. Without adaptation, flooding in Red Hook could place the interior of the building 2'-0" or more below water, negating its proposed function as a center for disaster response. By raising the slab, the interior of the building will not flood or experience significant damage during a significant weather event. Mechanical systems and energy storage for the solar panel arrays would be located at the gallery level on the interior, and the generator and exterior condensing units would be located on an elevated pad at the exterior to ensure continuity of power and systems during severe weather events.



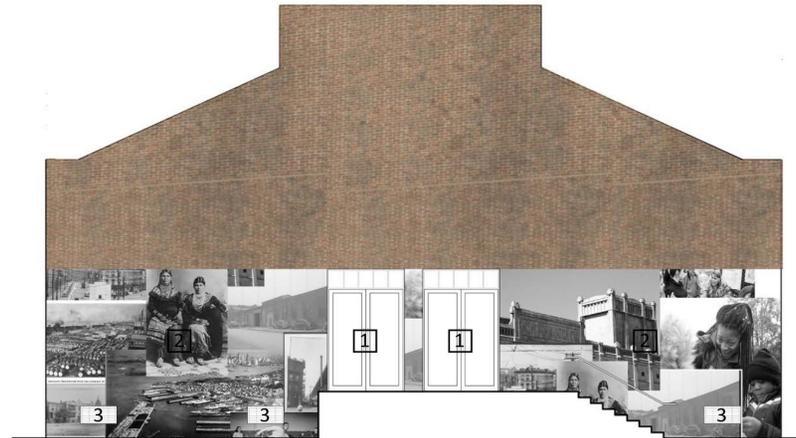
1. FULLY ACCESSIBLE ENTRANCE



2. RED HOOK HISTORY MURAL BY LOCAL ARTIST



3. WET FLOODPROOFING VENTS



Verona Street Facade and Proposed Restoration Plan

An added masonry wall would support the proposed new slab, inset from the original load-bearing masonry and fully waterproofed with a fluid-applied membrane prior to the installation of the slab. Flood vents would be added at the east and west facades, allowing water to move through, around, and under the structure during a flood event; the waterproofing and flashing would prevent this water circulation from negatively impacting the structure of the building during a flood event (Eggleston et al. 2019). This wet floodproofing measure would not impact the new slab structure or the available occupancy of the center due to the raised slab. The elevation of the slab would not harm the character-defining features of the building. The slab would remain below the level of the windows on the facade but is critical to the function and longevity of the restored building.

In parallel, an amphibious foundation system will be employed as an adaptation measure in the garden pavilion, an external component of the landscape programming of CARE. The floating foundation system is composed of three parts: buoyancy blocks underneath the structure to provide flotation, vertical guideposts to prevent any movement other than up and down, and a structural sub-frame that connects the entire system (Buoyant Foundation Project, n.d.).

In the case of the pavilion, the columns will be dual acting, also serving as the guides for the rise and return motion according to the flooding level. This system allows the slab to float on the surface of rising flood water rather than succumbing to inundation and is implemented both as a resilience measure and as a showcase of the technology's viability.

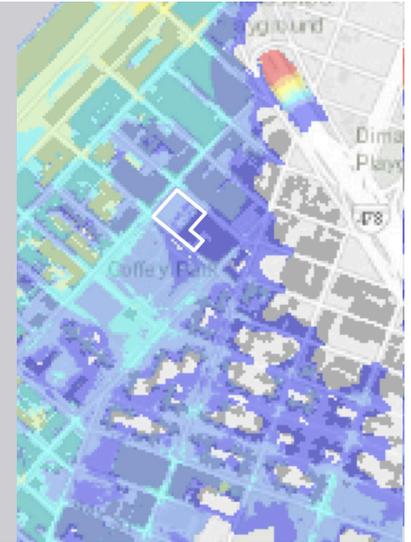
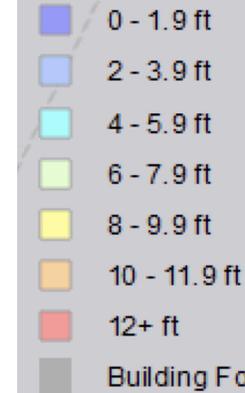
When creating the restoration plan for the structure, the need to restore and retain these character-defining features was coupled with the need to introduce flood adaptation measures and attempts to improve energy performance to make CARE as close to net-zero operational energy as possible. As the sustainable use of energy is a key component of long-term resiliency in the face of climate change, the implementation of green building technology at CARE is important to demonstrate actions that community members can take in their own homes and businesses to regain some control over their environmental future. An example of CARE's methods for obtaining peak energy use is the addition of solar panels on the south-facing sloped roof and the south side of the sloped monitor roof.

These panels will be raised off the roof 6"-12" parallel to the roof slopes. In this position they can mirror the historic form of the building while being clearly and fully separate from it. Their presence will not impact the historic fabric of the building but will provide a significant benefit to the energy-efficient function of the building. With the solar panels installed as a canopy for the proposed pavilion in the lot adjacent to the Arthur Tickle Engineering Works boiler room, the Center could achieve energetic self-sufficiency for its operation in ideal conditions.

The roof of the Center would also be used for other water management measures. These would include sedum extensive green roofs on the north-facing roof surfaces to aid in water retention and blue roof construction at the base of each roof to allow for water retention and slow release to avoid overburdening the already strained sewer-stormwater system in Red Hook. Water from the blue roofs can also be connected to the on-site cistern system to harvest rainwater for use in the planted areas of the site.

The cost-benefit analysis with regard to sustainability in historic buildings will serve as an example for a community with significant historic resources. The process to conduct such an analysis will be part of the adaptation consultations offered by CARE. Additional

## BFE Above Grade & Building Footprints



BFE above grade in Red Hook with location of CARE outlined in white

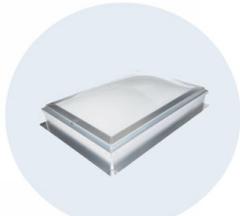
flood adaptations and sustainability measures taken in the adaptive reuse and restoration of the buildings, such as the cisterns and the amphibious foundation for the external pavilion, are highlighted in the accompanying site plan.

At the interior of the building, the open, industrial character will be preserved to the greatest extent possible, including the masonry walls, while allowing for the introduction of Code- and function-required services and spaces for the planned educational and resiliency programming. A gallery at the east facade, indicated in historic maps (Sanborn Map Company, 1939 & 1950) would be restored to allow for offices and conference spaces. The function of these spaces, and their subsequent relationship to Red Hook and CARE's goals, will be explained in the following section.

The adaptive reuse of the Arthur Tickle Engineering Works boiler room will allow CARE to spatially represent its key goal of sustainably adapting heritage for the improvement of community resiliency while ensuring that neighborhood residents are able to gather and voice their opinions on retrofits and adaptations. It is intended to serve as a model for the reuse of industrial heritage spaces, which abound in the Red Hook neighborhood, and as an example of adaptation measures that can be replicated at all scales to serve the residential, commercial, and industrial built environments in Red Hook.



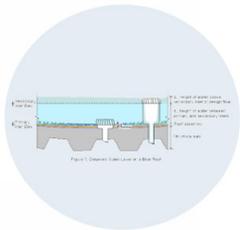
1. SEDUM GREEN ROOF



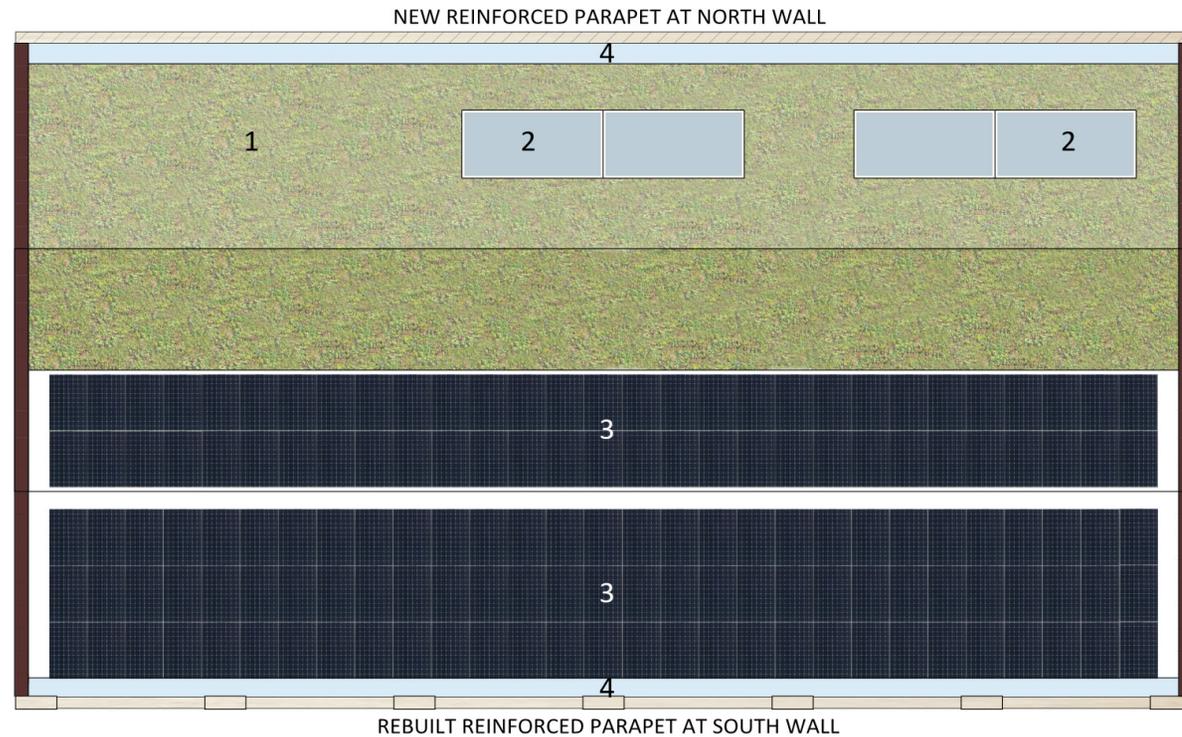
2. SKYLIGHTS



3. SOLAR PANEL ARRAY



4. BLUE ROOF (WATER RETENTION)



## PROPOSED ROOF PLAN

SCALE: 1/8" = 1'-0"

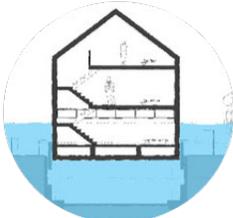
RED HOOK CENTER FOR ADAPTATION, RESILIENCE, AND THE ENVIRONMENT



1. Cisterns



2. Daylit Stream



3. Amphibious Foundation



4. Flood Vents



Rendered Site Plan of New Center Site with Adaptation and Sustainable Technologies Highlighted



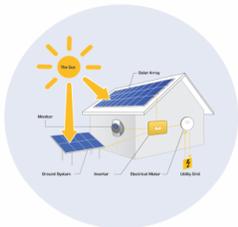
PRESERVATION



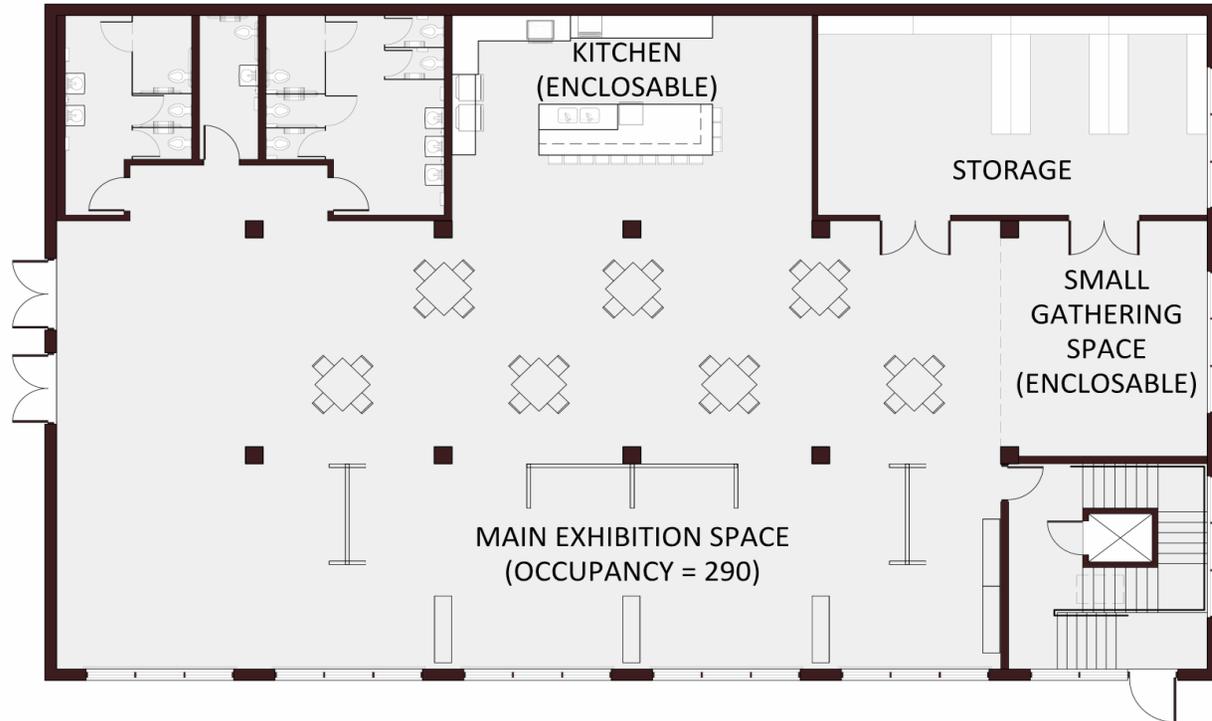
RESILIENCE



EQUITY



SUSTAINABILITY



### PROPOSED FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

RED HOOK CENTER FOR ADAPTATION, RESILIENCE, AND THE ENVIRONMENT

IMAGE CREDITS - FLEXIBILITY: LOGIC EXHIBIT SYSTEM. | STORAGE ABILITY: NPR, 03/14/2020. | NON-PROFIT OFFICES: CRISMATEC. | DISASTER RESPONSE: WSB-TV ATLANTA.



FLEXIBILITY



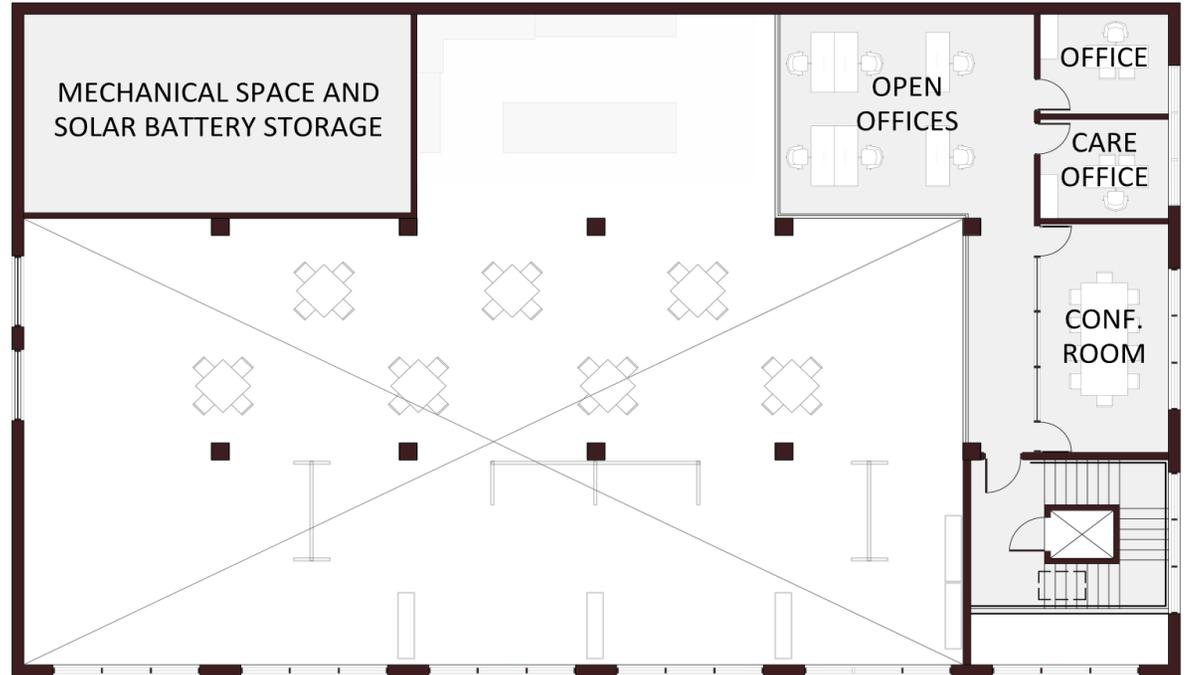
STORAGE ABILITY



NON-PROFIT OFFICES



DISASTER RESPONSE



## PROPOSED GALLERY FLOOR PLAN

SCALE: 1/8" = 1'-0"

RED HOOK CENTER FOR ADAPTATION, RESILIENCE, AND THE ENVIRONMENT

Proposed Gallery Plan



Collage View from Coffey Park of the Restored Building and Proposed Site Work at the New Center for Adaptation, Resilience, and Environment

## INTERIOR USAGE AND PROGRAMMING

CARE intends to address community issues impacting social cohesion, access to public space and urban accessibility, susceptibility to flooding and physical vulnerability, and the neighborhood's history of resilience and activism through its usage and programming. Therefore, there will be flexible space for interpretation, education, public programming, community space, and disaster response within CARE's 6000-square foot interior. This space will be equally accessible to all publics and will provide programming meant to unite Red Hook's divided communities.

### ***Disaster Readiness and Response***

Resilient Red Hook developed the Ready Red Hook community disaster readiness plan that is intended to guide neighborhood residents in preparation during the 72 hours before a disaster and response during the 72 hours after a disaster. Ready Red Hook is a comprehensive plan that encompasses food and shelter, communication, health and medical, utility, community response, and coordination needs; however, three of these six vital services (utilities, coordination, and the community response team) will be

headquartered at the Red Hook IKEA. The other three services (food and shelter, communications, and health and medical services) will be stationed on Hicks, Richards, and W 9th Streets. The location of CARE will serve as an ideal alternative or supplement to IKEA due to its accessible site and proximity to the food and shelter, communications, and health and medical headquarters (Ready Red Hook n.d.).

CARE's flood-adapted, multi-purpose space will provide ample area for community coordination and the provision of vital supplies to those in need. The reception of these supplies will occur through the main entrance. The ramped approach and oversized doors can accommodate the heavy-duty carts and dollies that are used in the delivery of supplies and equipment.

The supplies would be kept in the proposed storage room when not in use. Additionally, the Center's large storage space will allow Resilient Red Hook to store some of their supplies in preparation for an emergency event, allowing supplies such as first aid kits, sandbags, and nonperishable food to be readily deployable. Furthermore, since CARE will only house foldable and modular furniture, any exhibitions could quickly be deconstructed and moved into the storage space during an emergency. This flexibility will



Collage View from Verona Street of the Restored Building and Proposed Site Work at the New Center for Adaptation, Resilience, and Environment

allow for both the rapid conversion of the space into a response headquarters and a rapid return to normalcy within CARE when it is no longer needed for response purposes. Finally, CARE's storage and kitchen will support the Visitation Church (Ready Red Hook's food and shelter headquarters) before and during an emergency by storing vital response supplies (such as cots and sleeping bags) and supplementing the Church's food preparation abilities (Ready Red Hook, n.d.).

### ***Community Meeting Space and Environmental History Exhibition***

The bulk of CARE's indoor space will be dedicated to an open multi-purpose room that will have a capacity of approximately 290 people. This space will feature foldable/stackable chairs and tables, as well as a modular exhibit system, and could be utilized for community programming, disaster response, and any other purposes the CSC deems appropriate. This space will also feature a permanent exhibition of photos, text, and diagrams, shown below, demonstrating the environmental history, physical vulnerability, and social factors contributing to inequitable spatialization of vulnerability within Red Hook. An audio version and large print version of the text will be

available for visually-impaired visitors upon request.

The images and text on the following pages are examples of what may be used for the permanent exhibition, pending copyright issues and fees for usage; if the use of an image is cost-prohibitive or impossible, a comparable photo or rendering may be found or created, preferably drawing from the existing collections of Red Hook nonprofits. Should both CARE and the Red Hook Business Improvement District (BID) be implemented in the neighborhood, the BID's interpretation of shoreline changes could be implemented into CARE's permanent exhibition as well.

## EXHIBIT OPENING: CENTER HISTORY AND MISSION



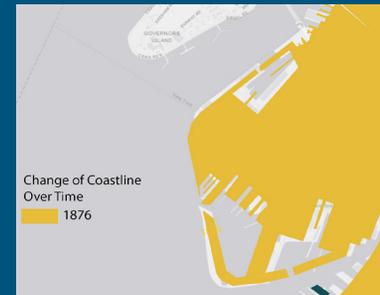
### Example Label Text:

Located in the former boiler room of Arthur Tickle Engineering Works, a prominent ship repair business, the Red Hook Center for Adaptation, Resilience, and the Environment (CARE) is a community partnership that aims to educate stakeholders, increase disaster preparedness, contribute to community cohesion, and model preservation. CARE is the result of stakeholder interviews, community data analysis, and an evaluation of the vulnerable physical resources and neighborhood character of Red Hook. We CARE about our environment and CARE about our community.

## EXHIBIT EXAMPLE SECTION: BUILDING RED HOOK'S "NATURAL" ENVIRONMENT

### Example Label Text:

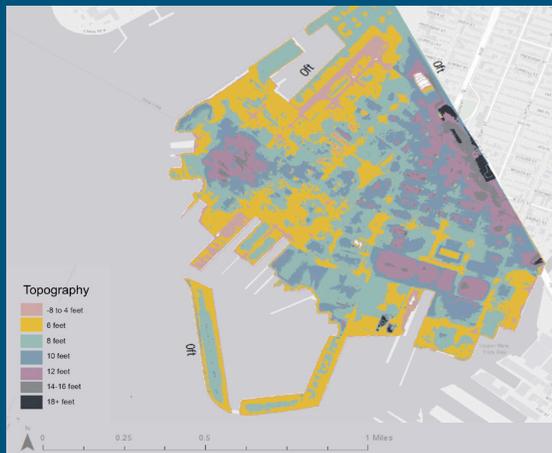
Red Hook was much smaller in the eighteenth century than it is today. At the time, the peninsula, connected to the mainland through low-lying wetlands, marshes, and tidal estuaries, was the neighborhood's most prominent feature. By the mid-nineteenth century, settlers had filled in many of the marshlands in the northwest part of the neighborhood. The Atlantic Basin was constructed in 1849, and the Erie basin was completed in 1876, completing the transformation of Red Hook's natural coastline into the artificial shoreline seen today.



## EXHIBIT EXAMPLE SECTION: VULNERABILITY TO FLOODING



Example Label Text: The hardening of Red Hook's shoreline and the infill of its marshes produced porous land on a high water table, leaving this land inherently vulnerable. As seen in this map showing flooding from Hurricane Sandy in 2012, this superstorm flooded the majority of the neighborhood and revealed the need for a resiliency center (like the one you are visiting today!).



Example Label Text: Red Hook's current topography, which is a combination of its natural topography and infilled land, makes it vulnerable to flooding. The majority of the neighborhood is located less than ten feet above sea level, and many building entrances are situated below historic and projected flood levels.



Example Label Text: Flooding during Hurricane Sandy surpassed ten feet in some areas of Red Hook! You can find a few markers of the water's height throughout the neighborhood. See if you can spot them the next time you are walking around, and join CARE's efforts to create new high water marks!

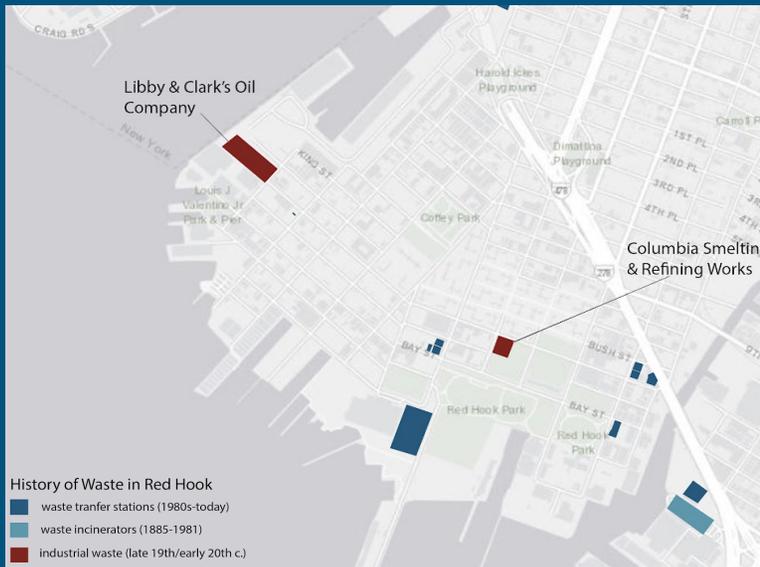


Example Label Text: One year after Hurricane Sandy, federal and municipal agencies worked together to identify plans for future flood mitigation; however, [today] the only flood protection measures in place in Red Hook are sandbags that can support deployable barriers in the event of a flood. [Bracketed information should be updated as more flood protection measures are implemented in the neighborhood. An additional sentence describing those measures should be placed here.]

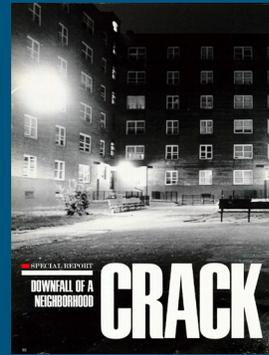
## EXHIBIT EXAMPLE SECTION: POLLUTION ENGULFS THE NEIGHBORHOOD

### Example Label Text:

Throughout its history, polluters have been a problem in Red Hook. In the nineteenth century, Libby & Clark's Oil Company dumped oil and acid into an adjacent lot. Then, in the early-twentieth century, Columbia Smelting & Refining Works started releasing lead dust and smoke which settled into the ground of what is now the Red Hook Recreation Area ballfields. The ballfields are currently undergoing remediation to remove the lead. Pollutant-emitting garbage incinerators operated in Red Hook from the early-twentieth century until the 1980s. They were replaced with garbage transfer stations which local organizations ultimately pushed out.



## EXHIBIT EXAMPLE SECTION: SOCIAL RESILIENCE IN RED HOOK



LABEL: The large-scale sale and usage of crack cocaine hit Red Hook in the 1970s. Drug-related shoot-outs occurred almost daily. However, local grassroots organizations resisted the crack industry. Neighborhood residents' outrage reached a climax in 1992 following the murder of longtime P.S. 15 principal Patrick Daly, who was caught in the crossfire of rival drug gangs. In the decade after his death, crime declined sharply in the neighborhood, largely due to the opening of the Red Hook Community Justice Center.



LABEL: Organized crime took root in Red Hook in the 1920s when the mafia infiltrated the waterfront. Workers could not get waterfront jobs unless they were willing to pay a portion of their earnings to mafia-involved senior dockworkers. Yet community members led anti-racketeering efforts. Businessmen signed a petition urging Port of New York businesses to stop alleged rackets and individuals hosted meetings for "insurgent longshoremen." Community-led resistance continued until the waterfront mafia declined by the 1970s, likely due to the opening of the Port Newark-Elizabeth Marine Terminal and enactment of the Racketeer Influenced and Corrupt Organizations Act.

## ***Temporary Exhibits***

Periodically, portions of the multi-purpose room will be used to host temporary exhibits. The exhibits may span any length of time but will likely be a maximum of a few months. Spare exhibit cases and portable exhibit walls could be placed in the storage space when not in use (Logic Exhibit System, 2017). If this system proves too bulky for storage or permanent use, temporary exhibit systems will be constructed for each exhibit, reusing materials whenever possible. Individuals or groups could apply to stage a temporary exhibit through the CSC. Temporary exhibit space will provide the opportunity for stakeholders to interpret and present their visions on climate resiliency and other important issues in Red Hook to the public. Nonprofits such as Resilient Red Hook, Red Hook Initiative, PortSide New York, and others could create individual or collaborative exhibits to illuminate their current work in the neighborhood. Students from local schools and nonprofit groups, such as the Red Hook Art Project, could also exhibit art about the environment. Providing a temporary exhibit space will allow CARE to present multivocal narratives and meet the changing needs of the community.

## ***Flood Adaptation and Neighborhood Style Guide***

CARE will provide stakeholders with a flood adaptation and neighborhood style guide. This guide will be available online as well as in print. Currently, there is not an ongoing flood adaptation assistance program in the neighborhood; therefore, visitors will be invited to schedule meetings with CARE employees or members of the CSC to discuss appropriate flood adaptations for their property. This service will be developed in conjunction with CARE's public partners. The guide will explain FEMA and NYC Building Code standards for constructing new buildings or making substantial improvements to existing buildings, explaining to community members how flood adaptations can reduce their flood insurance costs if their building sustains substantial flood damage (Homeowner's Guide to Retrofitting, 2014).

CARE will also encourage planned flood retrofits. By emphasizing adaptation as a crucial component of any renovation or new development, CARE can help reduce costs while protecting Red Hook's architectural character. Community input and the diverse built environment of Red Hook will help determine appropriate retrofits

(Veelen, 2017). Finally, CARE will organize an annual walking tour of model retrofits within the neighborhood and highlight buildings and streetscapes that may need to be retrofitted in the future.

To assist with the neighborhood's adaptation to a changing environment, we have examined the character of four sub-areas of Red Hook. The selections were driven by the unique urban form of the areas and their presence throughout the neighborhood. For each sub-area appropriate flood retrofits were selected that seek to go beyond preserving the urban forms and aspire to preserve the distinct community fabric that defines the character of the neighborhood.

This focus allowed for an equitable analysis seeking to assist as many communities in Red Hook as possible - from business owners on Lorraine Street to row house homeowners living on Coffey Street. No one area was prioritized over another because all communities contribute to the creation of the environment that makes Red Hook unique. The four sub-areas identified were Red Hook Houses and Lorraine Street; South Waterfront: Industrial, North Waterfront: Warehouses; and Residential Adjacent to Van Brunt Street. For a summarized description of each subarea, refer back to "Red Hook Built Environment."

The following pages are an excerpt of the proposed Neighborhood Style Guide:



## I. DESCRIPTION OF NEIGHBORHOOD

### A. RED HOOK HOUSES AND LORRAINE STREET



A majority of Red Hook residents live in the Red Hook Houses and frequent the Lorraine Street commercial corridor. The Red Hook Houses and Lorraine Street commercial corridor sub-area has mixed architectural characteristics. Public facilities such as the Red Hook Recreation Center and the ballfields also define this section of the neighborhood.

Map of the Red Hook Houses and Lorraine Street subarea



(Left) Red Hook Houses from Lorraine Street  
(Right) Red Hook Houses playground and trees at the intersection of Lorraine and Hicks Street

The commercial corridor along Lorraine Street, bound by Columbia Street and Hitch Street, features one story commercial buildings. Other structures along Lorraine Street include a five story storage warehouse. One to two story masonry warehouses are coated with graffiti. As well as a set of three story concrete townhouses.



(Left) Businesses along Lorraine Street Commercial corridor  
(Right) Storage Warehouse at the start of Lorraine Street near the Brooklyn-Queens Expressway



(Left) Warehouses with graffiti along Lorraine Street  
(Right) Concrete townhouses on Lorraine Street

## B. SOUTH WATERFRONT: INDUSTRIAL

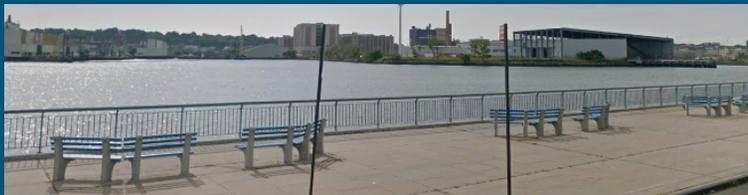
The community along Red Hook's southern waterfront experiences views of the NY-NJ harbor through the lens of heavy industry and modern commercial industry. The architectural characteristics of this section of the waterfront are more industrial - in the historic sense as well as in terms of its current use. This distinguishes it from waterfront sections to the north that feature a different building profile in terms of materiality. Here, metal benches face the water encouraging community interaction amongst the cloistered businesses lining the waterfront.



(Left) Map of the South Industrial Waterfront (Highlighted in blue)



(Right) Red Hook Grain Terminal



(Top) Benches along Columbia Street  
(Bottom) Low warehouses along the waterfront



Wide parking lots provide space for buses, cars, and the NYPD auto pound. Moving north along the coast, IKEA looms into view with its characteristic blue exterior and duplicative modern Swedish design. The adjacent Erie Basin Park continues with inclusive metal benches and incorporates Belgian-block paving stones into the asphalt that lines the walkway.



From top:  
(1) Parking along Columbia street (2) NYPD Auto Impound Lot (3) Erie Basin Park adjacent to IKEA. (4) IKEA along the waterfront

## C. NORTH WATERFRONT: WAREHOUSES



Businesses cater more to the leisure visitor and many non-residents frequent this area of the waterfront for its parks, dining and entertainment. Orienting yourself north along the waterfront just past IKEA along Beard Street the asphalt gives way to Belgian-block pavers and flood barriers featuring the artwork of children. Turning west at the intersection of Beard street and Van Brunt street, Van Brunt leads further down the waterfront and to the 19th century warehouses that typify this area of the community.

The warehouses are one to four stories in height and feature common-bond red brick facades. Windows can be rectangular in shape and simply framed by black lintels and black rectangular shutters - sometimes split into two parts perhaps hinting at an original one-over-one window. Other windows feature brick arched lintels framed by arched black shutters. The end of Van Brunt Street opens to a waterfront walkway with concrete pavements and a shrub and brick border on the east side of the walkway and wave-breaking rocks and the sea along the west side.



19th century warehouse at the waterfront



NYC Dock Company building

Conover Street intersects this walkway and features Belgian-block pavers mingled with asphalt. An empty concrete paved lot is the backdrop for the Waterfront Museum. Jumping across it lands you at the Pier 44 Waterfront Garden where a concrete boardwalk leads away from uncouth grass and wooden benches. This park is cut by Pier 44 itself where the red brick of the 19th century warehouse extends to the pier's flooring as the pier stretches out towards the sea. Another park, Valentino Park and Pier, features similar grass, trees, benches (and Statue of Liberty views) with a blend of concrete and organic crescent moon shaped asphalt embellishments. Lower lying warehouses continue up to Pier 12 and the Atlantic Basin where a more modern industrial tone is established by the wide expanses of concrete and black tar riding up to the waterfront. Finally, there is a shift of scale with larger (six story) warehouses situated near the NY Dock Company Building.



Path along waterfront near Conover street with Pier 44 warehouses in the back



Detail of 19th century brick warehouses

## D. RESIDENTIAL ADJACENT TO VAN BRUNT STREET



Map of Residential Areas (in red)  
Adjacent to Van Brunt Street

The Van Brunt Street commercial corridor is lower in height, less structurally dense, and generally consistent in typology. Vacant, overgrown lots are interspersed amongst connected masonry or wood row houses. Freestanding structures become more common as Van Brunt Street approaches the waterfront. These structures are one story commercial buildings in brick or concrete as well as freestanding three to four story mixed use buildings with concrete or brick facades.

The community north of Coffey Park is defined by residential pockets. Pioneer Street bound by Richards Street and Van Brunt Street predominantly features two to three story masonry row houses with a dominant common-bond pattern in reds and browns. Some row houses are painted, others appear to have a brownstone like finish, with wood or sheet metal cornices.

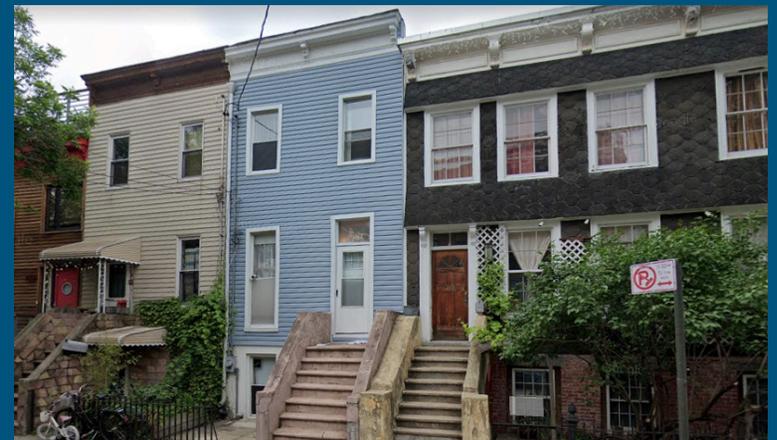


(Left) Freestanding multi-story brick mixed-use building  
(Right) Row houses at 95 Pioneer Street



Two to three steps are traversed to meet the door. Trees of varying ages line the streets allowing for a shaded effect in some sections. Additional residential pockets following this formula can be found along Dikeman street bound by Dwight Street and Van Brunt Street. Here, wood or aluminum siding can also be found amongst facade materials. Sullivan Street bound by Richards Street and Van Brunt Street is another residential pocket which affronts P.S. 15 Patrick F. Daly School.

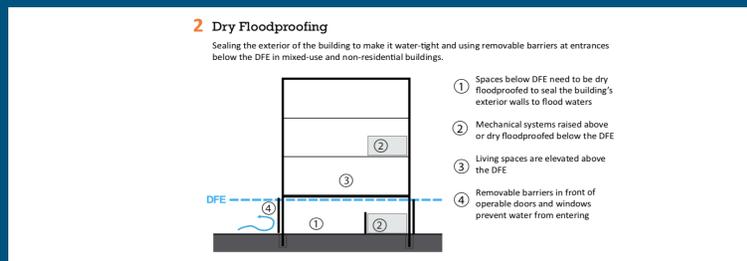
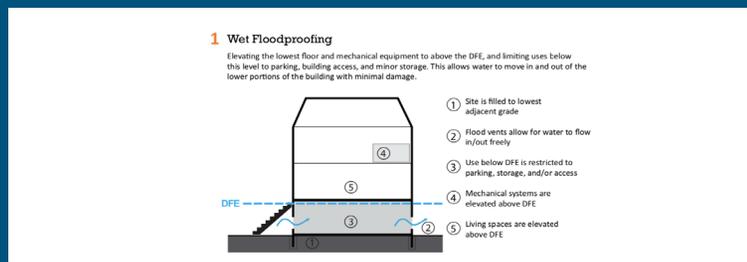
Coffey Street bound by Richards Street and Van Brunt Street offers three to four story row houses interspersed with vacant lots and independent one-story structures with masonry or wood or aluminum facades. Cornices in sheet metal or wood are prevalent on the connected row house style residences, Multiple steps - up to ten - lead to door fronts.



(Top) Row Houses at 18 Dikeman Street  
(Bottom) 127 Coffey Street

## II. SUGGESTED FLOODING RETROFITS

Flooding retrofits used to prepare a new or existing building for the effects of flooding can include wet floodproofing and dry floodproofing. According to FEMA, dry floodproofing cannot be used to bring a substantially damaged or substantially improved residential building into compliance with a community's floodplain management ordinance or law, so it will not be encouraged by CARE as a method of floodproofing for residential houses (Homeowner's Guide to Retrofitting 2014). The goal of these suggestions is to find a methodology that best preserves the neighborhood's architectural characteristics while taking into account the community needs and the diverse array of socio-economic conditions presented in the neighborhood. Understanding that a majority of those in the "front" are renters and do not have autonomy in making decisions to floodproof their building will also be considered. Further, the cost of retrofitting buildings is significant and many buildings present technical as well as urbanistic challenges (NYC Department of Planning 2013).



## 1. RED HOOK HOUSES AND LORRAINE STREET

Flood retrofits in this area will vary. Given the density of the Red Hook Houses, there is a constant need to provide access to recreational and commercial facilities, and this will be a key consideration for flooding retrofits. The Red Hook Houses are currently undergoing renovation via NYCHA and Kohn Pedersen Fox Associates (KPF). At the Red Hook Houses, the focus is on creating low floodwalls that double as benches and the implementation of a "lily pad" concept where raised earth at the center of internal courtyards allows for a porous complex deterring flooding (Kohn Pedersen Fox Associates 2018). As the demographics of the Red Hook Houses consist of renters who do not have individual autonomy to invoke flooding retrofits, encouraging participation in planning events hosted by NYCHA and maintaining an awareness of flood retrofitting progresses and setbacks will be encouraged by connecting residents to community groups within the Red Hook Houses who make resiliency their priority.

Maintaining the spatial relationship between Red Hook Houses and the Lorraine Street corridor will ensure access and encourage economic vitality of the corridor. The Red Hook Houses are dense, both in terms of population as well as structural density. The shift in density presented by the one-story Lorraine Street Corridor and the expanse of public space offered by the ballfields and recreation center across from the Red Hook Houses are key elements of the urban form of this sub-area of Red Hook and should be maintained to adequately preserve the social fabric of the community.

During a flooding event water will rise on the Lorraine Street Commercial Corridor such that the water will block access to the commercial corridor that many in the Red Hook Houses depend on for food and other fundamental goods.

A planned decision regarding flooding retrofits would allow for the single-story structures to be raised together, above the freeboard, encouraging the same degree of access from the street, as well as maintaining the urban form and spatial relationship that currently exists between Red Hook Houses and the Lorraine Street Commercial Corridor (high density

structures balanced with low). For each individual structure wet floodproofing will be an ideal retrofit where raising the ground floor within the building envelope will help to preserve the exterior facade while meeting the BFE. The portions of the building below the BFE must be made of flood resistant materials and allow for automatic exit and entry of floodwaters through the integration of flood vents. Raising the structures will require some adjustments in terms of storage, entrances and accessibility, and mechanical systems. However, as the BFE will only continue to rise over time, making the leap to elevation is unavoidable. Confronting it in a planned and coordinated manner with the other buildings along the street will only help to preserve urban form in the long term.

Dry floodproofing is also an option to seal the buildings from the freeboard down. This does make it fully accessible as well as maintains the ease of access from Red Hook Houses to the street. However, it is important to note that in the event of a flood, dry floodproofing is not foolproof and should water enter the building any commercial items stored at this level will be destroyed. Regardless of which method is pursued, a planned effort will work to maintain the corridor's commercial vibrancy and support the needs of the community in this sub-area.

## **2. SOUTH WATERFRONT: INDUSTRIAL**

Flood retrofitting the industrial waterfront in Red Hook poses a challenge. Industrial buildings here have large, single-story footprints with their operations located on the ground floor - even more troubling as these buildings are located directly along the waterfront and are thus very susceptible to flooding.

Managing retrofits along the South Waterfront poses the challenge of maintaining the present urban form, here the delicate balance of an economically productive site with the recreation needs of the community. The Columbia Street Esplanade gives space to the community for walks, fishing and sitting on a bench while also providing access to the industrial buildings along the waterfront for employees. To best preserve this spatial relationship will again require a planned retrofitting strategy. Managing the esplanade itself is a key priority because if the esplanade is elevated but the buildings

alongside it are not then this will disrupt the flow and therefore the spatial relationship that currently exists.

The commercial buildings themselves have the opportunity to be flood retrofitted via both dry and wet floodproofing. In the case of wet floodproofing, a coordinated plan for elevation paired with flood vents below the BFE could work to preserve the integrity of the structures while also offering flood protection. Elevating a large industrial building can pose a physical challenge given their size (Coastal Climate Resilience Urban 2013). However, elevating within the building envelope would allow for the integrity of the structure to be maintained while leaving the lower floor available for flood venting and not requiring the foundation to be lifted with the rest of the structure. Here, the lots are large with plentiful parking, which will make it easier for buildings retrofitting to allow for the adaptation of accessible entrances.

Dry floodproofing is also an option for industrial buildings. This involves erecting physical barriers such as shields or gates as well as sealing the building itself. However, dry floodproofing is not necessarily recommended given the extent of the unknowns regarding the next flooding event. If there is another extreme weather event like Hurricane Sandy, the force of wave action and the extent of time areas below the BFE remain underwater all will affect the level of damage. Dry flood proofing measures may not have anticipated the extent to which these two variables will affect the building at issue resulting in leaks or structural failures - not to mention the loss of goods or equipment stored on the lower level. Dry floodproofing also requires constant maintenance, and shields and gates may require deployment before a flood arrives, potentially causing those doing so to risk their lives.

Therefore, wet floodproofing is recommended and the creation of a plan to raise the Columbia Street Esplanade to maintain the spatial relationship in this sub-area between walkway and commercial structure is highly recommended.

### 3. NORTH WATERFRONT: WAREHOUSES

Along the waterfront, flood adaptation measures are crucial to the preservation of these structures as is ensuring equitable access to waterfront parks, walks and views. Many of the same problems posed in retrofitting South Waterfront: Industrial are also applicable here. The industrial buildings are along the waterfront, they have large footprints, and likely would benefit more from wet floodproofing as opposed to dry. Dry Floodproofing would alter the exterior facades of the historic warehouses thus changing their form and is therefore not recommended. Elevating the buildings with their base is also not recommended as the heavy masonry and heavy timber warehouses (some four stories in height) would need to be lifted as a whole. Therefore, elevating within the building envelope would allow for the exteriors to retain their historic forms while also allowing for space on the lower floor to install flood vents for water to flow through. As with the other sub-areas, a planned retrofitting policy for the whole sub-area would allow for the preservation of the current socio-spatial relationship for those who work and play at the waterfront. Attention should especially be paid to the paths along the shoreline. Elevation of the shoreline in sporadic sections would disrupt the current urban form and lose the welcoming and accessible nature of the paths. Therefore, establishing a plan that supports elevating the shoreline paths together is suggested and as is wet floodproofing within the envelope of the building.

### 4. RESIDENTIAL ADJACENT TO VAN BRUNT STREET

Flooding retrofits in the residential corridor adjacent to Van Brunt Street should consider the effect of alterations on the human scale of the corridor - the relationship between the street and frequently-accessed buildings.

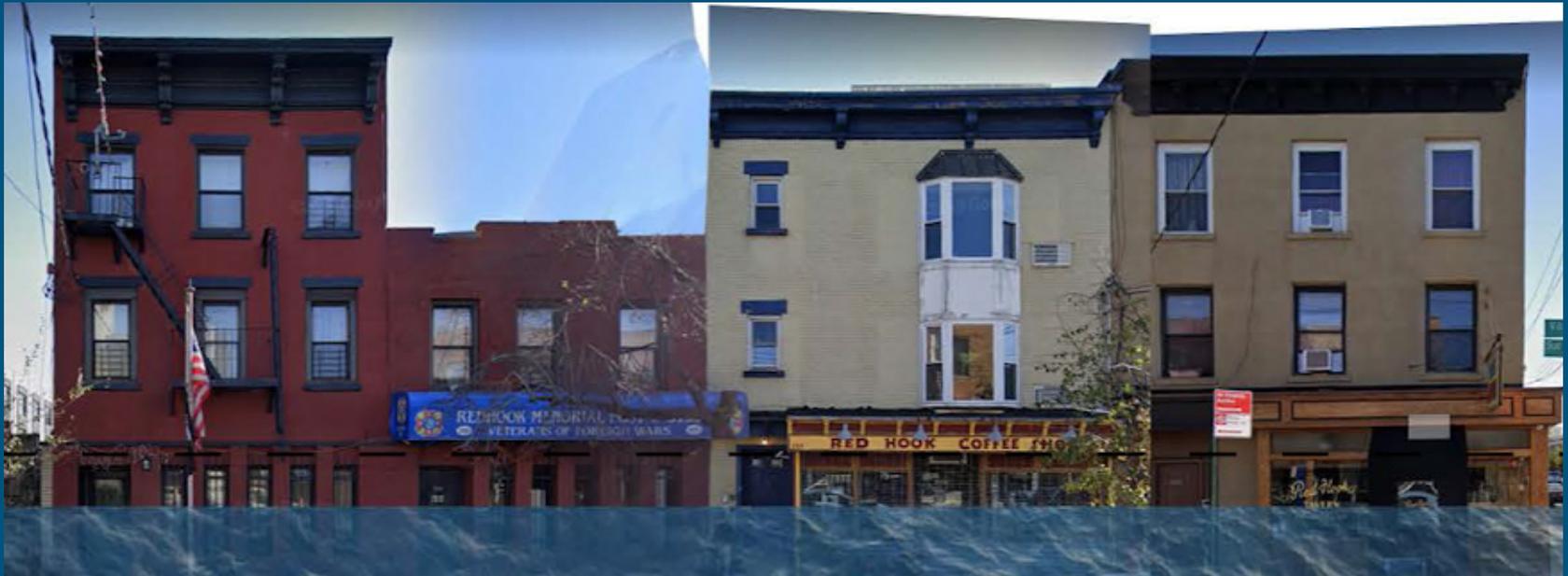
Here, it is unlikely that flooding retrofits will take place at the same time. However, if there is an aspirational design for the whole corridor that takes into account how the community utilizes the space, it is more likely that the relationship between the street and the buildings will be preserved. For example, if elevating a pair of row houses located at 329 Van Brunt street

(currently the site of Red Hook Tavern and Red Hook Coffee Shop) occurs but the row houses at 346 Van Brunt Street utilize dry floodproofing, the ability for the community to access each in its current streamlined manner will be disrupted. Larger ramps will lead up from the street to the Red Hook Tavern and the flow from space to space will be lost. Therefore, identifying retrofits that could be applicable to the whole corridor is key. The community of businesses and residents who inhabit this street as well as the community who patronizes the businesses must be able to give input on what would work best. Further, this would allow for a uniformed response to topics like the preservation of trees along the street as well as any decisions regarding the elevation of the street itself - allowing for not just the buildings to be preserved but the overall relationship between buildings and sidewalks along the corridor. For example, if elevation outside of the building envelope is suggested, what landscaping or artwork would best serve to enhance the streetscape and enliven the commercial corridor?

As with the Lorraine Street Commercial Corridor, both wet and dry floodproofing are possible for Van Brunt Street. However, dry floodproofing is not recommended for residential structures because it cannot bring residential structures in compliance with FEMA standards (Coastal Climate Resilience Urban, 2013). As such, wet floodproofing, especially wet floodproofing that takes place within the building envelope will be encouraged to preserve the integrity of the exterior facade as well as the relationship between the street and the home.



Simulation of water rising to the Base Flood Elevation along Lorraine Street with the dashed line representing freeboard



Van Brunt Street commercial corridor with BFE and Freeboard designations

## ***Workshops, Lectures, and Forms***

CARE will invite community members, environmental advocates, and experts in sustainability, resiliency, preservation, or related fields to lead public workshops and lectures. The CSC will facilitate community requests regarding who to invite and handle the logistics of planning these events. Some of these events will occur once while others will be recurring. For example, based on the flood adaptation and neighborhood style guide, we envision a bi-yearly discussion on how to retrofit buildings in Red Hook while respecting the character of the neighborhood. During these workshops, Red Hook residents will be able to ask questions about obtaining funds, planning, and designing retrofits or other questions. They will also be guided on how to use CanVis to visualize adaptations for their property. Additional workshops and lectures could accompany temporary exhibits or cover crucial topics such as installing solar panels into homes, preparing for another Sandy-level storm, or how to become an environmental advocate. Depending on the subject, workshops and lectures could cater to adults as well as children visiting CARE for school field trips or extracurricular activities.

Open forums could also take place at CARE. These forums could allow residents and stakeholders to share their thoughts and concerns on large-scale environmental measures being proposed in Red Hook, such as the FEMA-approved designs that currently are being developed as a part of the Red Hook Coastal Resiliency Project, and to develop comprehensive solutions to the issues that they identify with these proposals (NYC Dept. of Design and Construction 2019). These forums could also be used as platforms for community members to self-identify issues in the neighborhood that are not being addressed by municipal or state initiatives. Members of the CSC will moderate these forums as well as record minutes, unless the forum was organized by a specific group.

Most of these events will be held on the ground floor of CARE in the multi-purpose space. Depending on the size and topic of the event, some could also occur in the break-out space below the gallery, in the conference room or offices upstairs, or in the garden on the raised gathering space or within the green spaces.

## ***Other Events and Rental Space***

Based on community interests, the CSC will determine the specific types of events that are held in CARE. However, movie screenings of films and documentaries related to climate or activism could occur. Additionally, as a revenue-generating measure, individuals or organizations could rent out CARE and its garden for private events. Given that there will be a bar attached to the kitchen, these events could include conferences, galas, awards ceremonies, performances, etc.

## ***Meeting and Office Spaces***

The upper floor of CARE will contain two private offices, six open workspaces, and a conference room. One office will be reserved for CARE's employees, administrative affairs, and CARE-related meetings. The CSC will hold their meetings in the conference room. In addition to booking the conference rooms for meetings, local nonprofits can rent work spaces in CARE. The length of the lease and the cost of rent will be up to the discretion of the CSC. Renting office space will provide CARE with a consistent revenue stream and create a space for collaboration among local stakeholders that currently does not exist in the neighborhood.

## **EXTERIOR USAGE AND PROGRAMMING**

The vacant lot to the west of 28 Verona Street will be activated as a garden space that can be used for programming, educational events, leisure, and ecological improvements. The space will be free and open to the public from dawn until dusk, with the exception of occasional planned private events. The park will be enclosed by walls and a gate that will be locked in the evening, due to the high-tech and expensive photovoltaic equipment at the pavilion, the potential liability of the daylighted river, and the possibility of vandalism. This garden space will address access to public space and urban accessibility, susceptibility to flooding and physical vulnerability, and the neighborhood's history of resilience and activism.

photovoltaic equipment at the pavilion, the potential liability of the daylighted river, and the possibility of vandalism. This garden space will address access to public space and urban accessibility, susceptibility to flooding and physical vulnerability, and the neighborhood's history of resilience and activism.

### ***Garden Purpose and Usage***

The garden will also serve numerous ecological benefits. Plants can reduce the concentrations or toxic effects of environmental contaminants through phytoremediation. In order to ensure the possibility of success for phytoremediation on this property, the soil will need to be tested, as too-high levels of contaminants can negatively impact plant growth. Different contaminants also require different phytoremediation approaches. For example, metal likely will be a significant contaminant at this site, since the vacant lot historically served as steel plate storage. Inorganic contaminants, such as the metals left in Red Hook's soil by historic industry, can be remediated through phytostabilization (the stabilization of metals and other contaminants in plants' root systems) or phytovolatilization (the uptake of metals and other contaminants by the plants' root systems and then released into the air following conversion to a gaseous state). Metals can also be removed from the land via phytoextraction (the uptake of metals by the plants' root systems and accumulation in biomass that will be harvested). Organic contaminants can be remediated via phytostabilization, phytovolatilization, and photodegradation which is the degradation of organic contaminants through enzymes released by plants' roots or plants' metabolic activities (Greipsson 2011).

The garden will also feature paths to allow visitors to wander through the garden without disrupting the plantings. Solar-powered lamp posts will line these paths as both a safety provision and as an educational tool regarding renewable energy use. A solar panel array covering the outdoor event pavilion will be accompanied by a plaque that reads:

Solar panels work by transforming light particles into electricity using small units called "photovoltaic cells." Because they only use the sun's light to produce electricity, solar panels produce renewable energy, or energy that is naturally replenished during a human's lifetime. Solar panels can be used to power things on many different scales, including homes and large commercial and industrial buildings like the ones on Red Hook's waterfront! To see solar panels being used on a small scale, look for solar-powered lamp posts located throughout the garden.

(Sources for the informational plaque include: Dhar, 2017 & Frewin n.d.)

This plaque, and others in the garden, are designed to be understood by a multitude of ages.

Similarly, other adaptations including the generator and cisterns will be turned into an educational resource through the use of plaques. The generator will be accompanied by the following plaque:

During Hurricane Sandy, many Red Hook homes and businesses lost power. This generator is what CARE will use to maintain power in the case of another emergency. Backup generators are an important flood protection measure, as they keep heaters, refrigerators, and sump pumps (which pump water away from the part of the building that sits below the water table) running, even when the city's electrical grid fails. This generator is powered by a battery to prevent the release of emissions into the air. Talk to a CARE volunteer or employee to learn how you can install a generator to protect your home or business during the next storm!

(Sources for this plaque include: Gilmore et al., 2006)

The cisterns will be identified by the following plaque:

These cisterns collect and store rainwater that runs off from the roof during precipitation events. They are particularly useful when Red Hook gets hit by storms because Red Hook's land cannot absorb as much water as other places, which causes the neighborhood to flood. By collecting some of this water, the cisterns serve as an alternate location for the water. We use the water in the cisterns to water the plants in our garden to make sure they never get full! We also test and disinfect the water regularly so that it can be used as drinking water in case of an emergency.

(Sources for this plaque include: Young & Sharpe, 2016)

We plan to have multiple cisterns, allowing them to serve as both a flood-protection system and a source of water for irrigation of CARE's garden.

A final plaque in the garden will be placed in front of an urban air quality monitor. Many Red Hook residents feel a lack of trust regarding the safety of their local environment. To help combat this, an urban air quality monitor will be able to monitor the levels of particulate matter, O<sub>3</sub>, and NO<sub>3</sub>. Community members will be able to view data gathering in progress, allowing them to make decisions confidently about their environment. This will contrast with the experience Red Hook residents had when they learned about lead levels in the Red Hook Recreation Area Ballfields' soil (Stapinski, 2018). The plaque will be located next to an air quality flag pole that adheres to the EPA's Air Quality Flag Program and will read as follows:

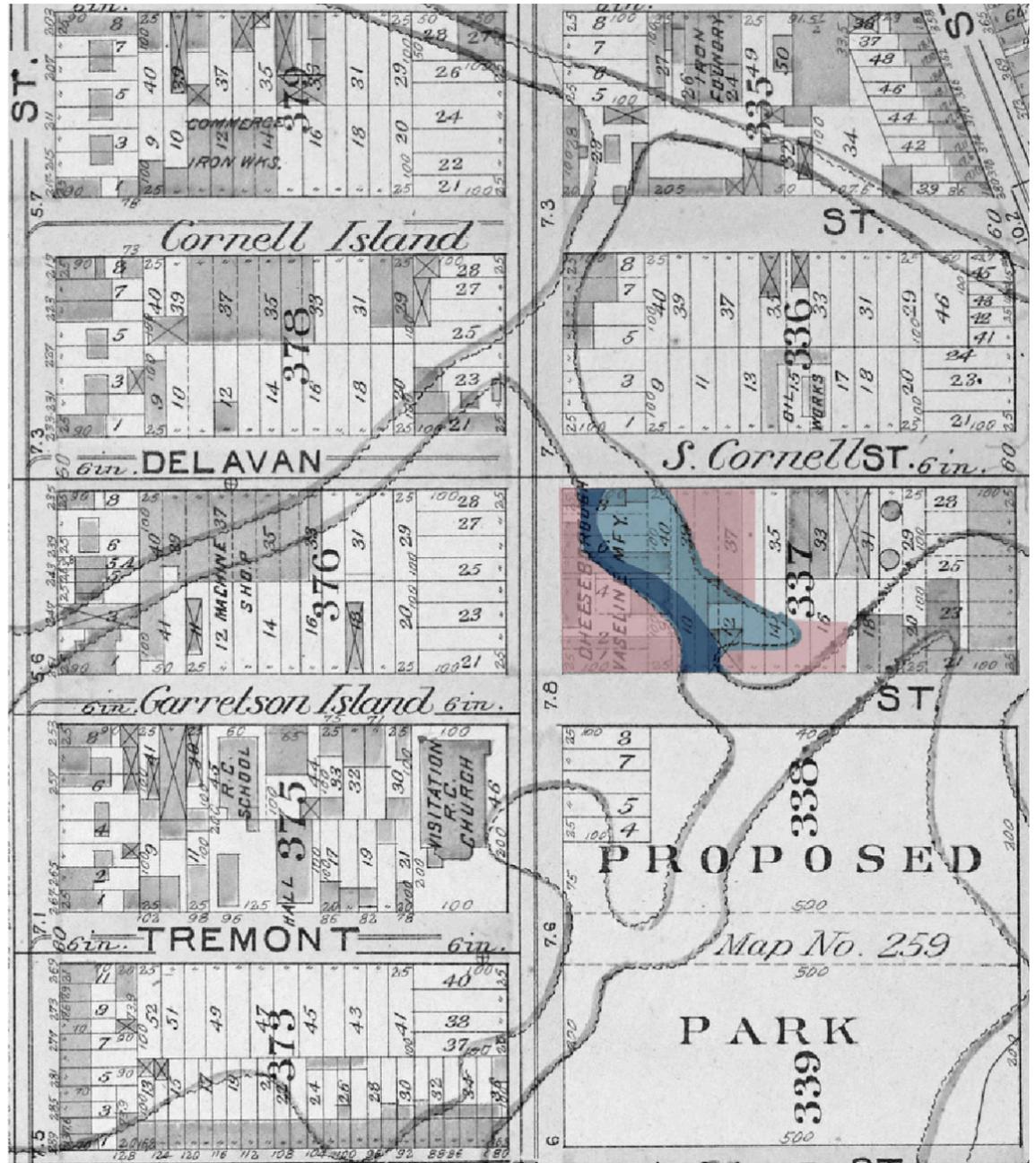
Local air quality is very important for human health, especially to people who have sensitivities like asthma. In Red Hook, we are located near the BQE, the traffic on which can release a lot of air pollution. This air quality monitor is able to tell us whether our air quality is "Good," "Moderate," "Unhealthy," or even "Hazardous" based on the readings it conducts every day. To learn what the air quality is today, look at the flag - green means "good," yellow means "moderate," orange means "unhealthy for sensitive groups," red means "unhealthy," and purple means "very unhealthy or hazardous." Be sure to check for a new flag color every day!

(Sources for this informational plaque include: Aeroqual, 2020 & Air Now, n.d. The information on this sample plaque is based off of the AQS1 Urban Air Quality Monitor by Aeroqual but will be adjusted to match the specifications of the air quality monitor purchased. If an air quality monitor cannot be purchased, air quality flags can still be utilized and updated on a daily basis utilizing information from any weather service; however, the purchase of an air quality monitor should remain a goal of CARE in order to encourage environmental interaction and education.

### *Daylighted River*

The garden will also be home to a partially-daylighted river, approximately 20' in width. The full width of the historic river, which covered most of the site, will be interpreted through landscape markers and plantings. The burying of this historic river, indicated on several historic atlases, contributed to the hardening of Red Hook's natural environment. Daylighting the river will provide stormwater retention. When a river is daylighted, the river's capacity for water retention increases, which can reduce downstream flooding. This will also divert stormwater from the neighborhood's combined sewage-stormwater system and reduce flooding from combined sewage outflows (Naturally Resilient Communities, n.d.). In the event that the river is the depression can be converted into a rain garden through strategic plantings. A rain garden will provide the same benefits as the daylighted river, though it will be a reflection of the neighborhood's historic marshes - watery areas featuring numerous plants - rather than the river marked on historic atlases (USDA Natural Resources Conservation Service, 2005).

- Proposed site for Red Hook Center for Adaptation, Resilience, and the Environment
- Location of historic river
- Proposed daylighted portion of river



Map of proposed daylighted river

## *Hàki Garden: A Living Partnership with the Lenape Center of New York City*

The Hàki (“huh-kih”) garden will be a collaboration of CARE, Red Hook Initiative, and the Staten Island-based Lenape Center of New York City. It will be located immediately to the north of the building’s entrance. This garden aims to foster relationships with members of the Lenape Tribe, educate the community about historic injustices against the Lenape in Red Hook and New York City, contribute to the phytoremediation of the current brownfield, and further the Red Hook Initiative/Red Hook Farms’ mission of combating food insecurity in the neighborhood. This garden could become a model for creating spatial representation for other historic injustices in Red Hook, such as but not limited to the history of enslaved peoples.

Hàki translates to “Earth” or “land” in the Lenape language, and this garden will attempt to illuminate how Red Hook is located on land that the Lenape historically occupied (Delaware Tribe of Indians, n.d.), which Dutch colonists’ forced them to relocate away from, to Staten Island (Red Hook Waterstories, n.d.). There will be a plaque at the entrance of the garden with the following indigenous land and territory acknowledgement:

The Red Hook Center for Adaptation, Resilience, and the Environment is located on ancestral Lenape lands. We ask you to respect and acknowledge the contemporary Lenape community, their elders both past and present, and future generations while on this land. Red Hook was founded on the exclusions and erasures of the Lenape people, including those on whose land CARE is located. The Hàki Garden demonstrates a commitment to beginning the process of establishing relationships with the Lenape community and dismantling the legacies of settler colonialism in Red Hook. (Plaque adapted from Garcia, 2018)

This garden will be used solely to grow crops historically grown by the Lenape. The majority of these crops will be food but medicinal herbs and flowers could also be planted here. All of the crops will be labelled with their Lenape name followed by their English name in parentheses. Lenape community members will be consulted to ensure accurate translations. The Three Sisters, consisting of xàskwim (corn), squash such as kèskùnthàk (pumpkin), and

malàxkwsita (beans), will be the predominant crops grown in the garden (Delaware Tribe of Indians, 2013; Delaware Tribe of Indians, n.d.). Upon harvesting, the majority of the edible crops, along with handouts of Lenape recipes that utilize these ingredients, will be donated to the Red Hook Initiative for distribution at their food banks. Crops that are not distributed through RHI’s food banks will be utilized during Lenape culture workshops conducted in consultation with the Lenape community.

The Hàki garden will serve as an important educational resource at CARE. All local community members, as well as representatives of the Lenape community, will be welcome to help plant, care for, and harvest the crops, allowing visitors to learn or share ideas about sustainable and indigenous farming. CARE frequently will invite Lenape representatives to lead workshops and lectures on historic and contemporary Lenape agricultural practices, Lenape history, contemporary Lenape society, or other topics of their choosing. These events will be aimed at a wide variety of stakeholders, including children, to ensure that Red Hook community members become more aware of the Lenape’s role in the history of Red Hook and the ongoing presence of a Lenape community in New York City. Ideally, lasting friendships and partnerships with the Lenape community will result from this garden.

### *Mural*

Finally, the garden will also be home to a mural, located on the west facade of the building, that displays the development of community and architectural types in Red Hook. This mural will highlight the numerous architectural styles that are present in the neighborhood, from industrial buildings to the early public housing model represented in the Red Hook Houses, as well as the historic communities that these styles to which these are tied. The mural will serve as an educational tool about the neighborhood’s historic character and will, ideally, be conceptualized and painted by a local artist. This mural will also increase CARE’s integration with the neighborhood, as public art is a character-defining feature of Red Hook. For more information on the types of styles that may be represented on the mural, refer to the section entitled “Flood Adaptation and Neighborhood Style.” This mural may be expanded or additional art may be created on the walls along the western and north sides of the garden.

## ***Off-Site Programming***

The majority of CARE’s programming will occur in its flagship building and garden. However, to ensure broad community outreach, it will also launch off-site programming to engage with a broad range of stakeholders. Off-site programming will provide the opportunity to address community issues impacting social cohesion, access to public space and urban accessibility, loss of the built environment, susceptibility to flooding and physical vulnerability, and the neighborhood’s history of resilience and activism.’

## ***Public Art and Water Marks***

From the physical resource survey, it became evident that high water marks are rarely delineated in Red Hook. High water marks are an excellent way to visualize the heights of past floods as well as future flood projections to the public in an accessible manner. We intend for CARE to collaborate with local schools, artists, and nonprofits such as Red Hook Arts Project to design and create new high water marks. CARE will advise on ideal locations for the high water marks and provide information on past and projected flood heights. New high water marks will show both the height of the floods during Hurricane Sandy and the projected flood elevations for the future. This project will help educate the public about flood levels through a creative outlet that matches the character of the neighborhood.

In addition to painted high water marks, the community and CARE could tie ribbons around trees or lampposts to mark flood heights. This would be a less permanent intervention that could cover a larger territory faster than painted high water marks.



Example of a high water mark in Red Hook

## ***Pop-Up Exhibits and Gardens***

Just as individuals and groups can host temporary exhibits in CARE, they can also collaborate with CARE to install pop-up exhibits around Red Hook. These exhibits could include interpretive environmental histories of individual buildings or sites, the commemoration of major events, or recognition of historic injustices. For example, an exhibit near the docks could map the slave trade through New York City and the movement of goods through New York ports to other parts of the country, demonstrating Red Hook’s role in the slave trade. Exhibits could include freestanding art, text, performances, or other creative outlets. Hosting exhibits around Red Hook will further integrate CARE within the community and increase accessibility to CARE for those who live farther away from the site. CARE also plans to partner with the NYC Parks & Recreation Department to host events, exhibits, or other community-oriented activities in Coffey Park.

CARE could also collaborate with the owners of soft sites to install community gardens. Some soft sites, such as the former site of the Revere Sugar Factory, have remained vacant for years despite numerous redevelopment proposals. Creating small community gardens around the neighborhood in collaboration with Red Hook Initiative could activate spaces until redevelopment occurs, contribute to phytoremediation of brownfields, or serve as a way to advocate for additional public open spaces in Red Hook.

## ***Educational Programming***

Programming catering to children and educators through CARE will extend to the classroom with visits to local schools and youth groups. Programming would vary depending on the age of the children and could be incorporated into existing curriculum or be stand-alone programming, such as activities in honor of Earth Day. Depending on resources and available space, schools could partner with CARE and the Red Hook Initiative to plant trees and community gardens on their properties. Many Red Hook organizations, from RHI to the Red Hook Arts Project, focus on education and development of the youth within Red Hook; CARE has the opportunity to add another important dimension to the youth programming in the community and contribute to generational success in Red Hook.

## CONCLUSION

Red Hook is home to numerous non-profits seeking to represent the neighborhood's history and ensure its continued success in the face of climate change and environmental injustice. However, there is no common shared space for these organizations to work collaboratively towards their shared goals. Through the creation of a centralized, common space, CARE will provide these nonprofit organizations, as well as government agencies and community stakeholders, with the opportunity to more efficiently reach their goals through communication and cooperation. Furthermore, CARE's key goals (stakeholder and community education, disaster preparedness, community cohesion, and modeling preservation) will operate in the intersection among equity, sustainability, and preservation. This will be accomplished through the promotion of equitable treatment of Red Hook nonprofits and residents, demonstration of how to combat historic built environment loss, and presentation of resilience through both short-term (disaster preparedness) and long-term (sustainability) methods. CARE's ultimate goal is to serve the community because it is only with the community's input that CARE will be a success.



**PROPOSAL 2: RED HOOK BUSINESS  
IMPROVEMENT DISTRICT FEASIBILITY STUDY**

**RED & HOOK**

Get Hooked on RED HOOK!

LAI MA, WILLIAM MCCALLUM, THOMAS RICE, TUCKER SIMMONS

## INTRODUCTION

Our proposal is organized around the framework that the City of New York requires for the submission of Business Improvement Districts (BID). In order to make our proposal feasible, we suggest a payment structure and specific services and improvements that would improve Red Hook following the needs assessed in the first half of the semester and also serve as a realistic goal and investment from the City's point of view. Ultimately, the BID would provide services that promote business development and resilience in Red Hook using funds assessed from business owners by the City. We identified the main streets that could support a BID in the district profile and two main ways that the BID would benefit the neighborhood: economic incentives and a destination management plan.

Economic incentives provide a way for businesses to succeed in place. Incentives include storefront improvements, disaster relief, apprenticeships, marketing, and guided tours. These provide an improved customer base for businesses, employment for local residents and employees for local businesses, and resources to improve storefronts and to fund adaptations to flooding. A destination management plan would aim to attract visitors to the neighborhood and manage how they interact with and experience Red Hook, while working to concentrate decision-making within and direct benefits to the local Red Hook community. Three strategies are proposed to enhance destination management:

- Wayfinding, or orientation, which controls how visitors move through the neighborhood. This includes gateways, signage, and an informational phone map.
- Visitor and local user support through outdoor amenities.
- Interpretation, which frames how visitors and local users perceive, interact with, and learn about the neighborhood. This includes physical markers, plaques, augmented reality, and a flood interpretive intervention. Interpretation also seeks to shed light on the physical, social, and environmental histories of the neighborhood.

## *Alternate Organization Models*

We analyzed different business organization and development models in order to find an optimal model for this organization in Red Hook, including community development financial institutions and local development corporations. Fundamentally the difference between our proposal and these models is funding and self-determination. The other structures primarily organize and fundraise, limiting their funds at this scale. In the BID, the City of New York will levy additional tax assessments on properties of business owners or residents of the district, collect those assessments, and give them to the BID organization to perform services. Each property will be assessed individually, and the sum of each property's assessment will equal the budgeted amount needed for the improvements and services of the district. If operated correctly under the right circumstances, a BID is self-perpetuating in that it funds itself and does not rely solely on fundraising.

However, most successful models for traditional BIDs have a higher density of businesses than Red Hook, making the implementation of a BID in Red Hook more complicated. To decide if a BID would be applicable in Red Hook, it is important to understand many variables about businesses in the neighborhood. Commercial spaces are found throughout the neighborhood with relatively low density. This density would be the biggest problem in creating the district, since the vital mechanism BIDs rely on is assessing commercial structures and using that money to provide services.

## *Administration and Annual Budget*

Once a year members ++of the community will vote on members of the BID's board. At least one member from the Red Hook Houses will be on the board at all times. One sitting member will represent each block in Red Hook, and each member will have one vote. BID's board will prepare the budget, but these are the estimated costs per annum for a BID in New York City:

Maintenance and adaptation	\$150,000
Marketing, promotion, and holiday lighting	\$100,000
Economic development/new initiatives	\$200,000
Administration	\$ 20,000
Total First Year Budget	\$460,000

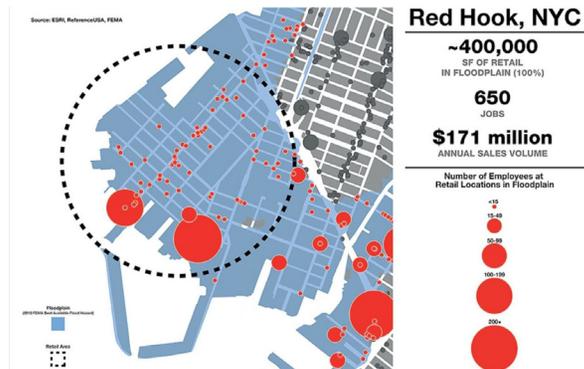
## Proposed Sources of Funding

The City of New York will levy additional tax assessments on properties of business owners or residents of the district, collect those assessments, and give them to the Red Hook BID organization. Each property will be assessed individually, and the sum of each property's assessment will equal the budgeted amount needed for the improvements and services of the district. Commercial properties would pay \$23 per individual property linear foot (FF). Residential properties will be assessed at \$1 per year, although residents are welcome and encouraged to donate to the fund that supports programs.

## DISTRICT LOCATION

After a review of existing businesses and commercial corridors in Red Hook, the boundaries for the BID are drawn to represent as many businesses as possible. The district layout will best support the goals of economic incentives and destination management.

The ways visitors enter the neighborhood, through four primary entrances, shaped the proposed BID boundaries. Visitors enter Red Hook through two entrances along the waterfront and two along Hamilton Avenue, discussed later in this proposal. Currently there are a series of commercial pockets, serving separate populations in Red Hook. We aim to connect these businesses into a single district with unified goals of growth and density. Businesses on Van Dyke, Clinton, Van Brunt, Lorraine, Centre, Beard, and Pioneer Street will all be included in the proposed BID.

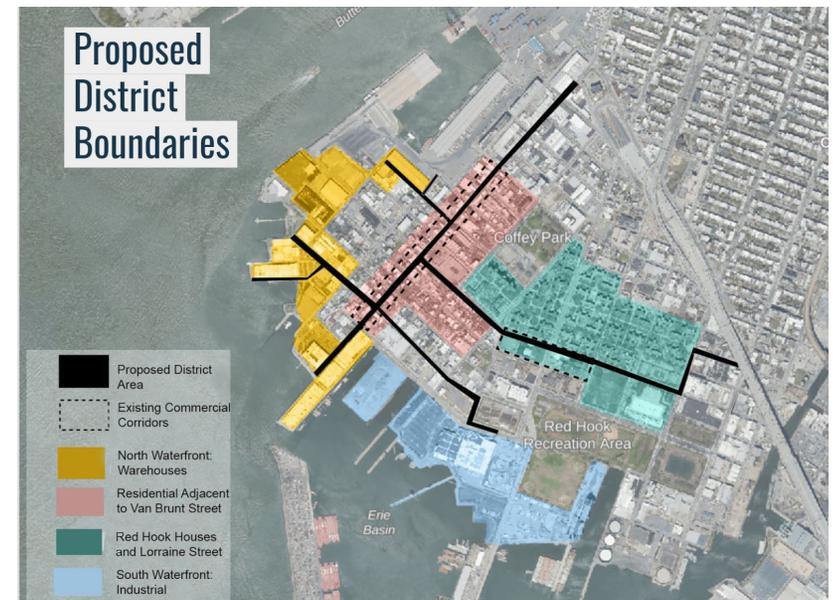


Current neighborhood commercial and flood prone statistics

## DISTRICT PROFILE

There are approximately 400,000 thousand square feet of commercial space in Red Hook ("Dense Urban Edge," 2013). In the physical resource survey, we found that there are about 46 commercial, 95 mixed use, and 46 industrial buildings in the focus area alone. Aside from Van Brunt Street and Lorraine Street, there are also a number of businesses scattered around the neighborhood. These businesses outside of the main commercial corridors still have a large impact on the overall economy of Red Hook. These businesses are shown as large red dots on the map on the waterfront.

Historically, Red Hook's commercial areas have suffered from flooding. Many storefronts have entries at sidewalk level in areas that experienced multiple feet of flooding during Hurricane Sandy. Property owners pay a premium for flood insurance. The Red Hook BID would provide a structure for dialogue and decision-making to improve resilience and an organizational tool to offer help during times of crisis.



Proposed Red Hook BID boundaries

Businesses on Van Brunt Street and Lorraine Street have different appearances and primarily serve different audiences, but they have some shared problems. Currently many of the businesses around the primary commercial corridors of Red Hook suffer from a combination of economic and environmental factors that affect long-term business prosperity.

At least sixteen percent of properties in Red Hook are vacant lots and parking lots. These gaps create discontinuity in the street wall and make for a less welcoming environment. By creating an economic district, we will create incentives for businesses to co-locate along economic corridors to qualify for benefits, increase overall density, and decrease the number of soft sites.

## ECONOMIC INCENTIVES

Our proposal includes two categories: incentives that directly involve the built environment and incentives that engage various publics in Red Hook. Our storefront improvement program and disaster relief fund will work to fix, improve, or adapt buildings, while the apprenticeship program and the marketing and guided tours will be geared towards stakeholders and visitors.



### A Windows

Upper floor windows should be kept clear of signs and existing detail should be preserved and maintained.

### D Signage

Signs provide the best space to advertise the name of a business. Effective signs are simple; they are not too large and fit within the scale of the building.

### E Awning

Awnings add depth to the storefront and protect shoppers and window displays from sun and bad weather. They should fit appropriately above windows and doors and not project too far over the sidewalk.

### F Transom Window

Transom windows allow for more light to enter the store. Keep them clear of opaque materials like cardboard or air conditioning units.

### B Cornice

The cornice is a significant decorative and unifying piece of the storefront. Be sure to preserve existing materials.

### G Security

Security is important for protecting businesses and making customers feel safe. Open-grille security gates can be installed on the interior or exterior of the store. Interior is preferred, as it allows for a clean storefront and greater visibility.

### H Display window

Display windows provide a great opportunity to show off merchandise. Be sure to limit the amount of signs and posters. Small decals are an effective and inexpensive alternative.

### I Bulkhead

Bulkheads create a defined platform for window displays and are located at the base of the storefront. They should be proportionate to the size of the building.

Diagram of recommended storefront improvements

## ***Storefront Improvements and Flood Adaptation Program***

Storefront improvements and flood adaptations are important in Red Hook because the neighborhood has a large number of historic commercial buildings in the floodplain. The historic fabric draws visitors to Red Hook and is a source of identity for residents. Therefore, historic commercial buildings need to be preserved and protected and individual property owners need an outside mechanism for funding.

Through the BID, businesses will have a stronger voice and be able to advocate for grants for building modifications through the Small Business Services Storefront Improvement Program. \$100,000 in grants were awarded to the Myrtle Avenue Business District, allowing the renovation of 100 storefronts to be subsidized. In the case of the Jamaica Center BID, the program reimbursed 75 percent of the cost of storefront improvements, with a maximum grant of \$20,000 per property (“Storefront Improvement” n.d.).

Funds raised through community assessments could contribute to a revolving loan fund specifically for funding flood adaptations to existing buildings. These funds would pay for contractors and consultants to provide site-specific adaptations. Appropriate adaptations that would qualify for these funds include (if applicable):

- Flood vents and floor drainage improvements
- Rain gardens
- Landscape restoration
- Above-ground cistern

For additional information about flood retrofits, refer back to the “Flood Adaptation and Neighborhood Style Guide” section in the CARE proposal. It is possible that stipulations from the storefront improvement program would not allow flood adaptations to be funded since this program’s design guidelines mainly reference cosmetic repairs. In that case, a revolving loan fund might be used.

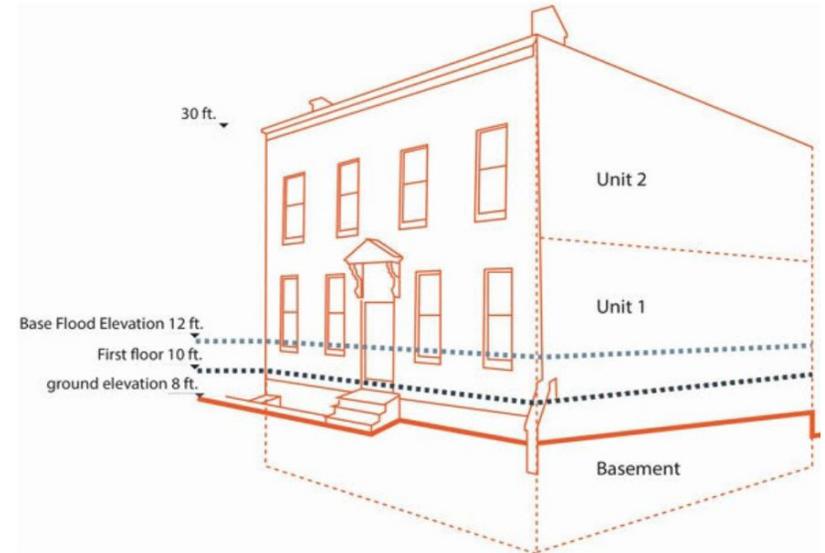


Diagram of recommended flood adaptation of typical building in Red Hook

We believe that a significant number of commercial storefronts in Red Hook could benefit from and qualify for the joint restoration of historic character and installation of flood adaptations. The adaptation of these public and semi-public buildings would provide economic security for business owners who might not otherwise be able to afford to adapt in place.

In practice, it will be difficult to renovate existing storefronts in Red Hook. On the one hand, raising a building or allowing water to flow through a permeable section of it could improve resilience. On the other hand, raising a building can create issues with party walls and street visibility, subsequently affecting businesses. For example, in a street of row houses, a single row house cannot be raised since they connect to each other for support. Additionally, due to the narrow streets that characterize the neighborhood, it will be less feasible to install ADA-compliant ramps and elevators that could bring customers to raised storefronts (or boardwalks). Store owners would need to weigh these variables in order to find the appropriate solution to their storefront.

## ***Disaster Relief Fund***

A disaster relief fund will be budgeted and available year-round for businesses that suffer from unexpected natural phenomena such as flooding or fire-related disasters. This fund would be made possible through marketing, donations, and allocated funds each year. It could follow a similar model as the Sunnyside Shines BID, which raised \$165,000 in private funds through fundraising to provide immediate relief to 103 workers displaced by a fire (Pesantez, 2019).

## ***Apprenticeship Program***

Funds will also be allocated for job training for local residents. This would involve businesses participating in an apprenticeship program facilitated by the BID, matching local students with skilled craftsmen, artisans, and other professionals in the neighborhood. It would provide skills training for neighborhood residents and foster a locally-sourced, well-trained workforce from which businesses could hire. At least two existing apprenticeship programs already exist in the neighborhood (Red Hook Initiative and Casa Kids), and we would aim to partner with these programs in order to expand and learn from them. The proposed Business Improvement District Organization would act as a liaison between employees and employers through outreach and workshops.

## ***Marketing and Guided Tours***

The BID's mission is to build a larger consumer base for Red Hook's businesses. Marketing and guided tours would be used to achieve these goals. Red Hook already has successful initiatives which draw large crowds, including the Total Immersion Red Hook event and the Red Hook Open Studios. We would use these events as models for more permanent events in Red Hook. Additional marketing would build a consumer base for businesses in Red Hook and coordinate regular events such as cruise ship arrivals, IKEA sales, and the Fourth of July fireworks that bring people to the community.

Social media sites would be used to distribute our events, such as Red Hook Food Tours. The Red Hook Business District Organization would offer Red Hook gift certificates for sale, which could be used at any participating business. An example of this initiative would be a prefix dinner ticket incorporating multiple restaurants in Red Hook.

## **DESTINATION MANAGEMENT**

Destination management is another way to build a larger consumer base by improving the experience of visitors, orienting them through Red Hook, and providing interpretation of the neighborhood's history in context. As opposed to traditional tourism management, destination management prioritizes the needs of the local community and works to give them power and agency in decision-making, as well as direct the financial benefits of tourism to the neighborhood rather than to tour operators and businesses at large.

Gateways, wayfinding signage, and an informational smartphone map would all be used to orient visitors to the neighborhood, while outdoor amenities would provide engagement and support to visitors. Interpretive interventions, including physical markers and plaques, augmented reality, and flood interpretive intervention, would tell the history of the neighborhood, providing an opportunity to engage the greater Red Hook community in telling the story of its diverse past.

### ***Gateways***

First impressions are very important, especially in a place like Red Hook, which is geographically isolated and distinct from the rest of New York City. The Red Hook BID would work to ensure that the primary entrances to Red Hook are well-maintained and contain information to help visitors orient themselves to the district's amenities.

Red Hook has limited access to public transportation, but it has many people arriving by water via ferries, water taxis, and cruise ships. Although these modes of transportation are not often used for daily commuting, they provide a constant flow of visitors. These visitors are an underutilized resource for local businesses. Two of the gateways will be located where people arrive in Red Hook by water, one at the Atlantic Basin ferry dock near the Brooklyn Cruise Terminal and the other at the IKEA water taxi dock in the Erie Basin.

People can also enter Red Hook by land, although the BQE separates almost the entirety of Red Hook from the rest of Brooklyn. Gateways at two entrances, one at Van Brunt Street and Hamilton Avenue and another near the Smith and 9th Street Subway station, would frame Red Hook and draw outsiders in.

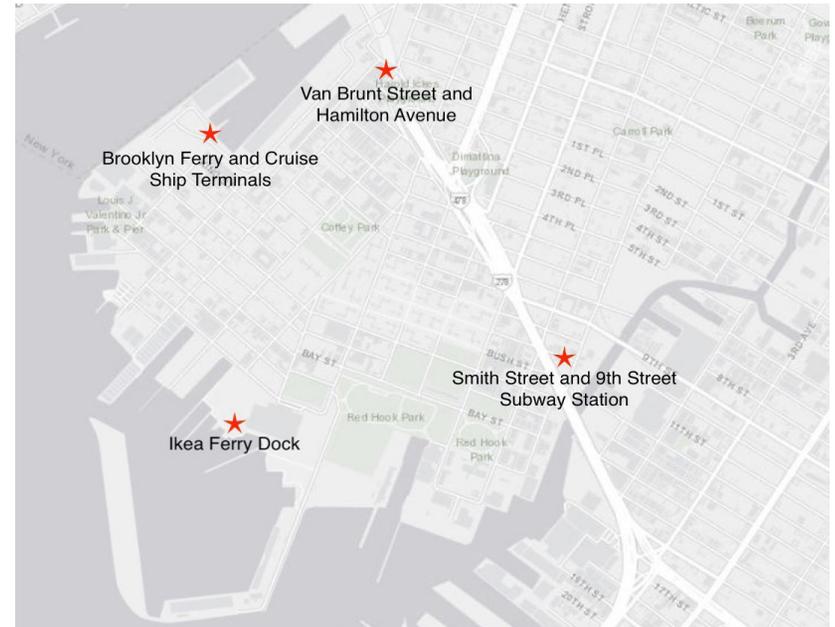
This location at the corner of Van Brunt Street and Hamilton Avenue is incredibly important for visitors entering Red Hook by car. This is a primary entrance to Red Hook for cars and trucks, and it is the location of the main entrance to the Red Hook Shipping Terminal. The Brooklyn Greenway bike path runs alongside Van Brunt Street at this point. In these key land and water entrances, the gateways will provide a positive and informative first impression to visitors by adding branding to the neighborhood and piquing individuals' curiosity about the place they are entering.

This gateway plan has two components, both of which brand Red Hook as a historic neighborhood through the use of historic imagery. First, there will be an overhead banner spanning Van Brunt Street, welcoming people to Red Hook, displaying images of the historic architecture of the neighborhood. This banner will be reproduced at each gateway to Red Hook. There will be a billboard at the entrance as well. This billboard shows an image of the demolished Hamilton Avenue Ferry Terminal in 1934 in the location it once stood. The ferry terminal is gone, but the image reminds passersby of the area's history. The embedded QR code allows interested smartphone users to access more information about the site along with augmented reality images.

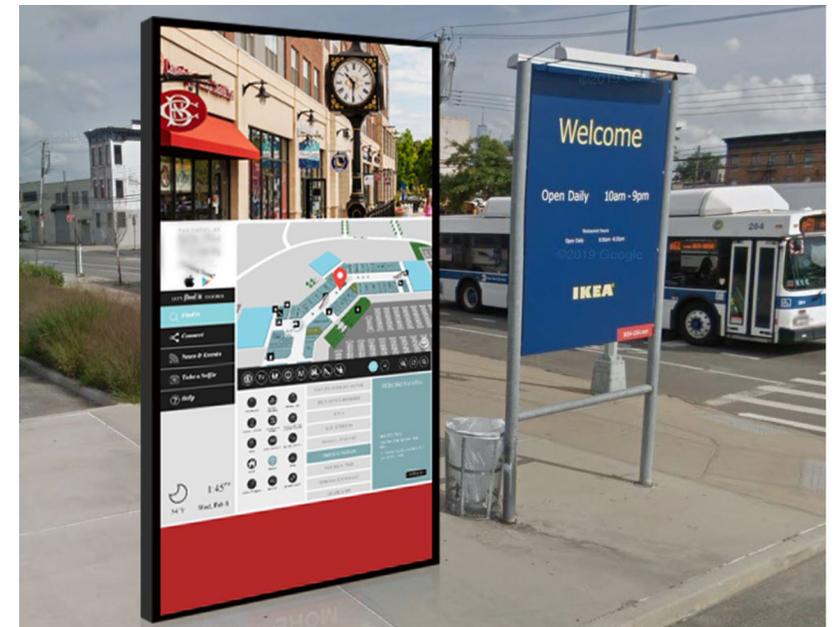
The example on the facing page shows the gateway along Clinton Wharf next to the Atlantic Basin ferry dock and the Brooklyn Cruise Terminal. This installation is important because it captures visitors from elsewhere in the City as well as international visitors from cruise ships. This gateway is crucial in encouraging passengers from cruise ships to stay in Red Hook, rather than immediately heading to Manhattan. The gateway features the same branding with the overhead banner to welcome visitors to the district. In this case, the billboard shows a juxtaposition of historic and modern photos of the Atlantic Basin, from 1878 and 2020. Visitors can see what has changed and what remains the same. Like before, the QR code will provide more information.

### Wayfinding Signage

In addition to the gateways, the neighborhood will feature wayfinding signage, which allows visitors to orient themselves and to plan their trip in the neighborhood. These stations will list information about business and historic sites. They will be aimed at native New Yorkers as well as visitors from other parts of the country and world. The



Map of gateways for visitors to Red Hook



Wayfinding signage at IKEA

content would vary depending on where the signs are located. For example, the signage near the cruise ship terminal would cater to tourists disembarking from a cruise ship, while signage near IKEA would cater to NYC residents who travelled to Red Hook to shop for furniture but may be interested in completing other activities. The wayfinding signs would also promote the interactive phone application.

### ***Interactive Phone Application and Augmented Reality***

The free, informational phone application would provide an offline map for visitors to view distinct sites and destinations in Red Hook and see ways to interact with them. These places would range from cultural and historical sites to local restaurants, boutiques, and galleries. This application would disperse digital information in collaboration with Red Hook WaterStories and PortSide NewYork, advertise local businesses and attractions, introduce augmented reality, and spatialize some information about Red Hook that is available online.

The augmented reality portion of the application would use an individual's smartphone along with QR Codes to display scenes of Red Hook in a 360 degree view and to compare historical photos of cultural and historical sites to their contemporary landscapes. Through augmented reality, users will see how Red Hook looked prior to demolitions and significant alterations of important industrial sites such as the Revere Sugar Factory and Todd Shipyard. They will experience what the Atlantic Basin looked like in its nineteenth century heyday and understand where the informal shanty towns that developed in the nineteenth and early-twentieth centuries were located. These images would spatially orient the history of Red Hook's past to its present.

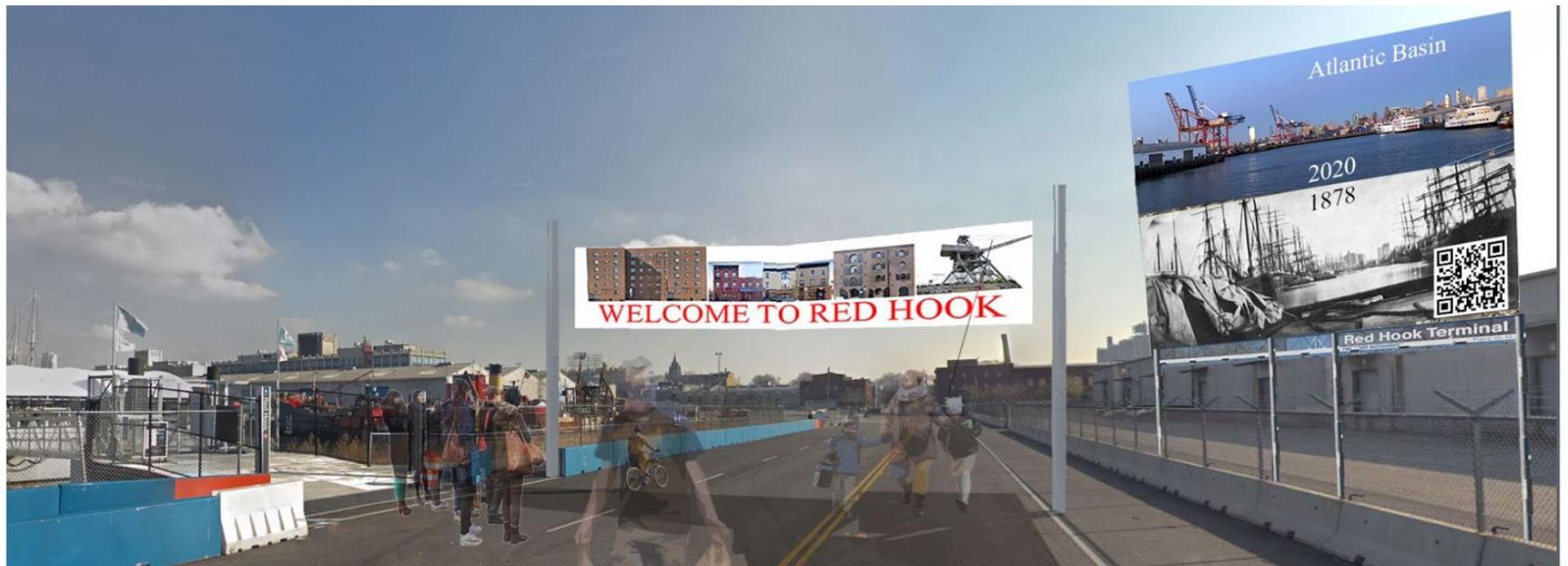
At specific locations with large quantities of historical data, 3D models could be generated and shown in the application. The application would use the phone's camera to orient the scene, which would pop up on the phone screen. In addition to seeing the augmented environment, users could access additional information about the photos, models, and locations shown through augmented reality.



Example of interactive phone application



Gateway example at Hamilton Avenue and Van Brunt Street



Gateway example at Ferry Terminal, Cruise Terminal, Atlantic Basin



Augmented reality spatializing the loss of the built environment



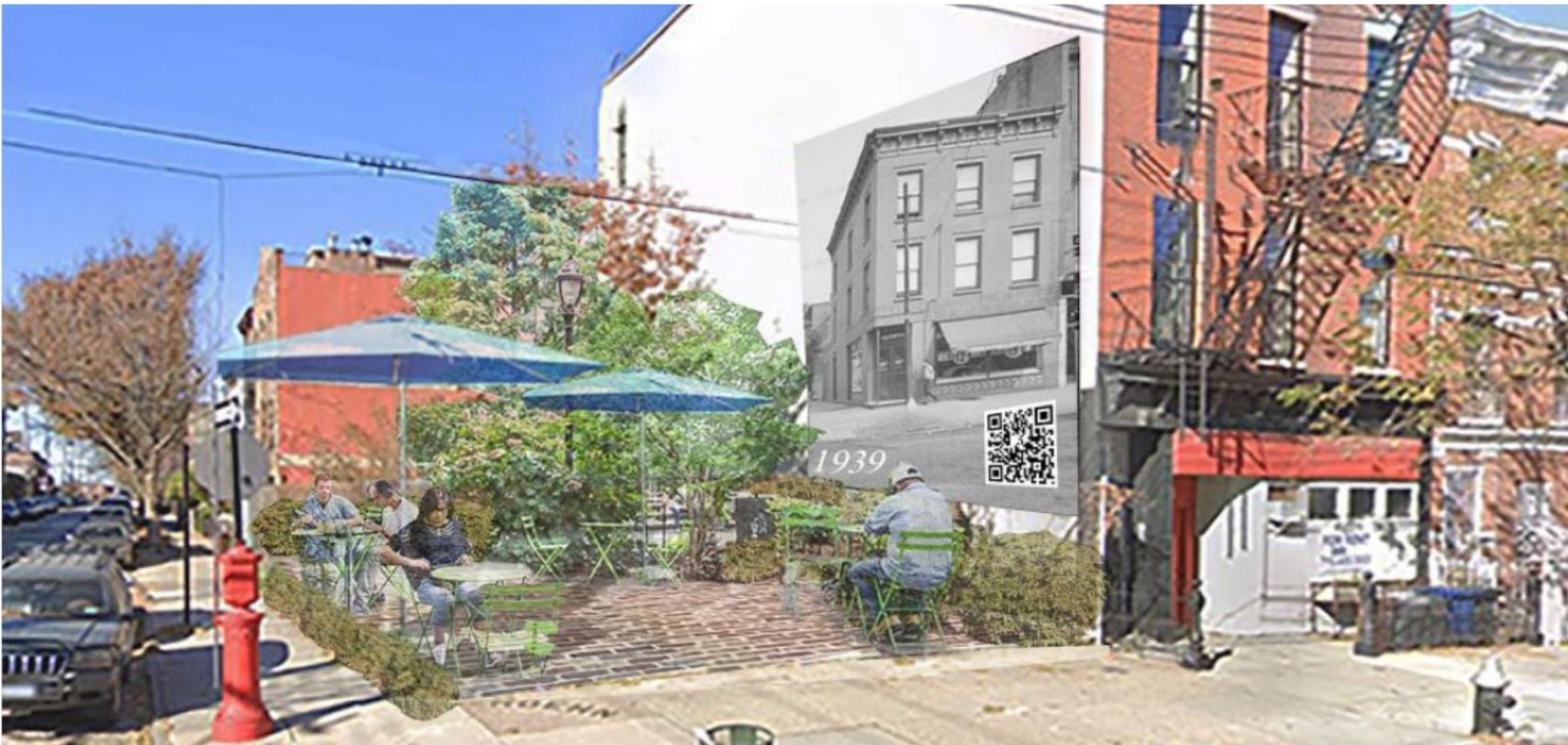
Augmented reality spatializing historic communities

## ***Outdoor Amenities***

Much of Red Hook's restaurant economy is concentrated in the warmer months when people are more likely to walk around outside. BID's outdoor amenities will include efforts to enhance the neighborhood in the spring, summer, and fall as well as to promote the area for wintertime visitors.

In the winter, the BID would facilitate the installation of holiday lights and decorations on key commercial streets. This would formalize the existing winter tradition of stringing lights across Van Brunt Street while taking away the burden of supplying lights and electricity from residents. Similar full-scale holiday light systems, such as those in Little Italy, have been successful in maintaining foot traffic during winter months.

The BID would work with the City to allow restaurants on Van Brunt Street and neighboring areas to acquire permits for outdoor seating. Seating could take place in some of the dozens of vacant lots in the neighborhood, such as this lot at the corner of Coffey and Van Brunt Street. In this location, an image of the beer hall which once stood on the lot raises awareness of the fragility of historic structures in Red Hook and how their protection might foster tourism. Additional outdoor seating would also provide space for interactions among street goers.



Example of transforming a vacant lot at Coffey Street and Van Brunt Street into an outdoor seating area

## PHYSICAL MARKERS AND PLAQUES

Another key component will be the addition of plaques marking historic and cultural sites throughout the neighborhood. These plaques will note historic structures, events, and individuals in the community. The plaques will also feature the branding of the Red Hook BID and can be used to facilitate tours. The BID would engage the community to identify and highlight lesser known and untold neighborhood perspectives. Temporary pop-up exhibits through CARE could accompany and expand upon some of these plaques.

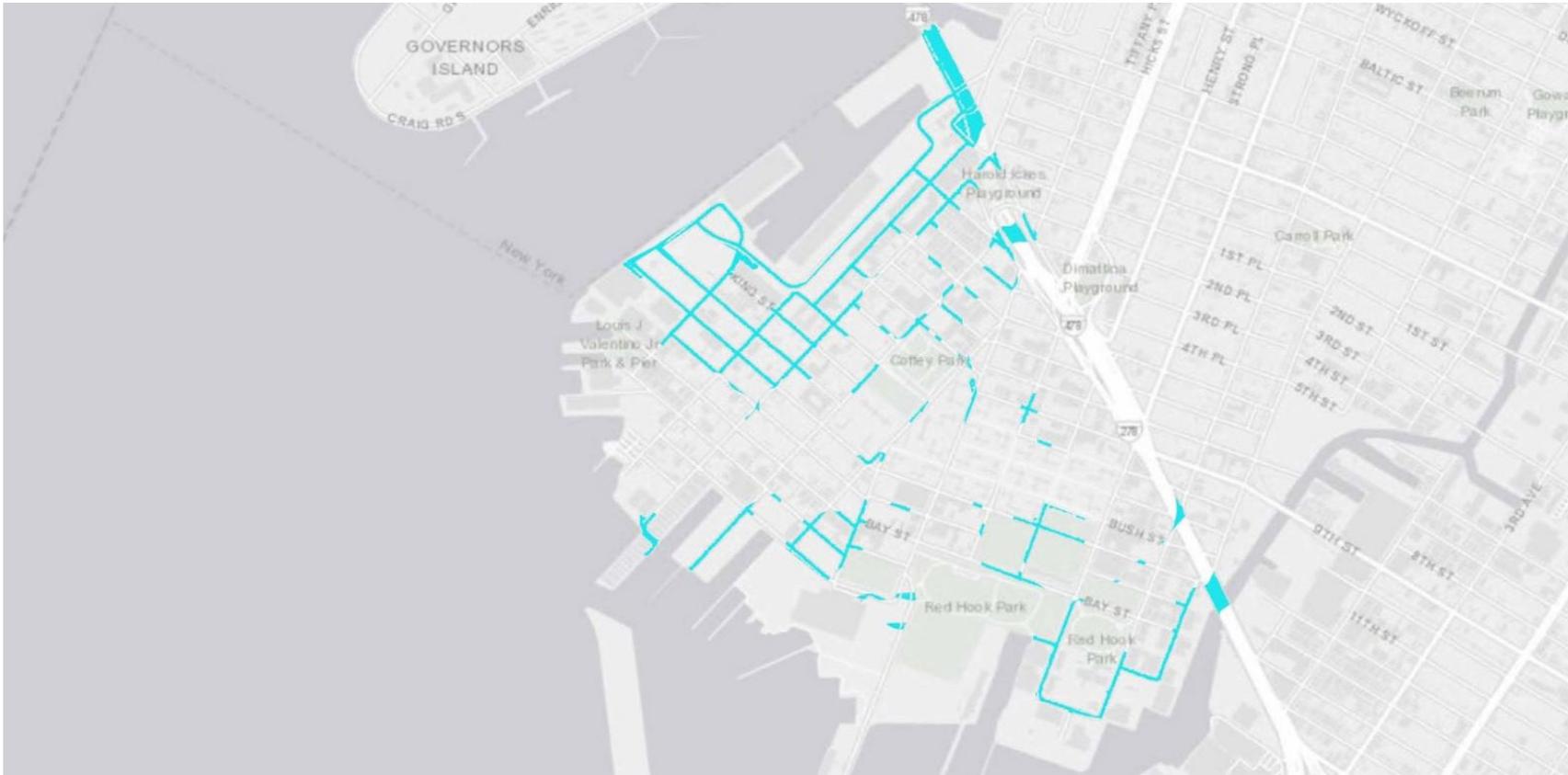


Example of a physical marker at the former site of the Revere Sugar Factory

## FLOOD INTERPRETIVE INTERVENTION

We propose installing a blue, heavy-duty paint coating over the modern sidewalk paving systems in Red Hook as an additional interpretive tool. This intervention will illustrate which streets are built on landfill and were originally water or marshland. In many ways, the original outline of land and landfill mirrors the modern elevation and flood patterns (as well as flood insurance premiums). Therefore, by painting these sidewalks, residents and visitors will be able to identify the areas with some of the highest flood risks in Red Hook.

A rotation of local artists would repaint the sidewalks with artistic designs every time they needed maintenance in order to promote community collaboration. The artists could paint any image or design they wanted, as long as the colors are blue and the subject is family-appropriate. While the designs would change periodically, the painted sidewalks would be a permanent intervention that could remind individuals about the vulnerability of the neighborhood to flooding.



Map of proposed flood interpretive intervention locations



Example of flood interpretive artist intervention

## CONCLUSION

A Red Hook Business Improvement District combined with proper destination management will be an asset for the community. In addition to bringing in added revenue from increasing customers and visitors, it will increase community cohesion within Red Hook. The organization will upgrade and preserve existing physical spaces in order to better prepare them for future flood events. With increased capital in the neighborhood and increased opportunities for residents, this proposal is situated at the intersection of the studio's three goals: preservation, equity, and resiliency.

BID will assist the neighborhood through economic incentives and a destination management plan. Proposed economic incentives, including the disaster relief fund, will help prevent demolition by neglect or severe damage during another flood. These incentives will also engage multiple publics in order to increase resilience and social cohesion through improving public spaces and access to them. Promotional marketing will create additional events and encourage higher levels of participation and the apprenticeship program will create well-paying jobs and skilled labor that empower the neighborhood. The destination management plan will bring different sections of the community as well as outside visitors together and showcase the stories of Red Hook' social and built environments over time. This plan will educate people about the neighborhood and facilitate an additional stream of revenue, increasing resiliency. Although rising sea levels are a major threat for Red Hook, in the case of the proposed Red Hook BID, "a rising tide lifts all boats."

A street scene in Red Hook, Brooklyn, featuring brick buildings, utility poles with power lines, and a row of parked cars on a cobblestone street. The scene is captured during the day with clear skies and some bare trees. A semi-transparent white banner is overlaid across the middle of the image, containing the title text.

**APPENDIX A**  
**HISTORIC CONTEXT ANALYSIS OF RED HOOK**

To begin our study of Red Hook, Brooklyn, the studio embarked on research to understand the historic context of the neighborhood, dividing the work into four distinct sections: Waterfront, Port, and Industry; Transportation; Housing and Recreation; and Crime and Racketeering. Together, these historic context statements cover many of the most important moments and events in Red Hook's history. Each of these subjects has had a lasting influence on the neighborhood and its development over time and provides critical background information about contemporary Red Hook and its place-based heritage.

## WATERFRONT, PORT, AND INDUSTRY

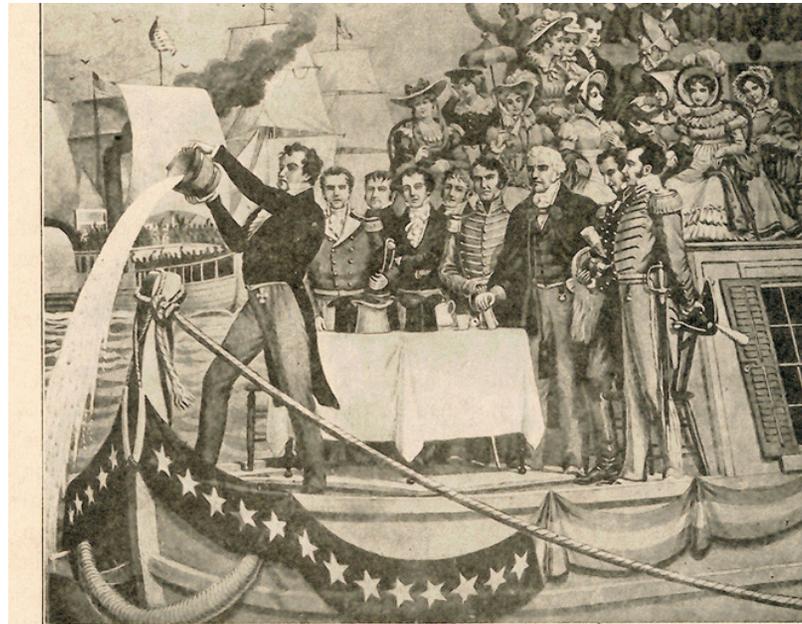
The history of the Red Hook waterfront and its industries has been propelled by broader trends of maritime commerce. Red Hook was attractive to maritime commerce due to its location across from downtown Manhattan and its open land and marshes available for development and waterfront industry.

Soon after the settlement of Manhattan, Red Hook was established by the Dutch in 1636. When the Erie Canal opened in 1825 and brought New York to preeminence, Red Hook became a destination for shipment and storage of break-bulk cargo, grain, and cotton. Initially, this resulted in a boom of related maritime commerce and development of the city. However, after this mid nineteenth century expansion, Red Hook's fortunes eventually declined as it was unable to adapt to changes brought on by technological advances at the dawn of the twentieth century.

In the early twentieth century, there were still many thriving maritime businesses, and important infrastructural improvements, but these gains were diminishing by the mid-century. In 1962, the opening of the Elizabeth-Port container port in New Jersey heralded the widespread departure of the maritime industry from the waterfront. Attempts to reverse this trend floundered (such as a failed fishing port) and by the dawn of the new millennium, Red Hook's waterfront-related industries were rapidly declining. In the 2000s, there were new developments including Ikea and a cruise ship terminal that further connected Red Hook to the rest of New York. However, instead of diversifying its commerce, Red Hook is reverting back to its traditional patterns with the opening of e-commerce storage sites, taking industry back to its industrial warehouse centric roots.



Tide mills were used to harness the flow of the tides to generate power



Opening up of the Erie Canal with the Wedding of the Waters

The Dutch colonists arrived in Red Hook in 1636 to an area already settled by native peoples (Geis 2014). These native peoples were the Lenape and they referred to Red Hook as “Sassian” (Montalbano 2019). The Dutch colonists, however, named the area “Roode Hoek” after its red clay soil (Field 1868). They also named it for the shape of the land - Red Hook juts out into the water much like a hook (Montalbano 2019). The Dutch took over the land, farmed, fished, and built mills (Malka 2010). The mills used to process raw grains, corn, and even ginger were called grist mills (Stiles 1867). The Dutch also built tide mills (Field 1868). The Dutch also farmed oysters in the tidal bays (Field 1868).

During the Revolutionary War, Red Hook was home to Fort Defiance which was important during the Battle of Long Island (Montalbano 2019). After the war, farming, mill work, and a decidedly rural pace dominated the waterfront and its industry for the next two hundred years (Malka 2010).

Red Hook’s industry changed with the advent of the Erie Canal. The Erie Canal opened in October of 1825 when the father of the canal, DeWitt Clinton, ceremoniously poured water from Lake Erie into New York Harbor.

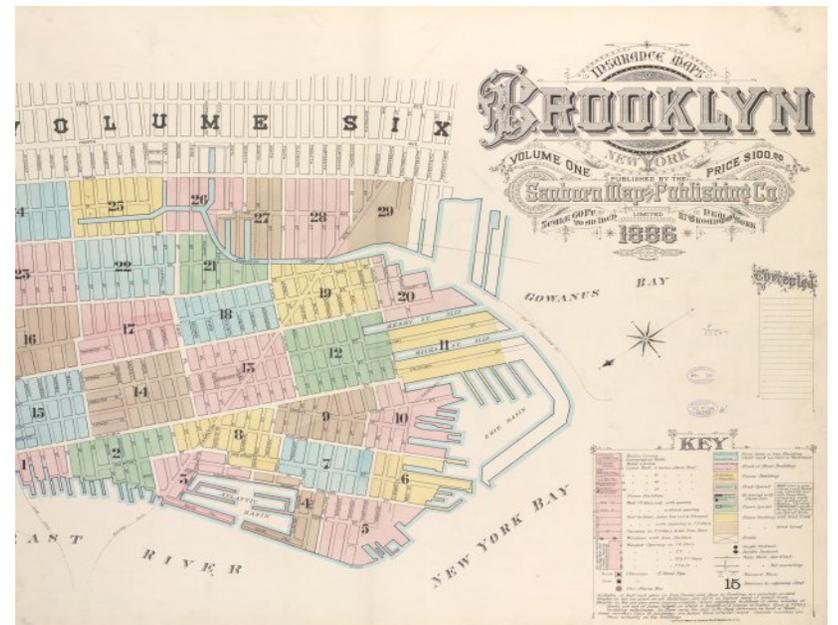
This action called the “Wedding of the Waters” was the beginning of New York’s preeminence as the largest trading port and city in the country, and in turn led to Red Hook’s economic boom (Spellen 2012). The canal allowed for more efficient trade and travel between the eastern seaboard and the country’s ever expanding western frontier.

Prior to the opening of the Erie Canal, to reach the Great Lakes and western frontier, it was necessary to travel over land or up the Mississippi River (Spellen 2012).

With the expanding trade into New York Harbor, the port facilities had to grow. Lower Manhattan was already built up with wharves and docks. Red Hook, however, was right across the bay from Lower Manhattan and was still underdeveloped. This made it a prime destination for the construction of new port facilities and warehouses (Red Hook Gowanus Neighborhood 2000). The waterfront along Red Hook thus began to develop and continued to do so for over 75 years.



Erie Canal and spheres of influence



1886 Insurance map of Red Hook, showing the growth of the waterfront

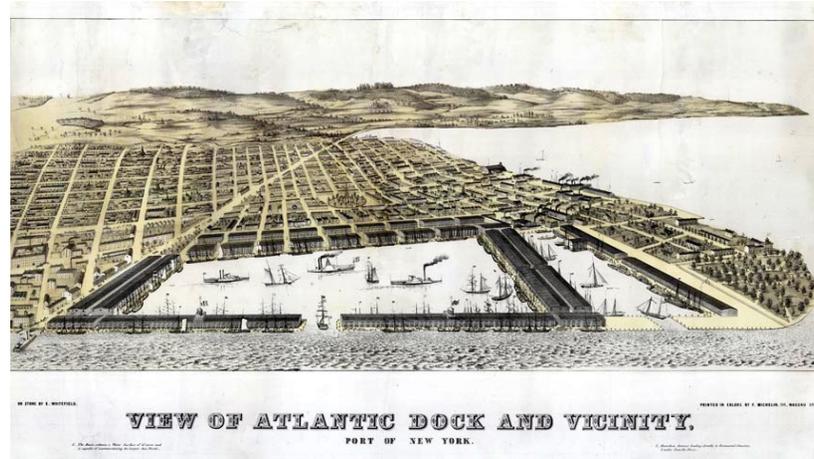
The first major port facility to be developed was the Atlantic Basin in the 1840's. Proposed and built by Col. Daniel Richards, it was forty acres of wharves with warehouses lining its docks.

The basin and neighboring Buttermilk Channel were dredged to allow the largest merchant ships of the time to safely navigate during low tides (Pollara 1997). When finished, the basin could accommodate up to 150 vessels at a time and was first opened to commerce in 1844 when the initial warehouses were built (Red Hook Gowanus Neighborhood 2000). However, the basin was not fully completed until the 1880s.

After the Atlantic Basin was constructed, shipping and raw goods storage in Red Hook boomed. The next major port facility to be constructed was the Gowanus Canal which began in 1848. This project was publicly funded, an anomaly in Red Hook at the time. It opened up waterfront facilities on the backside of Red Hook and was used as a staging area for barges while they waited to be serviced in the Atlantic Basin (Red Hook Gowanus Neighborhood 2000).

With the continued growth of commercial traffic, the Atlantic Basin could not keep up with the demand, and many vessels would have to wait in the Gowanus Canal until space became available. This situation led to the Erie Basin being constructed in the 1860's (Red Hook, Gowanus neighborhood 2000). The Erie Basin was 135 acres when built with large breakwaters protecting the berths. Like with the Atlantic Basin, warehouses lined the Erie Basin and made it a prime port facility (Pollara 1997). With both basins and the canal completed, Red Hook's shipping and raw goods storage continued to expand.

By the late nineteenth century, Red Hook was one of the leading ports for grain and cotton in the country. It's two main commodities were grain from the west brought down the Erie Canal, and southern cotton shipped north. Grain shipments were primarily stored in warehouses around the Erie Basin until being brought into Manhattan or shipped out to other eastern seaboard ports (Red Hook Gowanus Neighborhood 2000). Cotton, on the other hand, was stored in Red Hook until it could be exported to English textile mills or shipped to textile mills in the northeast and Great Lakes (Redhook Waterfront 2015).



Sketch of the Atlantic Basin prior to the construction of the Erie Basin



Picture of the Erie Basin breakwater with cargo

As the twentieth century ebbed forward Red Hook's traditional raw goods storage began to decline. Technological advances and the rapid expansion of the railroad allowed for cheaper and faster transport of grain from the midwest. This resulted in a reduction of grain shipments on the Erie Canal and eventually led to Red Hook being bypassed completely in the grain supply chain (Simon 2010). Cotton storage also declined during this time period. English textile mills began importing cotton from British India and Egypt while US textile mills began to close their northern facilities and move south, closer to where cotton was being grown and where land and wages were less expensive (Redhook Waterfront 2015). Businesses in Red Hook attempted to combat this decline by converting their warehouses from grain and cotton storage to general goods storage (Simon 2010). Along with the transitioning of warehouses, the sugar industry began sugar refining on the waterfront (O'Connell 2018).

Red Hook's waterfront further evolved to include new industries and reflect technological changes. The State of New York attempted to modernize its canals, which it deemed inefficient (Simon 2010). In addition to focusing on the Erie Canal, in 1922, the state built the Gowanus Grain Elevator, also called the Red Hook Grain Terminal (Simon 2010). This massive project was isolated from the rest of Red Hook and proved ineffective in bringing large-scale grain shipping to the area (Gray 1990). The New York Dock Company took over the railroads formerly managed by the bankrupt Brooklyn Wharf and Warehouse Company, and built new large concrete loft buildings, storing agricultural products such as coffee. The New York Dock Company became one of the largest employers in Red Hook (Columbia HP Studio II 2009). In 1915, The American Molasses Company opened up a refinery in Red Hook. The business shipped in and refined raw sugar. It was later part of Sucrest Sugar and later the Revere Sugar Refinery. The massive complex operated until the 1980s (O'Connell 2018).



Aerial View of the Erie Basin



A New York Dock Company Building

By the 1920s, there were many other industries operating in the port area. The Erie Basin was filled with businesses including the Gilbert H. Edgett & Company, which built engines and repaired ships. The Thames Tow Boat Company, which housed coal barges; Brooklyn Fire Brick Works, which made brick and other materials; Philip H. Gill Company, which built grain elevators; and the John Mckenna Lumber Company, were all present in 1920 (Smith 1920, 446). The American Marine Paint Company built a warehouse where it could capitalize on the shipping industry (Columbia HP Studio II 2009). From 1907 to 1966, Ira S. Bushey & Sons company operated a shipyard, fuel terminal, and fleet of boats, including the Mary A. Whalen, now home to PortSide New York.

Despite some technological obsolescence in Red Hook, the Erie Basin was the busiest port facility in the U.S. in 1939, and there were major developments in Red Hook linked to the port. (WPA Guide to New York City 1939). The WPA Guide (1939) notes the presence of large slums in Red Hook during the Depression (Federal Writers Project N.Y. 1939). As a result, the first of the NY Housing Authority Red Hook developments were built to house dock workers and families in 1939 (Federal Writers Project (N.Y.) 1939). Additionally, the last marshland in Red Hook was filled in to allow for more development (Malka 2010). The heavily polluted Gowanus Canal was fitted with a large propeller to circulate its water back into New York Harbor (Columbia HP Studio II 2009). Even with these large scale efforts, Red Hook's future was uncertain.

In the 1960s two events happened that further isolated Red Hook and rendered their waterfront obsolete. First, in 1962, the Port Authority of New York & New Jersey opened the world's first container port: Elizabeth-Port Authority Marine Terminal (History, n.d.) in New Jersey. Container ports handle cargo packed in large sealed boxes (A Preservation Plan For 2009). This was the new way to ship and store goods. Red Hook's port was unable to keep up. It was smaller and outdated with no space for the required elements of container shipping.

As such, the jobs moved elsewhere. Further, the ferry service from Manhattan stopped serving Red Hook in the 1960s (Howard 1965). This resulted in further isolation for the waterfront and for Red Hook.

Red Hook did, however, attempt to fight back. In the 1980s, a small container port was built (Red Hook Then To, n.d.). Unfortunately,



The Mary A. Whalen



Red Hook Grain Terminal

this did not make up for the loss of jobs with the opening of the modern Elizabeth-Port Authority Marine Terminal. Another stab at resurrecting industry was the development of the Erie Basin Fishport. The goal was to create a place to farm and process fish (Martin 1983). However, the Fishport went out of business after two years in 1989 because it failed to attract fish to process or tenants to man the fishport (Quint 1989).

As the twentieth century headed to a close, the last vestiges of industry were extinguished. Revere Sugar Refinery went bankrupt in 1985 and its sugar processing plant located on the waterfront then sat in vacancy (O'Connell 2018). Finally, in the 1990s, the Port Authority began selling off sections of the waterfront to the highest bidder (Abrams 1991).

In the 2000s, there were a number of major projects on the Red Hook waterfront. In 2006, a Fairway Market opened in an old warehouse and the Port Authority opened the Brooklyn Cruise Terminal on the outside of the Atlantic Basin (Montalbano 2019). An Ikea store opened in 2008; its construction involved tearing down Civil War-era warehouses and filling in the graving dock at what had been the Todd Shipyard. Soon after filling it in, a city report documented a need for more drydock space (Signore 2008). In 2009, Christie's Auction House began using a New York Dock Company warehouse to store valuable items (Cardwell, 2009). These developments were seen by their boosters as bringing commerce back to Red Hook but were viewed by their detractors as serving the gentrifiers and greater New York City residents over the existing Red Hook residents.

In the 2010s, there were discussions about closing the small shipping port controlled by the Port Authority of New York and New Jersey (Geiger 2018). Many felt that it was unrealistic to try to maintain a small shipping port in Red Hook because it is not economical for containerization. However, the port remains open to this day. In 2012, Hurricane Sandy hit the area and added further struggles to the neighborhood as it worked to recover from devastating flooding (Red Hook Residents Reflect 2017). As Red Hook moves deeper into the 21st century, its struggle to diversify its industry continues. Opportunities to return to storage and warehousing have come through interest in e-commerce in the area. Introducing e-commerce storage warehouses would return Red Hook to dependence on commercial and maritime trends, keeping the neighborhood reactive rather than resilient when writing its own history.



A map of container ports in New York and New Jersey, Port Authority of NY and NJ



A view of the Red Hook Container Port

## TRANSPORTATION

The history of Red Hook is deeply tied to the history of transportation. The area was built around the waterfront industry, for the transportation of goods traveling across the water between New York and ports around the world. Early nineteenth century water transit between Manhattan and Red Hook made it a popular residential area for working class people, both those who worked on the waterfront and those who commuted between the two cities. The early twentieth century advent of light rail service across the Brooklyn Bridge bolstered this popularity (Simon 2010). Just as increased access to the neighborhood via public mass transit options like ferries and trolleys raised the tide of the neighborhood, their loss contributed to its deterioration and depopulation in the 1940s and 1950s, along with sweeping infrastructure programs that cut across the neighborhood for the creation of expressways systems with the Gowanus Expressway and Brooklyn-Battery Tunnel, largely bypassing Red Hook. While transportation options stagnated for the last half of the twentieth century, changing demographics in the early 2000s brought with them a return of public mass transportation opportunities by water and by land. Continued commercial interest in Red Hook has the potential to bring an influx of commercial transit over roadways throughout the neighborhood; likewise a rising population may put strain on the existing infrastructure and public transit services. Various modes of transportation have shaped Red Hook throughout history and continue to do so today.

in the 1940s and 1950s, along with sweeping infrastructure programs that cut across the neighborhood for the creation of expressways systems with the Gowanus Expressway and Brooklyn-Battery Tunnel, largely bypassing Red Hook. While transportation options stagnated for the last half of the twentieth century, changing demographics in the early 2000s brought with them a return of public mass transportation opportunities by water and by land. Continued commercial interest in Red Hook has the potential to bring an influx of commercial transit over roadways throughout the neighborhood; likewise a rising population may put strain on the existing infrastructure and public transit services. Various modes of transportation have shaped Red Hook throughout history and continue to do so today.

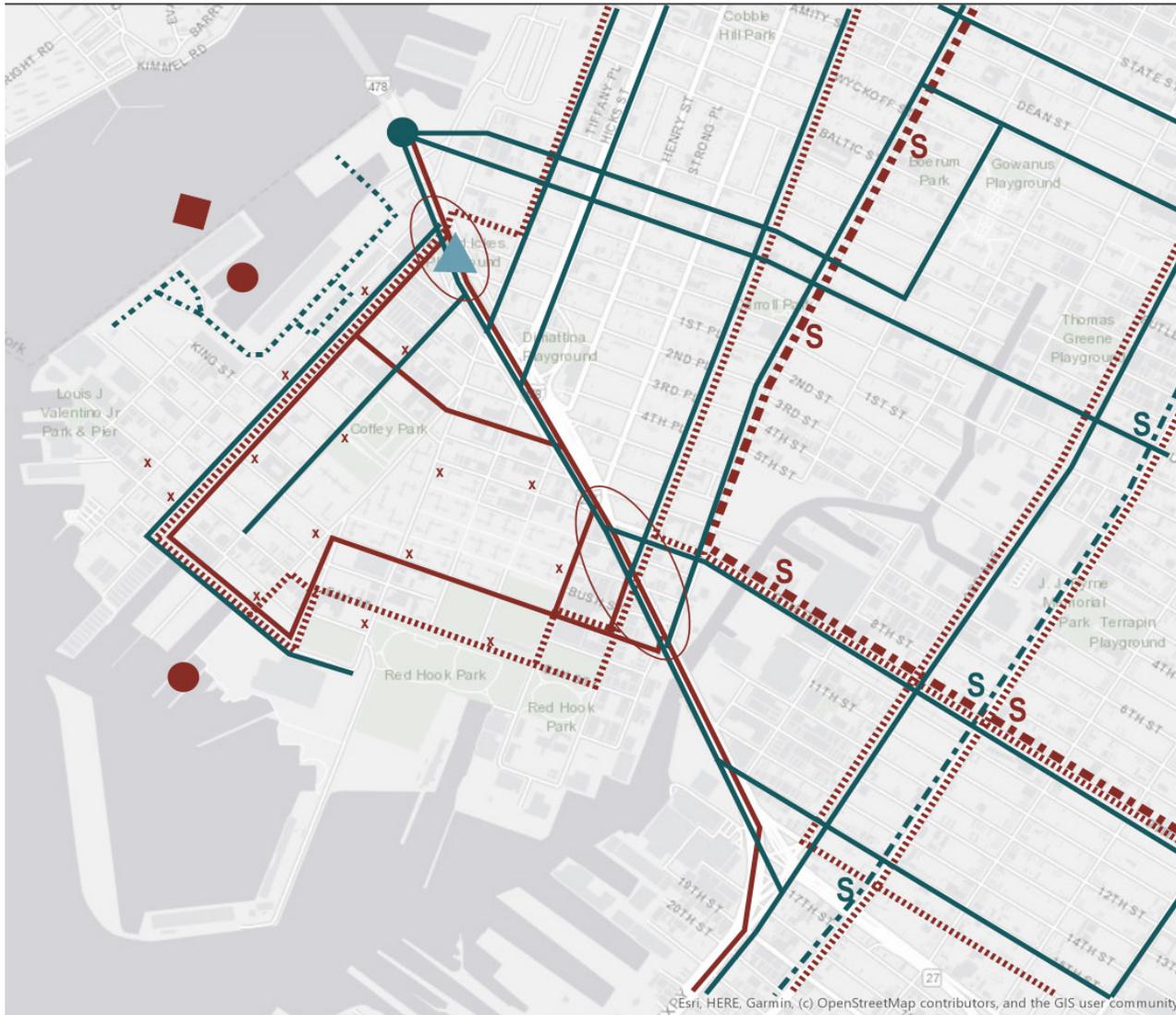
The first formal infrastructure for transportation in Red Hook began

with the establishment of the street grid over the area in the 1830s, including Hamilton Avenue as a main cross-grid thoroughfare (Graves 1836). The street network served as arteries for transit of pedestrians, carriages and wagons and, along with the Gowanus Turnpike and Bridge, connected Red Hook to the rest of Brooklyn and Long Island (Simon 2010). That grid has expanded with the land mass of Red Hook, but otherwise remained nearly the same until the middle of the 20th century (Pincus 1920).

Not long after the grid was first established, investor Daniel Richards established the Atlantic Basin (Cornwell 1848). In order to attract a residential population to the area to build up a workforce with easy access to the Atlantic Basin docks, Richards and other businessmen established the Hamilton Ferry in 1846, with a landing where Hamilton Avenue met the East River. They subsidized it for several years until it had sufficient ridership so as to be self-sustaining, at which time they relinquished it to the Union Ferry Company as they had “labor enough to develop their own enterprise without entering into new fields” (Stiles 1870).



1836 Map of south Red Hook showing early street grid



- LEGEND**
- Historic Ferry Stop
  - Historic Trolley Lines
  - ⋯ Historic Rail Lines
  - - - Historic Elevated Subway Line
  - S Historic Subway Stop
  - Modern Ferry Stop
  - ◆ Modern Cruise Ship Port
  - ⋯ Modern Bus Line
  - - - Modern Subway Line
  - S Modern Subway Stop
  - Modern Truck Route
  - X Modern Bike-Share Stations
  - BQE Pedestrian Crossings
  - ▲ Brooklyn-Battery Tunnel Ventilation Building

Overlay Map of Historic and Modern Modes of Transportation In and Around Red Hook

By 1850, there was a greater tonnage of ships registered from New York's ports than from the next four largest American ports combined (The Port of New York, n.d.). Roughly 150 boats could dock in the Atlantic Basin alone and the area continued to rapidly develop (Simon 2010). Wharves began to spring up along the East River. As the area around the Atlantic Basin quickly filled up, another private investor, James Stranahan, hired laborers to begin cutting away at Bergen Hill, in what is now Carroll Gardens, in order to extend the land mass around the Atlantic Basin and allow for additional space for larger ships (Gaudet, n.d.).

The mid-to-late nineteenth century saw further development of the inland portion of Red Hook. Hamilton Avenue was already one of the busiest thoroughfares in the city, as traffic coming in on the ferry moved along it further into Brooklyn. Horsecars began to service Red Hook in 1850s along Van Brunt and Richards Streets, bringing public transit deeper into the residential areas of Red Hook. The Brooklyn Bridge opened in 1883, and by 1900 many of the horsecars servicing Red Hook had been replaced with electric streetcars (Thomas, n.d.).

Between 1880 and 1900 commercial freight traffic dominated the Atlantic Basin; meanwhile steamships carrying passengers would have to dock further into Brooklyn. Heavy traffic at the waterfront did not necessarily bring heavy traffic to the inland roads of Red Hook. Most freight ships would offload their cargo onto the docks or directly onto lighters, a type of transfer barge, that would take the cargo to railway depots in New York City or New Jersey. Goods that needed to be stored would be transferred to one of the many warehouses on the Red Hook waterfront and eventually transferred by water to its next destination (Stiles 1870). However, the 1910s and 1920s saw the rate of growth beginning to slow in Red Hook (See Figures 7,8,9,10 below) The New York Dock company developed a large warehousing and manufacturing center in Brooklyn that began to handle much of the freight traffic previously handled by the Red Hook wharves. Rail lines for freight had served the Atlantic Basin since the early 1900s but they were not as connected or extensive as the newer warehousing hubs. This started a downward trend not only at the waterfront, but for transportation service to Red Hook as well.

In the 1920s the streetcar service on Van Brunt street shortened and the Hamilton Avenue Ferry ridership began to dwindle. The ferry went from serving over 3 million patrons in 1923 to about half of that in 1930 (How the Hamilton Avenue, n.d.).



Hamilton Avenue Ferry Boat



1916 Map of Red Hook showing trolley lines on Van Brunt Street and Richard Street

The ferry was discontinued by 1942, and streetcar service was terminated by the mid-1940s (Campbell-Dollaghan 2016). This left bus service as the public mass transit option within Red Hook for nearly half a century.

The 1930s and 1940s saw dramatic changes in transportation connectivity and infrastructure in Red Hook. Mayor Fiorello La Guardia and Robert Moses, then head of the Triborough Bridge Authority, sought to build an elevated highway to carry traffic around the edges of the outer boroughs, from the southern tip of Brooklyn around Queens and on to Westchester and towns to the north; Manhattan would tie into this parkway system by a tunnel to Brooklyn (Caro 1974). These roads were ultimately planned to converge over Hamilton Avenue on the northern border of Red Hook and their construction would drastically change the landscape of Red Hook.

Construction of the Gowanus Expressway began in 1939 in Sunset Park; the elevated highway ran north to Hamilton Ave and turned west, running nearly the full length of Red Hook before reaching the interchange connection with the Brooklyn-Queens Parkway which ran north to downtown Brooklyn (Eastern Roads, n.d.). Hamilton Avenue ran below the expressway, widened from four lanes to ten to allow for local traffic on either side of the elevated roadway structure. Construction of the Brooklyn-Battery Tunnel began in 1940 to connect the new expressway to the southern tip of Manhattan. The Expressway was completed in 1946, with the tunnel following



Intersection of Rapeyle Street and Hamilton Avenue, c. 1940

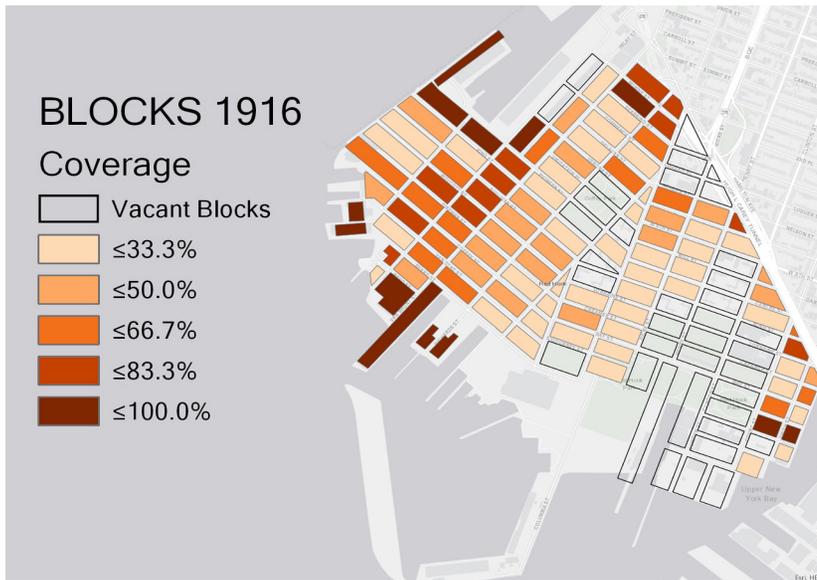
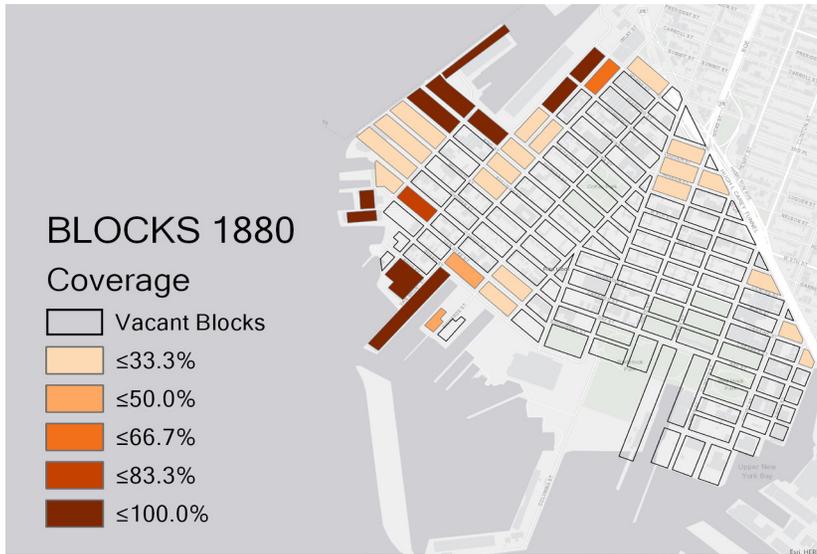
in 1950. Construction of the tunnel required demolition of several blocks on either side of its route and the displacement of thousands of people; likewise, the construction of the Gowanus Expressway required the eviction and relocation of more than 1,300 families and over one hundred businesses. This was not an extraordinary loss by the measure of Robert Moses; over the course of his career, it's estimated that his roadway projects caused the eviction of more than a quarter of a million New Yorkers from their homes (Caro 1974).

The new expressway system created an impermeable barrier across more than half of Red Hook's northern border, with no means to cross for more than half a mile between Woodhill Street and 9th Street, effectively cutting it off from the rest of Brooklyn except at the most distant northeast and northwest corners. This barrier continues to impact the community today.

With public ferry and trolley services stopped, the only public mass transportation directly serving the neighborhood was bus service, which was introduced in 1939 (Campbell-Dollaghan 2016). The alternatives were to commute by private automobile or to leave the neighborhood - around the barrier of the Gowanus Expressway - to reach the subway lines in Gowanus. Bus traffic remained the primary mode of transportation for Red Hook between 1950 and 2000 (Red Hook Buses Planned 1936). An MTA Brooklyn Bus Map from 1969 shows that the B61 and B57 were servicing the neighborhood. These lines have survived virtually unchanged to today.



Intersection of Rapeyle Street and Hamilton Avenue, c. 2013



Percent of Land Developed in 1880 and 1916

Land use in 1903 and 1916

From the perspective of commercial automobile transport within Red Hook, one benefit of the new tunnel and expressway was that freight trucks, which were banned from the bridges and most of the parkways, could legally pass through the tunnel and connect the waterfront warehouses to Manhattan and beyond. The increased freight traffic was one of the reasons cited for the almost immediate widening of the Gowanus Expressway after the Tunnel opened (Caro 1974). One industry taking advantage of increased freight truck mobility into and out of Red Hook was waste transfer stations. Businesses took advantage of the high number of vacant lots and cheap land prices in Red Hook, which arose as an effect of the declining industry on the waterfront, and built waste transfer stations, temporary holding facilities for garbage, that brought with them constant freight-truck traffic and its associated noise and air pollution (Farrell 2000). This pollution ultimately led to a groundswell of community activism against the waste stations and their truck traffic (Hays 2001). The city government did eventually regulate commercial traffic on local streets, but not until the early 2000s (DOT 2020). Here, truck routes were implemented, limiting freight traffic to designated routes in order to protect residential corridors and other non-commercial areas from the noise, pollution, and pedestrian dangers of large trucks (Motorists and Parking 2020).

Other developmental shifts around the turn of the millenium affected transportation in Red Hook as well. The defunct freight rail lines

around the Atlantic Basin were removed in 1996. In 2006, part of the Basin was redeveloped into a cruise ship terminal (Goldstein 2016) and, by 2010, 120,000 passengers passed through the Brooklyn Cruise Terminal annually and spent \$30 million while in New York (Dolnick 2011). However, many community members argue that this economic surge benefits only Manhattan and not local businesses. The municipal ferry returned to Red Hook in the Atlantic Basin, in 2017 (Guzenfeld 2017). These ferries provided a public alternative to the private water taxi service offered by IKEA from 2014 onward connecting their dock at the south end of Red Hook to Manhattan (Pham 2014). New types of transportation services were introduced as well, including bike-sharing stations in 2016 (Major Citi Bike Expansion 2019) which have now expanded to fifteen stations in Red Hook. Additional changes may be ahead as the city looks to potentially bring new transportation options, such as a modern trolley - the Brooklyn-Queens Connector - and new industry, which would bring its own specific transit needs, to the Red Hook community.

The history of transportation is interwoven with the history of Red Hook. As a residential area of primarily working class communities, the prevalence and relative affordability of public mass transportation was integral to allowing residents to commute efficiently. The high point of transportation options - when ferries, trollies, and bus lines were all servicing the major areas of the neighborhood - coincided with the peak of population in Red Hook.



Map of 311 Complaints in Red Hook



Gowanus Expressway from below, c. 2019

Between 1940 and 1950, the decade in which most public mass transit options were lost in Red Hook, the population of the neighborhood dropped by half (Social Explorer, n.d.). Public transportation had created demand for residences in Red Hook and it follows that its loss would change how it was inhabited (Stiles 1970). While Red Hook's population remains near post-peak low levels today, renewed interest in alternative industries for the neighborhood and residential speculation in the last two decades have contributed to new residents in Red Hook and the development of various transportation options. Although these efforts have been met with mixed success within the community, it is obvious that any planning for the future of the neighborhood will need to include provisions for adequate transit - public, private, and commercial (Gill 2016).

## HOUSING AND RECREATION

Housing and recreation in the Red Hook neighborhood can be divided between four major phases: pre-colonial and early settlement prehistory, informal housing before the public investment that arrived during the 1930s, re-urbanization through public funds and public housing, and a recent shift towards private and speculative-based investment. The main factors and themes that altered the housing context within the neighborhood were the development (and subsequent crash) of Red Hook's maritime economy, the economic crash of the Great Depression, the New Deal era public policies, and finally the modernist approach to public housing and urban design.

### *Shantytowns and Squatter Camps*

Self-constructed houses and settlements were present in Red Hook ever since the 1800s, with examples of shantytowns such as Slab City (Spellen 2018; PortSide NewYork, n.d.). These were seen as starter homes for immigrants. Red Hook contained one German and four Irish shanty towns. While their exact location could not be mapped, the descriptions of Red Hook place the front end as the area where shanty towns and informal housing were concentrated.

These settlements are also referred to as "spontaneous settlements," as they appeared and evolved unplanned and unregulated. This is opposed to slums, which are overcrowded and in poor physical condition, but traditionally derived from within the formal housing sector (Caves 2005). These self-built homes were fabricated out of

collected and salvaged materials with no infrastructure, exemplifying the poverty of these initial informal housing settlements. By the twentieth century, the shanty towns had been removed, but as a result of the decline in the maritime industry Swedish and Norwegian sailors became stranded in New York and established the squatter camp of Ørkenen Sur (Spellen 2018). This settlement was located along a property owned by the New York City Department of Transportation, slated to become a rail switching yard, but the project was never executed (Spellen 2018). These shantytown dwellers built their homes themselves and paid "ground rent" for the land (Salguero 2020). Rather than living in abject poverty, the residents kept animals, performed small scale farming, had a local economy, and delineated their own street grids and patterns (PortSide NewYork, n.d.).

These shantytown settlements and their "ground rent" structures are significant to the narrative of Red Hook for their local economy and internal dynamics. The type of informal housing that followed chronologically in the same space, the Hooverilles, did not follow the same patterns.

### *Hooverville*

In the wake of the Great Depression, the economic downturn left millions of people without work and, eventually, hundreds of thousands found themselves homeless (Spellen 2018). This surge in homelessness and informal housing happened during the presidency of Herbert Hoover, who was seen as guilty for the misfortunes of the population as much as the Wall Street "fat cats." That is the origin of the "Hoover" name of this type of informal housing. Brooklyn had two of these types of settlements, the largest one in Red Hook and another in Gowanus (Spellen 2018). Red Hook's Hooverville, called Tin City, among many other names, was located between Hamilton Avenue and the waterfront, where now most of the Red Hook Recreation Center and park are located. By 1932, the settlement was well established at the base of Henry street, with population peaking in 1933 at over 1,000 dwellers (Spellen 2018).

Living conditions in these settlements were subpar when compared to current standards, with no water, sewage, or toilet facilities, little heat and limited comforts (Spellen 2018). There was a reliance on institutional and public humanitarian aid (such as the Salvation Army) to care for this population (Spellen 2018).

Once the policies put in place by the New Deal started taking effect, there was a decline in population numbers as people started moving away from Hoovervilles and Tin Can City in particular. New York City officials considered the region a public health concern and shameful for the city's image. The federal government was considering the creation of a public housing program and Robert Moses was the proponent of a park and recreation center on the site of the Hooverville. Moses put his plan in place and now the park occupies the region where Tin Can City was formerly located.

### **Red Hook Houses**

Prior to the removal of the unofficial housing settlements in Red Hook, there had been an ongoing debate as to what should be done about the growing housing crisis in the neighborhood, and how exactly the areas considered slums could be replaced. There was a very visible need for affordable housing, particularly for the Italian and Irish families who worked in Red Hook's maritime commerce industry (Spellen 2017). As the Great Depression led to a huge rise in unemployment, the Works Progress Administration was formed by President Franklin D. Roosevelt to increase the number and scale of federally-funded works projects across the country. As New York City was becoming more densely populated, the construction of public housing, such as the Red Hook Houses, were overseen by the WPA in tandem with the newly-formed NYCHA, breaking ground in 1938.

By June 1939, the oldest buildings of the complex, today called Red Hook East, were fully finished and ready for tenants, who moved in soon after. The founding of the New York City Housing Authority established a connection between municipal powers and affordable housing, drawing inspiration from the state-funded housing already in place in Europe by the 1920s (von Hoffman 1996). Following an early twentieth century trend, the design of the housing project was particularly idealistic, intending to provide clean, modern, airy apartments with ample light and privacy. Architect Le Corbusier unveiled his innovative design for Plan Voisin in Paris in 1925, with the intent being that this design itself would fight the issues that the slums had faced, and that if individuals were provided with adequate housing, the crime and disease rates themselves would decrease (Lubin 2013). As the Red Hook Houses were some of the earliest housing projects in New York City, Alfred Easton Poor's design is reflective of this trend, combining these modern facilities with green space.



Ørkenen Sur shanty settlement dwellings



Aerial picture highlighting the historic overall location of the different forms of informal housing in Red Hook

However, while the intention of the design was quite progressive, the original NYCHA screening process was not, and created issues unto itself. In order to qualify for housing in this facility, applicants had to meet “morality standards” set by the organization. If one received any welfare assistance, were a single mother, or even did not have enough furniture, it could lead to the dismissal of an application for housing (Ferré-Sadurní 2018). This aspect of social injustice in the NYCHA housing system was not corrected until 1968, and by this point, the system had begun to fall into disrepair. Lack of resources and management exacerbated the issues the already aging complex faced, and the community faced new issues of violence and crime.

### ***Privately-Owned Housing***

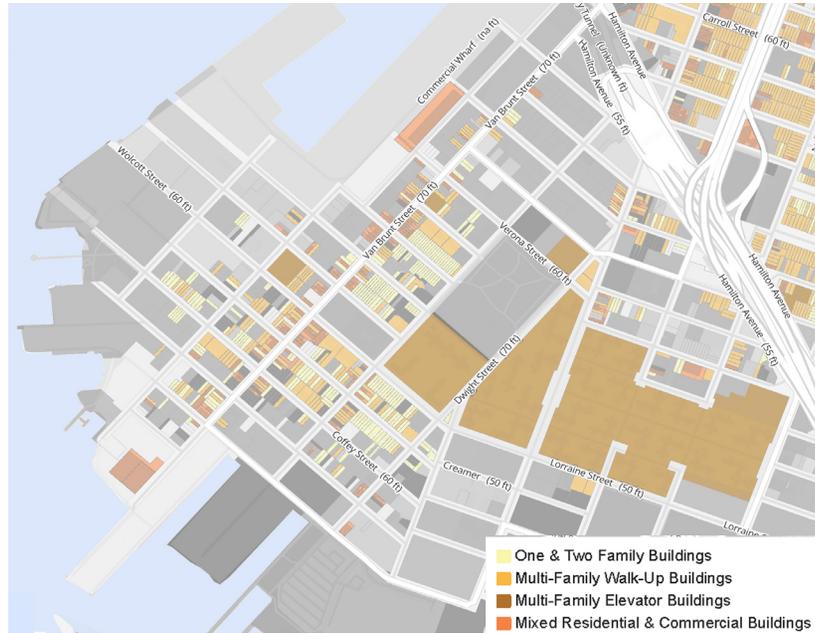
Most of the privately owned housing is situated in the west, also known as the “back,” of Red Hook. Since the 19th century, VanBrunt Street has been the dominant commercial street in this area. Privately owned housing was largely self-constructed, small-scale wooden houses before the 1890s. However, unlike Shantytowns, these houses developed in a planned manner adhering to the city’s block grid pattern (Broomly 1880). From the 1890s to the early twentieth century, wooden houses were gradually replaced by brick dwellings (Hyde 1898).

Residential building typologies in the early twentieth century largely consist of two to four story row houses with basements. Compared to contemporary row houses in central Brooklyn or Manhattan, those in Red Hook were built with more affordable techniques and skills and less decorative ornament, often without stucco or paint on exterior walls. By the early 1930s, similar urban structures can be seen in the “front,” but were later replaced by the Red Hook Houses. The Houses were built to house workers in the shipyards and their families, making it an increasingly crowded area as employment grew.

Overcrowding meant that though apartment buildings were few in the area, most of the row houses could not be single-family dwellings. In extreme cases, young immigrants who just started their jobs in shipyards had to sleep in stairway corners before settling down (Salguero 2020). The discussion of creating more residential space actually started long before that. A 1918 newspaper article reported on a suggestion of 500 yardmen’s homes to be built in Red Hook, for those who worked in and around Erie Basin (New York Times 1918).



View of Red Hook Houses (Tower-in-the-Park design visible)



Mapping of current residential land use

Red Hook's population peaked in the 1930s, when the Red Hook Houses opened (U.S. Census 1930). Public facilities and organizations developed alongside housing, usually in service to the rising population of immigrants. In 1854, the Visitation of the Blessed Virgin Mary Parish was founded, commissioned by Italian, Irish, and German factory and dockworkers (Visitationbvm-brooklyn.org 2020). The church was completed in 1878, but was destroyed by fire in 1896. Reconstruction began immediately, resulting in the present Gothic Revival building. In the same block is the Parochial School, currently used as the Red Hook Justice Center.

Red Hook Park became one of Robert Moses' first large-scale projects as Parks Commissioner, after his appointment in 1934. Assembled from land acquired by the city in 1913, originally for a freight rail line, and from area cleared of Shantytowns in the early 1930s, Red Hook Park was officially opened to the public in 1936 and was met with enthusiasm by residents, with more than 40,000 cheering on the ribbon-cutting. As more lots became available, they were incorporated into landscape architect Gilmore D. Clark's design (New York City Parks Department, n.d.). Some of the land integrated into the Park was the former site of the Columbia Smelting and Refinery Works, which operated until the late 1930s. This land had many environmental issues associated with it, as the factory was a lead smelting factory; those issues continue to affect the site today.

The Red Hook Recreation Center also opened in 1936, just across the street from the Park. Moses was particularly interested in implementing safe swimming around New York City, as he not only was an avid swimmer, he felt the public bathing facilities in place were inadequate and unsanitary. However, it should be noted that Moses may have had these feelings because of his own racial bias, and because of this, kept the majority of his projects racially segregated (Landmarks Preservation Commission 2008). The Red Hook Recreation Center opened in the summer of 1936, in a large-scale project of public pool implementation on the agenda of Moses and Mayor Fiorello H. LaGuardia, where multiple pools were opened around the city that summer. Swimming was not a novel concept to those living in the neighborhood, as there had been a so-called "floating pool" at the end of Conover Street (originally a means to avoid the polluted river, but in reality the same water just floated on a pontoon), but the Landmarked Art Moderne-style bathhouse and outdoor pool were a new resource for the neighborhood not located near a public beach (LPC 2008).



Historic photograph of the "back" along the north side of Sullivan Street



Parochial School of the R.C.

## WATERFRONT RECREATION

The waterfront was not initially a space for recreation in Red Hook. In recent years, however, there has been an uptick in the development of recreational spaces on the waterfront, such as Valentino Pier transitioning from a commercial to public space. This trend is likely to continue as the population in Red Hook continues to rise and there is more demand for public recreation space.

Historically, the narrative of housing and recreation in Red Hook has been one of desire for more affordable housing, as well as the implementation of recreational activities, particularly ones that use Red Hook's available land space, and that fit the needs and desires of the residents. Thus, activities that may not be available to those living in more densely populated areas of the city, such as community-driven swimming pools and parks, are available to the residents of Red Hook, and would have served as a crucial point of the modernist approach to urban development during the building of the Red Hook Houses. However, the issues of "The Back", which is the area closest to the waterfront, versus "The Front", which is mainly comprised of The Red Hook Houses, has become even more divided as the housing has developed. The Back has seen an uptick in owner-occupied houses, which deviates from the historic trend of the neighborhood being mainly renter-occupied. The newest (and most expensive) developments are not being marketed to those already residing in the neighborhood. Even though the majority of the Red Hook residents live in the Red Hook Houses, and that is where recreation has historically been concentrated, the facts presented point toward a shift away from the historic norms of housing and recreation, and away from the majority population.



Red Hook Recreation Center



Red Hook Park soccer fields

## CRIME AND RACKETEERING

Today, Red Hook is one of Brooklyn's safest neighborhoods (NYC Police Department, 2019). Yet, historically, Red Hook has been perceived and portrayed as a hub of criminal activity. The history of crime in Red Hook can be divided into four main periods: Isolated Criminal Incidents (Pre-1920), Organized Crime and Racketeering (1920-WWII), Transition from Organized Crime to Drug Crime (WWII-Cold War), and a Neighborhood on the Mend (1990-Present).

While crime in Red Hook has not followed a consistent pattern, the neighborhood has shown diverse ways of resisting and recovering from influxes of criminal activity. The various forces at play over the course of the history of crime in Red Hook, from powerful mafiosos controlling the waterfront to the creation of the Red Hook Community Justice Center, have shifted in importance over the past century and have contributed to the changing character of the neighborhood.

Red Hook was not associated with crime until the early-twentieth century when Al Capone's criminal career famously began in the neighborhood. Born in Brooklyn in 1899, Capone participated in small-time street gangs at Red Hook's docks; his participation in large-scale organized crime started only when he moved to Chicago in 1920 (History.com Editors 2009). History has over-emphasized Capone's role in the neighborhood due to his later notoriety.

Organized crime began to dominate the neighborhood in the 1920s, after Capone's departure. This takeover occurred primarily through mafia infiltration into the International Longshoremen's Association (ILA), a dock workers' (or longshoremen's) union. In fact, mafia power permeated the ILA so thoroughly that Joe Ryan, elected ILA "president for life" in 1927, resigned in 1953 due to a state investigation into the ILA's involvement with waterfront racketeering. This investigation found Ryan to be corrupt (Otis 2010; International Longshoremen's Association, n.d.).

Perhaps the most powerful mafioso in Red Hook in the 1920s-30s was Albert Anastasia, an Italian immigrant with a criminal history who became heavily involved with the ILA. By the 1930s, Anastasia served as a pier superintendent for the ILA and "dominated six locals of the International Longshoremen's Association" (U.S. Federal Bureau of Investigation, n.d.).



ILA "president for life" Joe Ryan



Mafia member and ILA pier superintendent Albert Anastasia

It was common for mafia members to serve as senior members of the ILA, but Anastasia was particularly powerful in both organizations (Otis 2010). Within the mafia, Anastasia founded Murder, Incorporated, an enforcement arm for Brooklyn's Italian-American and Jewish mobs (U.S. Federal Bureau of Investigation, n.d.).

After serving in World War II, Anastasia "quit the waterfront" and moved to New Jersey although he was linked to the importation of heroin to the United States in 1951 (U.S. Federal Bureau of Investigation, n.d.). It is unclear if he imported the heroin into Red Hook (U.S. Federal Bureau of Investigation, n.d.). Additionally, members of Anastasia's organization appear to have maintained control of the waterfront until his 1957 murder. Following his death, mob warfare and struggle for control over Red Hook ensued. Notably, though, most mafia-owned property was located north of Hamilton Avenue by this time, suggesting that, while mafia racketeering occurred along Red Hook's waterfront, the location for many of their other criminal activities was shifting to other Brooklyn neighborhoods (Cook 1972; Mathew 2017).

There were numerous anti-racketeering efforts throughout this time period. In 1933, four organizations of businessmen signed a petition urging Port of New York businesses to stop alleged rackets on the piers (New York Times 1933). Often, the mafia executed these activists. Such was the case of Frank Fuzo, a florist and "bitter enemy of racketeering," who was murdered in 1931 for discouraging fellow merchants from paying kickbacks to racketeers (New York Herald Tribune 1931). A notorious case was the slaying of Peter Panto, who disappeared in 1939, after hosting meetings for "insurgent longshoremen" (New York Times 1941). His body was found in a New Jersey lime pit eighteen months later, and the crime was linked to Albert Anastasia (New York Times 1941).

Ultimately, mafia activity in Red Hook declined through the late 1960s and 1970s, likely in part due to the opening of the Elizabeth Port Authority Maritime Terminal in New Jersey. This new terminal led to a decline in Red Hook's waterfront industry - mafiosos' primary draw to the neighborhood (Port Authority of New York and New Jersey, n.d.). The Racketeer Influenced and Corrupt Organizations Act (RICO) passed in 1970 also sparked a city-wide reduction in mafia power by permitting the prosecution of members for criminal acts that they ordered, but did not themselves commit (Mathew 2017).

The large-scale sale and usage of crack cocaine, hereafter "crack," hit Red Hook in the late-1970s (Colt 1988, 93). Crack quickly became a dominant force in Red Hook, though, unlike in media portrayals, it was not the "crack capital of the world" (Colt 1988). Arguably, it was not even the crack capital of NYC. Crack was a nationwide crisis and considered the single most difficult problem facing NYC's public housing (Pitt 1988).

However, drug-related shoot-outs occurred almost daily in Red Hook. At the medical clinic, seventy-five percent of drug cases involved crack. Many local businesses, including a pizza shop, candy shop, and ice cream truck, sold drugs or drug paraphernalia (Pitt 1988, 93-96). According to Life Magazine, everyone in the Red Hook Houses was a user, a dealer, or a "hostag[e] to the crack trade" (Pitt 1988, 93). While this statement may seem hyperbolic, crack affected many aspects of daily life. Parents feared letting their children play outside, as drug dealers sold out of needle-infiltrated playgrounds (Pitt 1988, 93). Many children spent long periods of time unsupervised due to their parents' drug addiction (Pitt 1988, 99). Some young women resorted to prostitution, which rose greatly with the crack industry, to support their drug habits (Pitt 1988, 96).

Red Hook residents could not rely on the police for support, as they were absent and, at times, abusive. The police did not patrol the Red Hook Houses, only entering the complex when responding to calls; however, many residents did not report drug-related incidents for fear of retaliation from drug dealers (Pitt 1988, 93; Gonzalez 1992). Even when present, police officers were not always helpful. A former Red Hook officer unapologetically admitted to ransacking homes without warrants, arresting people for looking suspicious, and using racial slurs. He claimed that the 76th Precinct, where much of Red Hook lies, was the "dumping ground" for officers - a form of punishment for officers who had erred in other precincts (Yates 2019).

Consequently, grassroots efforts led the resistance to Red Hook's crack industry, eventually contributing to its decline. Residents mobilized to defend their neighborhood and subsequently regained a sense of power. Women spearheaded the neighborhood tenant patrol and teenagers formed a youth patrol (Colt 1988, 93). Community outrage towards crime reached a climax in 1992 following the murder of longtime P.S. 15 principal Patrick Daly. While searching for a fourth-grader who left school after a fight, Daly was caught in the crossfire between rival drug gangs (McFadden 1992).

The community recognized Daly's attempts to empower at-risk children and used his death as motivation to create a safer neighborhood (Fried 1993). In the decade following Daly's death, crime declined sharply in Red Hook. This decline followed municipal and national trends, although Red Hook experienced slightly more drastic changes. By 2005, murders fell seventy-five percent, robberies fell sixty-two percent, and assault fell forty-five percent compared to a fifty-six percent decline in violent crime in NYC and a twenty-eight percent decline nationwide (Bleyer 2006; Francis, n.d.). Many factors accounted for the reduction in crime in Red Hook and beyond. NYC's police force expanded by thirty-five percent in the 1990s and an economic boom increased employment. Additionally, Mayor Rudy Giuliani enacted his "broken windows" policy which policed lower level crimes in an attempt to deter more serious offences, although notably it led to some significant civil liberties violations and racial profiling (Francis, n.d.).

Yet some Red Hook-specific factors explain the neighborhood's heightened success in combating violent crime. Greg O'Connell, a former narcotics cop, purchased properties in Red Hook because the "lawlessness and drug use" did not intimidate him (Alexander & Maloney 2019). While it does not appear that O'Connell deliberately tackled crime in Red Hook, he has helped foster community programming by renting to nonprofits for free or at below-market rates (The Real Deal 2010).

The redesign of the Red Hook Houses, beginning in 1996, also served as a key factor in the decrease of crime in Red Hook. In the late 1980s, a team of NYCHA landscape architects studied the area to determine the types of changes that could align with Crime Prevention through Environmental Design (CPTED). CPTED is an extension of the "broken windows" theory that landscape architects used to address unwelcoming features of the Red Hook Houses. For example, many outdoor spaces were covered in asphalt, providing ample space for "drive-up" drug deals that prevented the space from being used for family-friendly gatherings.

To solve these problems, NYCHA installed short fences that delineate property without limiting visual permeability. They also installed brightly colored playgrounds, speed bumps and stanchions to limit vehicular speed and access, and basketball courts for teens and young adults (Speckhardt 2001).



A Red Hook woman photographed while under the influence of crack cocaine



Longtime P.S. 15 principal Patrick Daly who was killed in the crossfire of rival gangs

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The main catalyst for the decline of crime in Red Hook was the Red Hook Community Justice Center - the nation's first multi-jurisdictional community court (Hynes 2008). Largely in response to Daly's death, this court opened in 2000 in the renovated Visitation of the Blessed Mary School (Donnelly, n.d.). This court emphasizes using common sense and compassion to rehabilitate offenders, rather than using incarceration as the only response to criminal behavior. Fewer than one percent of cases, compared to fifteen percent at the downtown Brooklyn Criminal Court, receive jail time upon arraignment (Lee et al. 2013, 5). Instead, the Center organizes alternative sentencing, including drug treatment, education, therapy, community service, arts programs, and job training. This system attempts to foster reciprocal respect and accountability between the court and defendants (Spadola et al. 2004).



Prior to the landscape architecture redesign, the Red Hook Houses' public spaces were uninviting to residents and easily accessible by nonresidents



The Red Hook Community Justice Center



Following the redesign, the Houses' public spaces featured short fences, benches, and greenspace, to create a welcoming environment for residents

Since the Court's opening, arrests in the precinct have declined and juvenile reoffending has decreased by twenty percent (Lee et al. 2013, 7). The court's impact is not limited to those who have committed a crime. It hosts conflict-resolution services based on Native American peacemaking techniques as a preemptive measure against violence (Donnelly, n.d.). Residents are invited to regular meetings, giving the community a voice (Spadola et al., 2004). There even has been a court-sponsored baseball league (Lee et al. 2013, 5). This ongoing community engagement has caused many residents to perceive the Justice Center as a "homegrown community institution" rather than a government institution (5). Consequently, this court has produced widespread impact and been replicated nationally and internationally (Hynes 2008).

From 1990 to 2019, crime in Red Hook declined overall by over eighty-five percent. Still, Red Hook has not escaped crime or its surrounding issues (New York City Police Department 2020). Neighborhood crimes are not as isolated as they were prior to the 1920s, but they also do not form overarching trends as seen during the heights of the mafia and the crack industry.

To a lesser degree than in the 1980s, drugs have remained an issue in Red Hook, as evidenced by a 2006 drug raid of the Red Hook Houses which led to 143 arrests (Yates 2019). In 2015, a shipment of frozen shrimp stuffed with more than twelve million dollars worth of cocaine was delivered to the Red Hook Terminal (Marzulli 2015). Notably, the convicted drug smuggler was not based in Red Hook (Marzulli 2016). In a separate 2015 incident, the NYPD raided Dell's Maraschino Cherries, a family-owned business which has been operating on Dikeman Street since the 1970s. Inside the factory, they found a marijuana-growing operation. Despite this activity, Dell's has been a positive force in the neighborhood by providing jobs to local ex-offenders and residents of the Red Hook Houses (Frazier 2018). Youth groups also remain a positive force in the neighborhood's attempts to reduce violence and crime. Youth activism has extended well beyond the youth tenant patrol in the Red Hook Houses during the 1980s (Colt 1988, 93). For example, a group of youth of color recently released a report entitled "Real Rites Research" in collaboration with the Red Hook Initiative. They cite over-surveillance and police brutality as well as the lack of youth community activities as factors that contribute to young adults' experiences of violence in Red Hook. In response to these concerns, they call for better leadership and mentorship opportunities for youth rather than more

policing (Real Rites 2019). Red Hook's younger population has and continues to further the legacy of resilience against crime in the neighborhood, fostering generations dedicated to activism.

With competing forces of criminal activity and community organization against crime, Red Hook demonstrates the importance of community activism and resilience in America's working class communities. In the early twentieth century, community members repeatedly stood in public opposition to racketeering occurring along the waterfront despite the ever-present threat of execution at the hands of the mafia. Later in the twentieth century, as the crack epidemic swept Red Hook and the nation, neighborhood residents mobilized to patrol the Red Hook Houses in hopes of creating a safer environment. And today, when faced with police brutality, neighborhood youths spearheaded research that identified Red Hook's ongoing struggles.

Still, the media has not portrayed these stories well and has over-represented criminal behavior. The media portrayal of the crack epidemic helps illuminate the misperception of the neighborhood. Reporters often dramatized incidents relating to crack activity at the Red Hook Houses, perpetuating the highly racialized nature of crack cocaine. Prior to 2010, crack all of the individuals featured in the Life article, were black or Latinx (Gonzalez 1992). Thus, the demographics of the Red Hook Houses may have exacerbated Red Hook's over-association with violent drug crime and crime overall.

Today, media representation of Red Hook continues to highlight criminal activity in the neighborhood, as seen in the New Yorker's 2018 feature on Dell's Maraschino Cherries, rather than the community's ongoing activism and recovery from a national drug epidemic, as evidenced by the Red Hook Community Justice Center. Consequently, outside of gentrifying areas such as Van Brunt Street, Red Hook often is misperceived as dangerous. The history of competing forces of criminality and community resilience in Red Hook have played a significant role in the development of the neighborhood and emphasize why Red Hook emulates broader experiences of blue-collar communities nationwide.





# APPENDIX B ANALYSIS OF PHYSICAL CHANGE IN RED HOOK

After researching and assembling reports regarding the history of Red Hook, the studio then embarked on the task of learning how the neighborhood changed over time. Students gathered information that allowed them to analyze how these changes happened, and more importantly, why these changes occurred. Similarly to the research on the historic context of the neighborhood, the studio divided the work into subjects:

1. Neighborhood Visions
2. Community
3. Urban Form and Architecture, Land and Waterfront
4. Disaster and Environmental Response
5. Public Perceptions

Each group traced their theme throughout time and were able to analyze the recurring trends present in the neighborhood, as well as build an even more extensive picture of Red Hook's past development. This leg of research allowed the studio to not only understand how these changes have affected the neighborhood and its concerns but also gave students a chance to spatialize and visualize the narrative of change.

## NEIGHBORHOOD VISIONS

When analyzing change over time through the lens of different visions for the neighborhood, three periods emerge. First, the initial development of Red Hook from village hamlet to maritime port allowed an urban center to become established, paving the way for Red Hook's future trends of development. Additionally, Red Hook's commerce propels the growth in the neighborhood via industry and a need to support the community surrounding it. Second, Red Hook enters a period of economic distress, leading the visions of the neighborhood to shift from reacting to the industry on the waterfront to trying to stimulate it with various redevelopment projects. Finally, Hurricane Sandy hits Red Hook, and neighborhood visions take on more than economic stimulation; they seek to outsmart and outlast a changing climate.



Ratzer map, one of the earliest illustrative examples of Red Hook, c. 1766



Richard's original plan for the development of Red Hook

## ***Village Hamlet to Urban Center: The Initial Development of Red Hook***

The area that would eventually become Red Hook, originally inhabited by the Lenape people, was established as the village of Red Hoek by Dutch settlers in 1636 (Waterfront Barge Museum 2019). As the colony of New Netherland grew in population and significance, the village's close proximity via boat to New Amsterdam (now present-day Manhattan) would have allowed for it to flourish as an outpost. Thus, the fact that the village was one of the earliest settlements established in Brooklyn is not surprising, strictly from a geographic perspective (Waterfront Barge Museum 2019). In the Ratzer map, published in 1766, Red Hook is shown to be one of the only villages in farm-filled Brooklyn, connected to Manhattan via ferry line (Ratzer, 1766). Thus, Red Hook was able to hold its prominence in the transitional period between Dutch and English rule, proving the strategic location of the village and contributing to a trend that would shape much of its development.

By the Revolutionary War, the village's placement on the edge of Brooklyn was still of great use, and thus, one of the earliest plans for the area was put into place. Fort Defiance was built over the remains of an earlier Dutch fort, chosen based on its waterfront location, on one of the outlying islands that made up Red Hook at the time (Red Hook Waterfront 2015). Built under the orders of General George Washington, the fort was intended to be a means of defense for the island of Manhattan, quite a large prize for those hoping to make leeway in the military campaigns around New York (Red Hook Waterfront 2015). The fort proved to be incredibly crucial during the Battle of Brooklyn, allowing for the Continental army to attack and severely damage British ships from afar, helping to turn the tides of the war, and solidifying Brooklyn's importance as a waterfront stronghold (Red Hook Waterfront 2015).

It is crucial to note that there was no specific "master plan" in place during early plans of developing Red Hook. Especially during the earliest centuries, the village developed in an organic manner, in a way that served those who lived in the area, such as for a means of defense. However, by the nineteenth century, there was a distinct shift towards the concept of a "plan" being applied to the locale's development, and Red Hook soon embraced a plan focused on the commercial growth of the port. Col. Daniel Richards, a man

of extraordinary vision in regards to the future of Red Hook, was the mastermind behind this idea of a developed urban center and port. After having witnessed the economic boom of the Erie Canal, Richards moved to Brooklyn in the 1830s with the hopes of recreating this prosperity (Red Hook WaterStories, n.d., "Atlantic Basin"). He established the Red Hook Building Company, and proposed a huge master plan for the land. He intended to landfill the marshes and basin and establish a street grid in the town, an idea that, while not accomplished during Richards' lifetime, would eventually become reality for the land that encompassed Red Hook (Red Hook WaterStories, n.d., "Daniel Richards").

While Richards was able to build a few large warehouses during his time as a developer, he eventually went bankrupt and had to sell the Red Hook Building Company, as well as the land he had acquired for his projects. However, Richard's dream was not deterred entirely by this predicament. James Stranahan, who had bought the land from Richards, embraced parts of Richards' plans. The idea for the Atlantic Basin was in Richards' plans, and was developed in 1851 by Stranahan (Red Hook WaterStories, n.d., "Daniel Richards"). The project served as a huge catalyst for the economic development of Red Hook, as the newly-constructed basin allowed for a jump in maritime action around the port, and this economic prosperity continued onward for the next century (Red Hook WaterStories, n.d., "Atlantic Basin").

A population increase followed this prosperity with new residents lured by jobs at the Atlantic Basin. From a neighborhood that had once been pastoral, this influx stood as a massive push toward the urban environment that Red Hook boasts today, and was yet another catalyst for a new plan. By the 1930s, Red Hook was in a tug-of-war between the competing plans of Louis Pink and Robert Moses, both of whom had grandiose ideas for a 40-acre piece of land bought by New York City in 1913, purchased in hopes of building a railroad yard that never came to fruition. Pink wished to turn the land into a public housing complex the likes of which had not been seen before. Moses chose to implement his style of clearing out existing conditions in order to see his projects through. This was the case with the Red Hook Recreation Center and adjacent Red Hook Park, which were built on the former site of a shantytown (Red Hook Waterfront 2017). By disregarding this entire group of people, and bulldozing over their homes, Moses' plan drastically changed the space of Red Hook, and the effects of this change can still be seen today.

With its population in a continuous housing crisis after Moses' plan, the City decided to implement affordable housing in Red Hook, under the name the "Red Hook Houses," by 1939 (Red Hook Waterfront 2017), discussed in the "Housing and Recreation" historic context statement. The construction of the Red Hook Houses served as a turning point for Red Hook's plans. By this point, people presented plans with the aim of keeping Red Hook's workers in place, while simultaneously "improving" the community. The Red Hook Houses have been quite successful in serving their intended purpose as an affordable means of housing in the area. Yet, for those who actually lived in Red Hook, there were few opportunities for involvement in the planning process -- a trend that continued into the next century. The building of the Brooklyn-Queens Expressway further aggravated this issue and signified a change in the trends of plans implemented in the neighborhood (Red Hook WaterStories, n.d., "Brooklyn-Queens Expressway").

### ***Reaction to Decline: Hopes of Economic Stimulation and Waterfront Redevelopment***

After World War II, storage and shipping technology evolved and embraced containerization. This resulted in a steady shift in the industry towards modern ports better equipped to handle this new way of storing and shipping goods ("History," n.d.). This change affected Red Hook, as it was too small and outdated to house this new technology. As such, Red Hook not only lost jobs associated with its old maritime ways but also experienced a drop in population as others sought work elsewhere ("Red Hook History," n.d.).

In the 1950s, the Port Authority of New York purchased two miles of Red Hook Waterfront (Horne 1955). The Port Authority believed that the terminal could be expanded and was in need of modernization (Horne 1955).

The Port Authority was acting upon its larger plan to take over and run the 150 municipal piers in New York City (Horne 1955). However, this plan did not spark redevelopment for Red Hook and the take over by the Port Authority brought no positive change. In 1962, the world's first container port opened on the New Jersey shore and the maritime industry followed, as the waterfront in Red Hook remained undeveloped ("History" n.d.).

As Red Hook seemed to sink behind, the zoning regulation updates in the 1960s did not help. The zoning decisions showcase how the City sees the waterfront as an industrial resource and thus limits its ability to grow. In 1961, New York City's zoning regulations were updated for the first time since 1916 (1961 New York City, n.d.). The regulations applied to Red Hook were: M2-1, M3-1, and R-5.

The letter "M" stands for manufacturing districts and the letter "R" stands for residential districts (Zoning Handbook A Guide 1961). The first number indicates allowable uses and the second indicates allowable bulk (Zoning Handbook A Guide 1961). Here, M2-1 indicates a "medium" manufacturing zone (Zoning Handbook A Guide 1961). M3-1 indicates a "heavy manufacturing" zone (Zoning Handbook A Guide 1961). R-5 indicates general residences (Zoning Handbook A Guide 1961). Red Hook's waterfront is zoned for medium to heavy manufacturing uses with the center of the neighborhood designated for residential purposes. As such, Red Hook was only able to promote manufacturing on its waterfront and attract residents inland, shaping how Red Hook would be able to develop. From the 1960s into the 2000s changes occurred to allow changes in uses and bulk but the general districts remain the same - manufacturing along the water's edge and residences allowed inland (Historical Zoning Map Table, n.d). As such, Red Hook was again only able to promote manufacturing on its waterfront and attract residents inland, tying its economic growth to the faltering maritime trade.

In 1972, the Housing and Development Administration approved an urban renewal plan to put in a modern containerport, waterfront park, and units of housing for those who would be displaced due to the containerport's construction ("Red Hook a Plan," 1996). The project would cover 218 acres and was estimated to add a total of 2,500 jobs (Tomasson 1975). By 1975, however, the containerport was still in the planning phase (Tomasson 1975). As the 1970s came to a close, the design of the project changed and a smaller container port than envisioned was completed in the early 1980s ("Red Hook a Plan" 1996).

By the 1980s, Red Hook was in serious need of revitalization. Hopes of economic stimulation struck again with the Port Authority's plan to convert the Erie Basin into a "fishport" (Gottlieb 1983). The port would provide a base for commercial fishing ships and also act as a space to process the fish (Gottlieb 1983). The expectations were



Aerial view of Red Hook 1924



Aerial view of Red Hook 1943

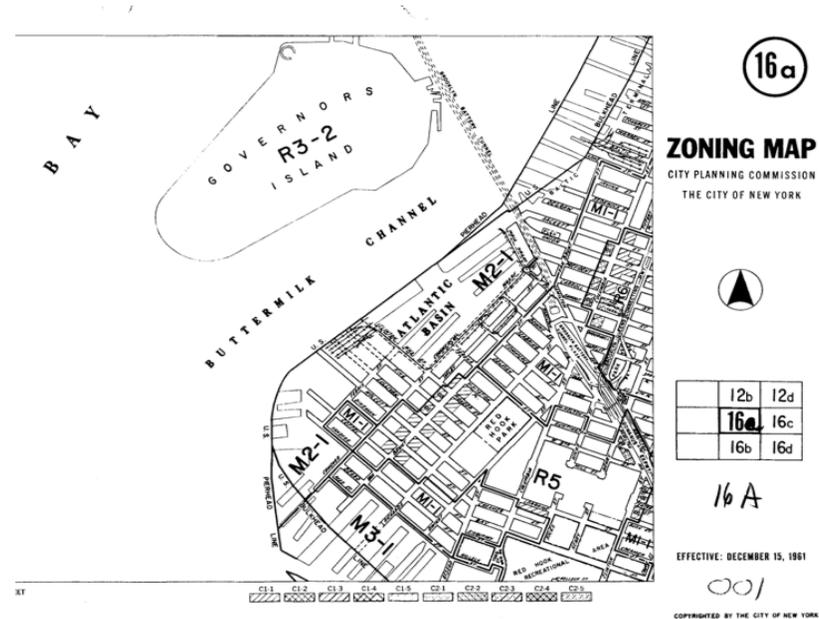
high for the success of the project but no one came. City fishmongers preferred the cheaper Fulton Fish Market in Manhattan and the “fishport” further failed to attract fishing boats, fish processors, or tenants, thus closing only 15 months after opening (Quint 1989).

However, another approach beyond stimulating the economy through industry also emerged with the approval of the New York City Local Waterfront Revitalization Program in 1982 (New York City Waterfront, n.d.). This program was part of the larger New York State Coastal Management Program which was part of the even larger federal Coastal Zone Management Program (New York State Coastal, n.d.). The Coastal Zone Management Act hoped to develop a strategy for successful coastal management beyond the state of New York (New York State Coastal, n.d.).

Building on this momentum in 1992, the City issued its first wide-ranging waterfront plan - the Comprehensive Waterfront Plan. This plan is credited with the improvements seen to New York City’s waterfronts and acted as a blueprint for Vision 2020 and Vision 2030 (Vision 2020 New York 2010). The plan focuses on balancing the competing goals for the waterfront in New York City including preserving maritime areas, redevelopment of underutilized areas, and increased public access (Comprehensive Waterfront Plan Reclaiming 1992).

The movement naturally led to the creation of special zoning regulations for waterfront areas in 1993. This included required waterfront public access areas, bulk and use regulations, and mandated waterfront public access along the shoreline (Waterfront Zoning, n.d.). Although not a program directly aimed at Red Hook, the regulations affect the development of Red Hook’s waterfront. This is evident in later Red Hook waterfront developments such as the IKEA (2008) and its waterfront public access. In 2009, public access regulations were again altered to promote public spaces and the greening of the waterfront (Waterfront Zoning, n.d.).

In 1996, a policy specifically aimed at Red Hook was introduced. Community Board 6 of Brooklyn released a 197-a Plan specific to Red Hook: Red Hook: A Plan for Community Regeneration (“Red Hook A Plan,” 1996). The key goals were to rebuild Red Hook’s population and economy through improvements to its social fabric (“Red Hook A Plan,” 1996). The plan specifically sought to promote opportunities for the development of the people who live in Red Hook by improving housing, social and youth services, preserving and



1961 Zoning Map for section 16a which includes Red Hook



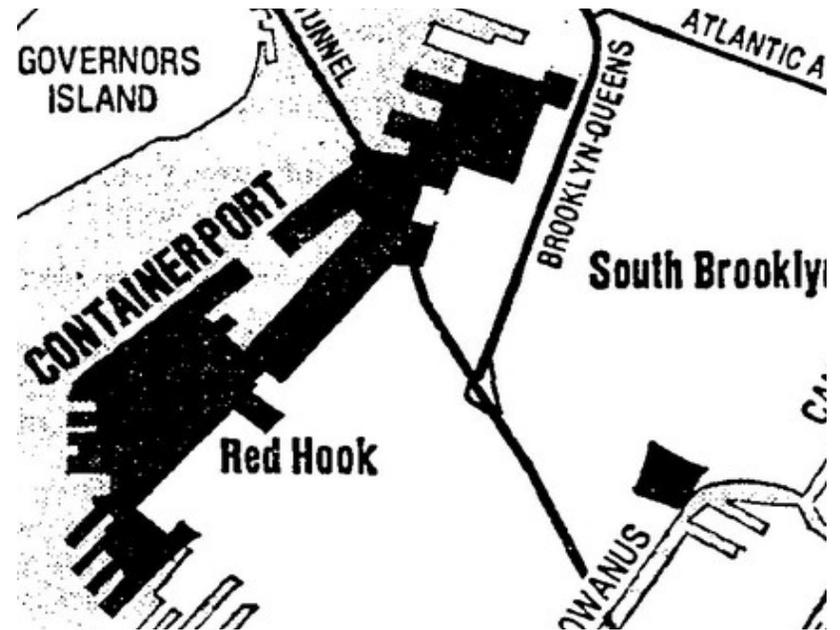
Stretch of Red Hook waterfront purchased by Port Authority of New York in 1955

expanding maritime activity, promoting employment and business opportunities, educating youth and better managing transportation (Red Hook A Plan 1996).

The vision was heavily criticized for its lack of support for business. (Sexton 1996). Some, but not all, plans were implemented (Borough Pres. Allocates \$6.9M 1999). Red Hook's first full-service bank branch was able to open in 1997 fulfilling an urgent need in the community (State of 197-a Planning 1998). Further, funding was allocated in 1999 for the conversion of the former Sullivan Street Hotel in Red Hook into 21 affordable apartments (Borough Pres. Allocates \$6.9M 1999). The 197-a planning process in Red Hook led to more "inclusive community representation on Community Board 6 and positive community activism on a range of issues" (State of 197-a Planning 1998). It is hard to say if the vision was realized fully but it opened the door to revitalization in Red Hook as certain, but not all, needs were met.

In the 2000s, Mayor Bloomberg started PlaNYC with the aim of creating a "Greener, greater NYC" (Mayor Bloomberg Presents PlaNYC 2007). The plan sought improvements for every New Yorker and specifically identifies goals for Red Hook. These goals include facilitating urban agriculture and community gardening in Red Hook, improving transportation connections between Red Hook and the rest of Brooklyn, and creating a revitalization strategy for targeted retail and community spaces within the Red Hook Houses (Progress Report 2014a). Much of this plan was not implemented (Somvanshi 2019).

Further, Vision 2020 was released in 2011. The aforementioned plan established a 10-year vision for the city's shoreline (NYC Comprehensive Waterfront Plan, n.d.). In Red Hook, Vision 2020 sought to promote continued industrial uses and become a hub for maritime support services (NYC Comprehensive Waterfront Plan, n.d.). Reducing traffic was also an issue. Further, the plan sought to create a waterfront interpretive center focused on the history of the working waterfront (NYC Comprehensive Waterfront Plan, n.d.).



Planned container port in Red Hook. Not realized.



Man selling his catch on the opening day of the Fishport in 1987

## ***Reaction to Natural Disaster: Visions after Hurricane Sandy***

After Hurricane Sandy, the trend toward environmental resiliency became evident in the 2014 NY Rising Community Reconstruction Plan. Red Hook took part and created their own resilience plan through community participation and sought a \$3 million budget for disaster recovery (Red Hook New York 2014). Further, the community began to look inward and established programs such as the Red Hook Local Leader initiative aimed at preparing members of the community for disasters to come (Local Leaders A Community, n.d.). This new focus emerged as one of the key drivers of existing policy in Red Hook. sought a \$3 million budget for disaster recovery (Red Hook New York 2014). Further, the community began to look inward and established programs such as the Red Hook Local Leader initiative aimed at preparing members of the community (Local Leaders A Community, n.d.). This new focus emerged as one of the key drivers of existing policy in Red Hook.

Initially, Red Hook and its development fell into the hands of outside developers, who sought to create their own vision of Red Hook through the implementation of a number of plans, many of which proved to be unattainable, that were not in line with the desires of the residents of Red Hook. The plans of Col. Daniel Richards in the mid-nineteenth century set in motion the trend of using Red Hook as a base neighborhood for improvement plans, with plans such as Pink's plan and Robert Moses' plans for the neighborhood both following in the 1930s. The implementation of Moses' proposed Brooklyn-Queens Expressway and Red Hook Recreation center, as well as the WPA's construction of Alfred Poor's Red Hook Houses, largely helped to shape the modern-day Red Hook neighborhood. The majority of these early plans sought to first respond to the industry and housing crisis in Red Hook, and then stimulate its economy as the waterfront industry moved elsewhere in the later half of the twentieth century. Plans were overwhelmingly unsuccessful in this task and Red Hook continued down the path of economic decline.

In the 1990s visions and planning began to incorporate the community. This is seen in the 197-a plan designed for Red Hook. This plan incorporated different community groups in determining what visions were important to the neighborhood. This resulted in some positive effects on the neighborhood - such as increased public

housing as well as meeting some essential needs of the community - like getting a bank.

After Hurricane Sandy a new focus emerged - preparing for the next extreme weather event. This focus is the driver for current and future contemporary visions and plans in Red Hook.



Waterfront public access at Ikea

## COMMUNITIES OF RED HOOK

Red Hook is a neighborhood that has experienced drastic change throughout its history. A demographic study provided valuable insights into the past and present of the community and highlighted the way changes have affected different areas of the community. Eight datasets were selected for comparison: population, race, educational attainment, income, employment, family structure, home ownership, and age. These factors were chosen based on their relationship to common community resilience indicators as established by the Federal Emergency Management Agency (FEMA) in order to understand how changes in the data over time could have impacted the resiliency of the community.

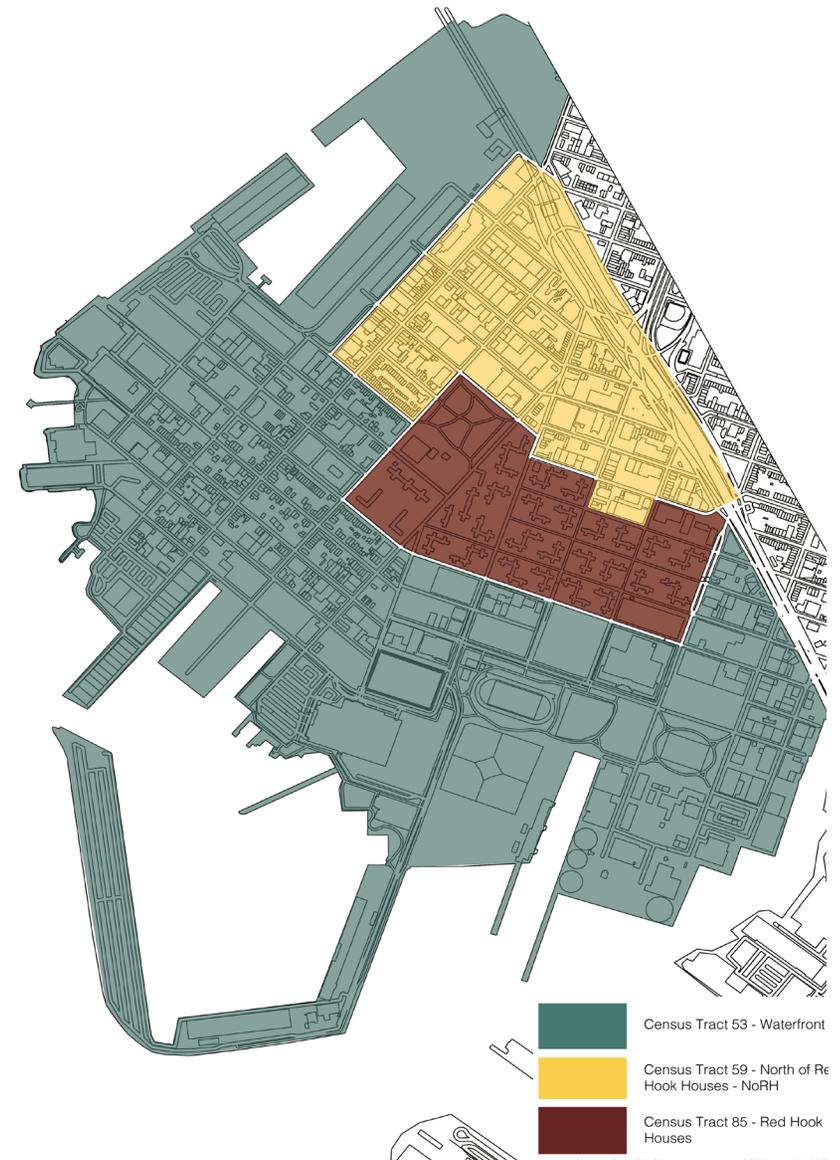
For the purposes of this study, the community of Red Hook was examined based on its current census tracts: the Waterfront (WF), census tract 53, which includes a multi-block swath along the waterfront; the Red Hook Houses (RHH), census tract 85, which encompasses both New York City Housing Authority (NYCHA) Red Hook Housing developments and the immediate vicinity; and census tract 59, the triangular area enclosed between the waterfront, the Red Hook Houses, and the BQE (NoRH).

Sources for compiling data ranged from historic to contemporary, including maps, Census and American Community Survey data, city government reports and plans, articles and publications. Together this data presents a picture of the undulating fortunes of Red Hook and the changing communities represented within the area over time.

### **Population**

From the earliest census data available, in 1790, the populations of both New York City and Brooklyn have been continuously growing, except for a small dip in the 1970s and 80s, which coincided with particularly high crime rates across the city. While Red Hook was known as a busy and heavily-populated community around the port in the early-twentieth century, the first tract-level census data was not taken until the 1940s. The starting point also represents the peak for Red Hook, whose population steadily fell from 1940-2010 (Figure X). Between 1940 and 1950 alone, Red Hook lost 40 percent of its population; that number would rise to 66 percent by 2010. The reasons for this loss are manifold but include the decline of the maritime trade in the Atlantic and Erie Basins starting in 1940 and culminating in the 1960s, the bisection of the neighborhood by the

construction of the Gowanus Expressway and Brooklyn-Battery Tunnel in the 1940s, and the loss of public transportation options such as the ferry and the streetcar making commutes between Red Hook and Manhattan or even other areas of Brooklyn more difficult for residents.



Red Hook Neighborhood Areas by Census Tract

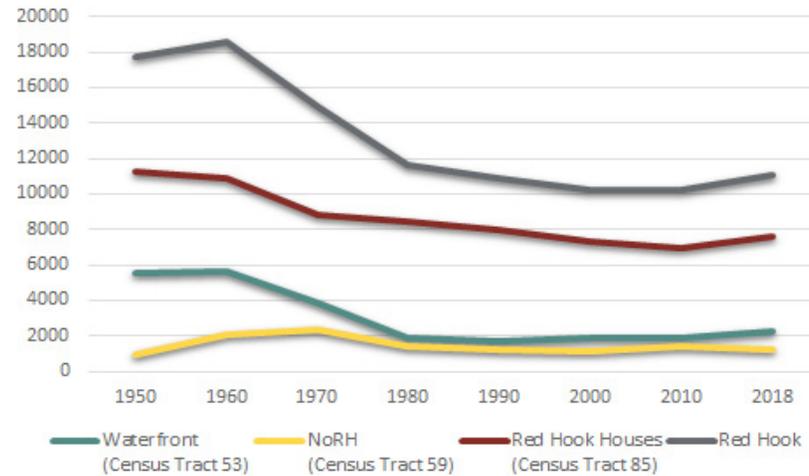
populated community around the port in the early-twentieth century, the first tract-level census data was not taken until the 1940s. The starting point also represents the peak for Red Hook, whose population steadily fell from 1940-2010 (Figure X). Between 1940 and 1950 alone, Red Hook lost 40 percent of its population; that number would rise to 66 percent by 2010. The reasons for this loss are manifold but include the decline of the maritime trade in the Atlantic and Erie Basins starting in 1940 and culminating in the 1960s, the bisection of the neighborhood by the construction of the Gowanus Expressway and Brooklyn-Battery Tunnel in the 1940s, and the loss of public transportation options such as the ferry and the streetcar making commutes between Red Hook and Manhattan or even other areas of Brooklyn more difficult for residents.

The Red Hook Houses have also consistently lost population since their opening, according to city reports on housing developments. From the first available annual report, "Project Statistics," in 1947 the Red Hook Houses population has fallen 30 percent; a fall that was likely also driven by the loss of jobs for workers at the docks. Within the Red Hook Houses themselves the trend of population loss has continued up through 2018. However, the area around Red Hook Houses experienced a modest growth of eight percent, which was impacted significantly by Hurricane Sandy. A population gain of fourteen percent between 2010 and 2012 was completely lost between 2013 and 2014 and has only slowly begun to rise again (Figure X). This gain was bolstered by the return of municipal ferry service to Red Hook in 2017, making transit to Manhattan faster and easier for Red Hook residents (Guzenfield 2017). While the modest gains in population appear to indicate renewed interest in living in Red Hook, it is unclear how far these trends will continue and how they could be impacted by factors like sea level rise, increased flooding, or another severe weather event.

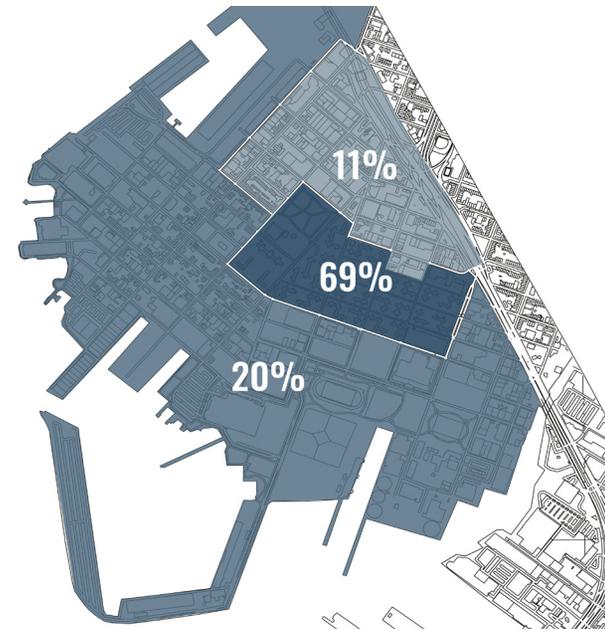
### Race and Ethnicity

The history of Red Hook is one of immigration and transience along the water. From its earliest settlers, the indigenous Lenape people, who used the land seasonally and for fishing and for transportation along the river, the water has brought people and goods into and out of Red Hook. The Dutch were the first colonizers in the seventeenth century (Webster 2016). As the port gained in prominence and size from the mid-nineteenth through the early-twentieth century various white immigrant groups rose and fell. At the zenith of the waterfront

Population in Red Hook:  
1950-2018



Changes in Red Hook Population by Area Over Time



Percentage of population growth by census tract, 2010-2018. Percentages represent how much of Red Hook's population is in each census tract

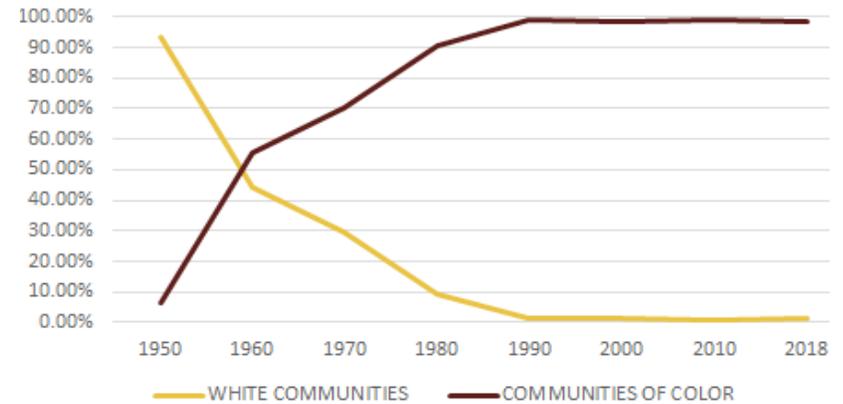
industry in the 1920s and 1930s, the population was predominantly Italian immigrants, nearly 60 percent, with Irish and Norwegian immigrants making up 20 percent of the populations each. Small numbers of German and Russian immigrants also lived in the area (Moore 1994). This was significantly higher than the foreign-born population in Brooklyn overall, which was only 34 percent in 1930. However, in the next two decades, the immigrant profile in Red Hook shifted significantly: by 1950, the population was 85 percent native-born in America and by 1970 that percentage would be greater than 95 percent.

Coinciding with the drop in population in 1940-1950 was a drastic change in race within the Red Hook population. The previous 98-99 percent white population had shifted to 50-50 white and black by 1970 and had reversed to primarily a community of color by the 1980s. When the option for Latinx was added as an ethnic identity option to the census in 1990, the population was further diversified, with nearly equal black and Latinx populations in the community. At a community level, this distribution has remained largely unchanged for the last three decades.

Looking at this data at an area level again presents a slightly different understanding of the overall data. While the white population did decline in all areas through the early 2000s, in the waterfront and NoRH that population has rebounded to a predominantly white population, whereas the Red Hook Houses remain a heterogenous population that is 98-99 percent people of color. This becomes notable as a dynamic that must be addressed in community-wide planning and initiatives.

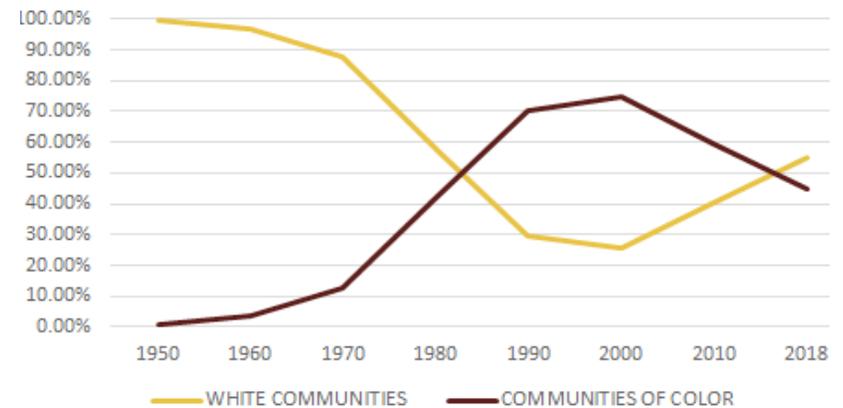
Again there were many factors which contributed to the changes in demographics in Red Hook. The Red Hook Houses were originally built as housing for the white working class at the waterfront. However, as the ports in Red Hook began to lose business to ports in New Jersey and elsewhere, the workers necessarily followed the work. This was part of a larger trend of rapid white flight from New York City Housing Authority (NYCHA) in the late 1950s (Bloom 2015). Coupled with systemic changes to NYCHA's admission policies in the 1960s, public housing developments in New York served primarily low-income minority communities by 1970 (Sadurni 2018). Red Hook was no different in experiencing these changes, which have lasted until today.

Race at Red Hook Houses



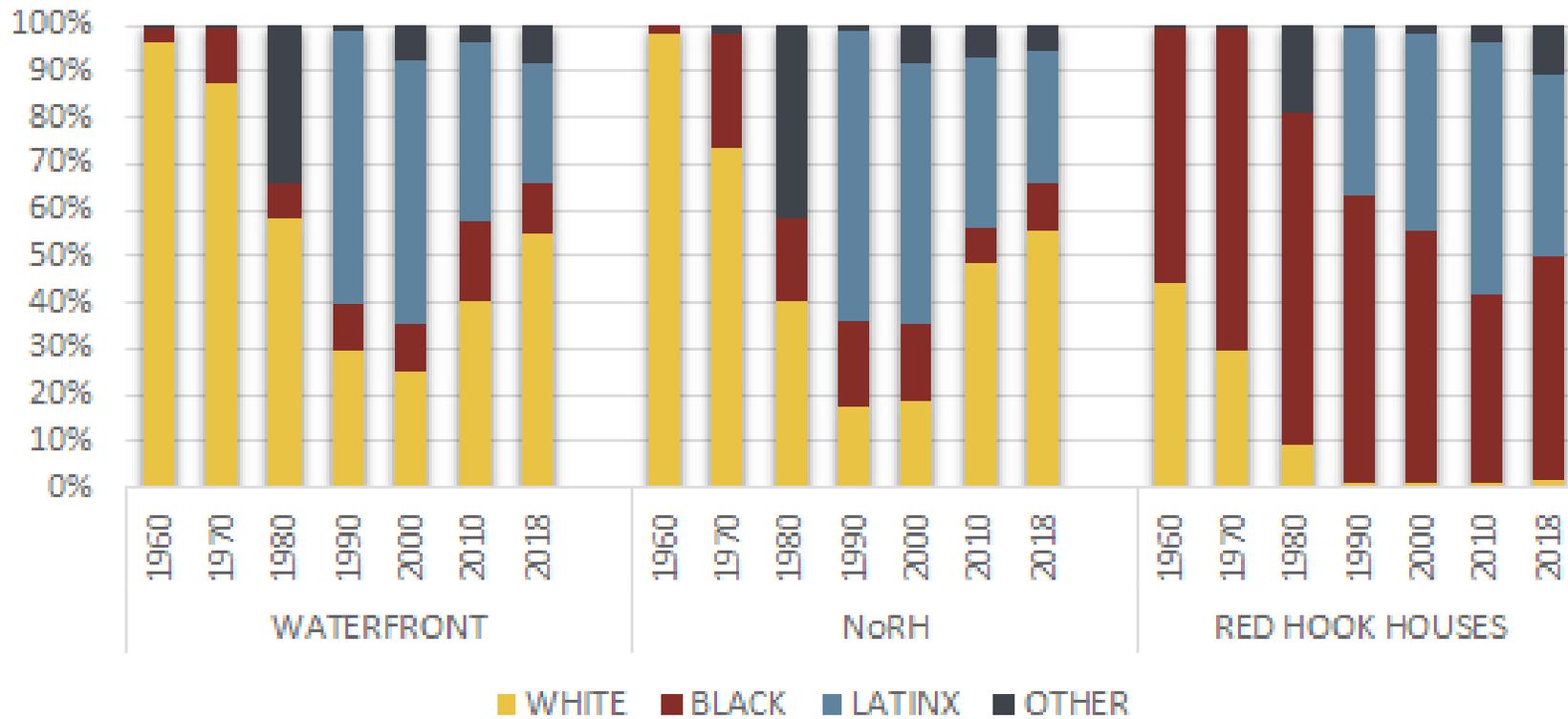
Race at Red Hook Houses 1950 to 2018

Race at the Waterfront



Race at the Red Hook Waterfront 1950 to 2018

# Population by Race/Ethnicity Over Time



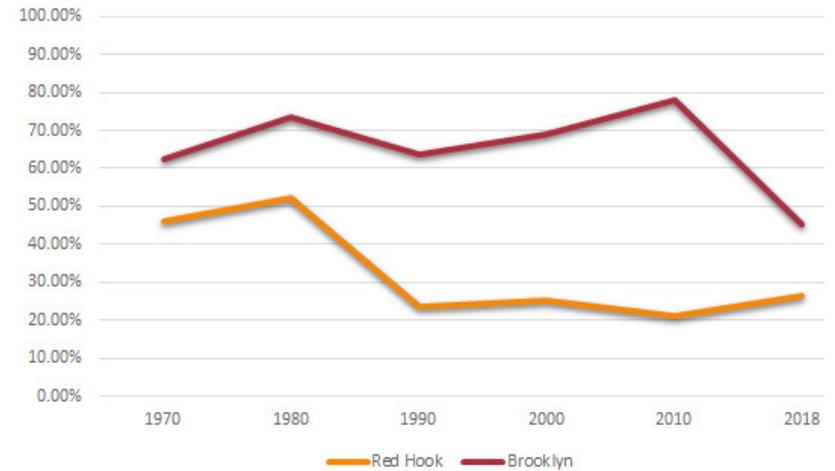
Race/Ethnicity in Red Hook Areas Over Time

## Educational Attainment

The educational attainment rates present data points that can be correlated to the median income and unemployment rates, which will be discussed later. In comparing Red Hook to the larger borough of Brooklyn, it is notable that Red Hook has always lagged behind the high school graduation rates of Brooklyn. However, it has matched the college graduation rates of Brooklyn at large since 1990.

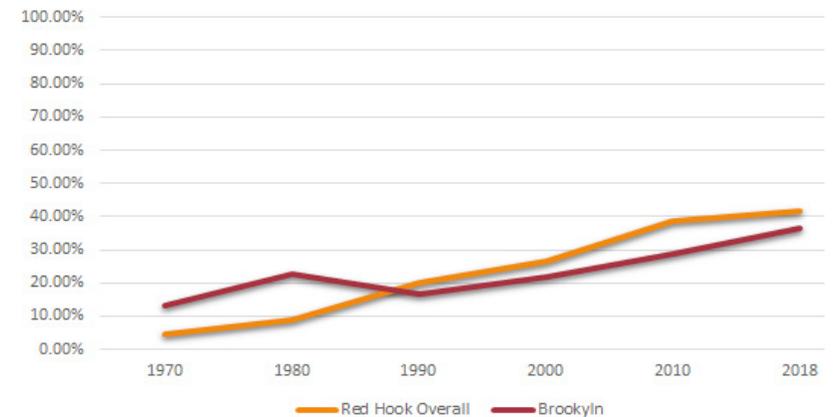
However, in looking at the educational attainment rates within specific areas it is clear that achievement rates are not equal in all areas. While in the 1970s and 1980s the Red Hook Houses had a higher high school graduation rate than either the waterfront or NoRH, that rate plummeted in the 1980s and has lagged significantly behind both areas since. Likewise, the college graduation rates were on par with the other areas until the 1990s but they have stayed relatively flat at ten percent, whereas the percentage of the population with college degrees has risen to nearly 60 percent in both the waterfront and NoRH. This extant growing disparity in achievement will be further discussed and perpetuated in later discussions of income and unemployment.

### High School Graduation Rates: Red Hook vs. Brooklyn



High School Graduation Rates: Red Hook vs. Brooklyn

### College Graduation Rates: Red Hook vs. Brooklyn



College Graduation Rates: Red Hook vs. Brooklyn

## Median Household Income

The perspective of household income was analyzed from the available information in Social Explorer platform (Social Explorer 2020). The focus was on the years of 1980 (height of the crack epidemic) 1990 (when New York City was faced with a wave of unemployment) 2000, and yearly after 2010, with all data adjusted for inflation.

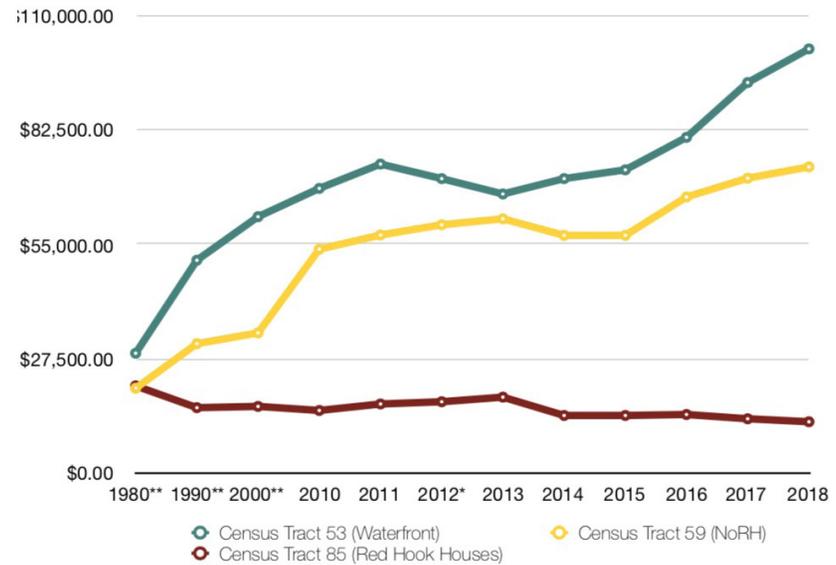
Initially, the census tracts had very similar income, averaging at \$23,500, but over time a gap formed between the median incomes in the waterfront census tract and the Red Hook Houses tract. Currently, the waterfront census tract median income of \$101,806 is above the average for Brooklyn and New York City. Meanwhile the Red Hook Houses median income is \$12,492, which corroborates the perception of an economic divide between the NYCHA population and the waterfront population.

Some other trends noted were that the NYCHA population's median income has been on a slow decline since the 1980s. It also became apparent that Hurricane Sandy did not directly or immediately impact household incomes in Red Hook in 2012.

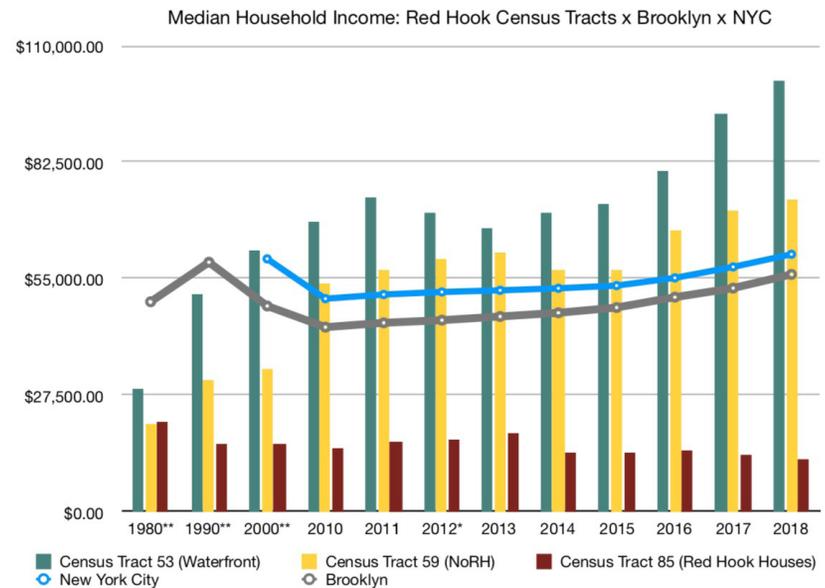
## Unemployment Rates

In the last half of the last decade, the unemployment rates of both New York City and Brooklyn have trended downwards, reducing respectively to 4.10 percent and 4.44 percent. This trend is repeated in Red Hook in the Waterfront and NoRH census tracts, while the Red Hook Houses population has constantly faced unemployment rates above 10 percent in a slowly increasing trend since 2010.

Given that most of the Red Hook population is concentrated in the NYCHA development, the population of the neighborhood has an issue with low household income paired with a higher-than-average unemployment rate. This is a scenario of inequitable distribution of wealth and work opportunities between Red Hook's population.



Median household income in Red Hook census tracts



Comparison chart of median household incomes in Red Hook, Brooklyn, and New York City

## Real Estate Equity: Homeownership versus Renters

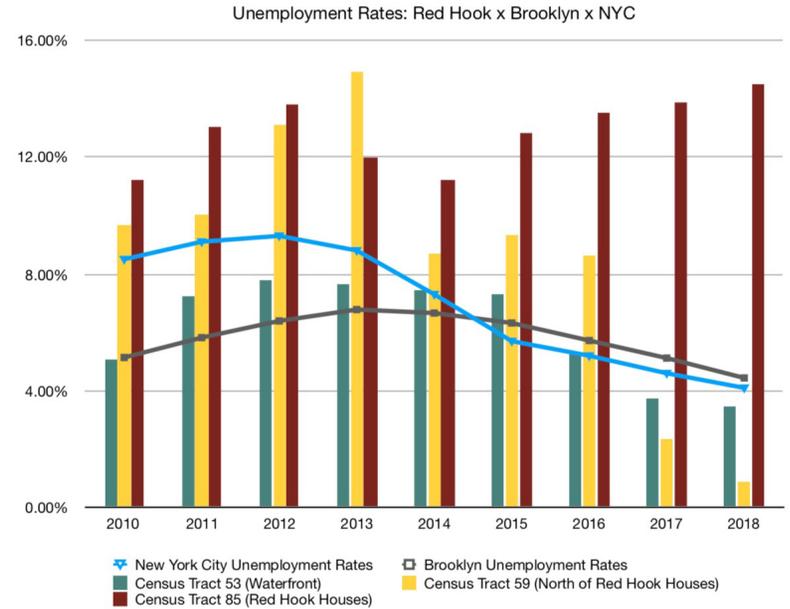
Homeownership is recognized as a community resiliency indicator by FEMA and as an indicator of individual wealth. Homeownership, and specifically owner-occupied housing, was evaluated between 1980, when median family income in Red Hook was relatively equal amongst all census tracts, and 2018. Census tract 85, dominated by the Red Hook Houses, has necessarily had minimal change to homeownership status, with a 0.2 percent loss in the immediate surroundings of the NYCHA development. However, the waterfront has seen a gain in owner-occupied homes, from 25 to 34 percent, over the same period in which the median family income rose by nearly 300 percent. The area to the north of Red Hook Houses, which saw a more modest median income increase of just over 100 percent, actually lost owner-occupied properties in the same period, indicating greater interest in living along the waterfront, closer to commercial corridors and public transit on the water.

While there was a small lag in the upward trajectory of homeownership in the years immediately after Hurricane Sandy, by 2014 all losses had been regained and the trajectory has only continued to increase, corresponding to steadily improving education, employment, and income indicators in the waterfront area. However, it is notable that NoRH has not experienced a similar increase given its similarly improving trends in these areas.

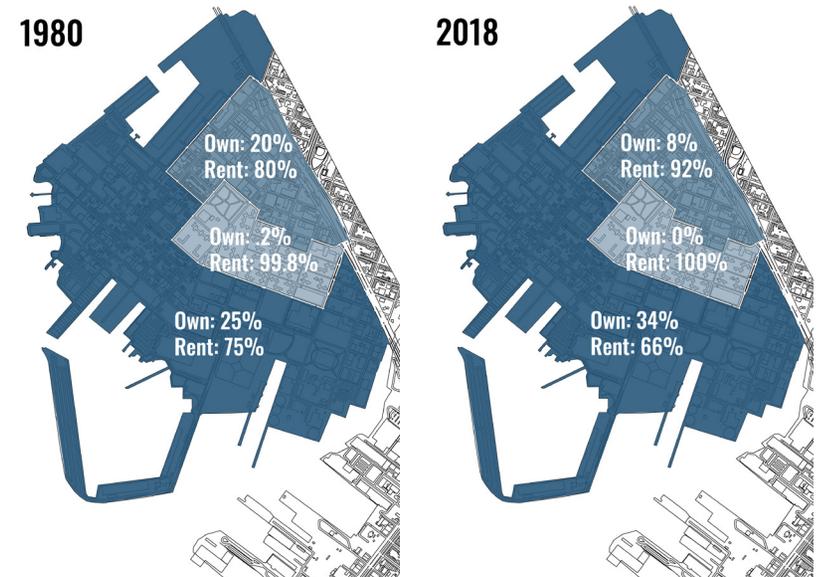
## Children Living With Single Parents

There are not enough data points tracking children living with single parents to assess change over time fully, as the ACHS information only tracks data for 2017 and 2018. However, comparing the Red Hook census tracts data to the entirety of Brooklyn as a baseline illustrates the disparity in this community resiliency indicator.

According to the ACHS 2018 data, in Brooklyn (Kings) county, 31.51 percent of children live in single parent households. The Census Tract 59, NoRH, is the only census tract in Red Hook below this statistic, with 29.09 percent of children in single parent homes, while the waterfront and Red Hook Houses tracts respectively have 46.95 and 92.47 percent of children in single parent households. As it is a community resiliency indicator, this data point displays a vulnerability in the Red Hook Houses and the waterfront census tracts.



Unemployment Rates in Red Hook, Brooklyn, and New York City



Homeowners versus renters by census tract in Red Hook, comparing 1980 and 2018

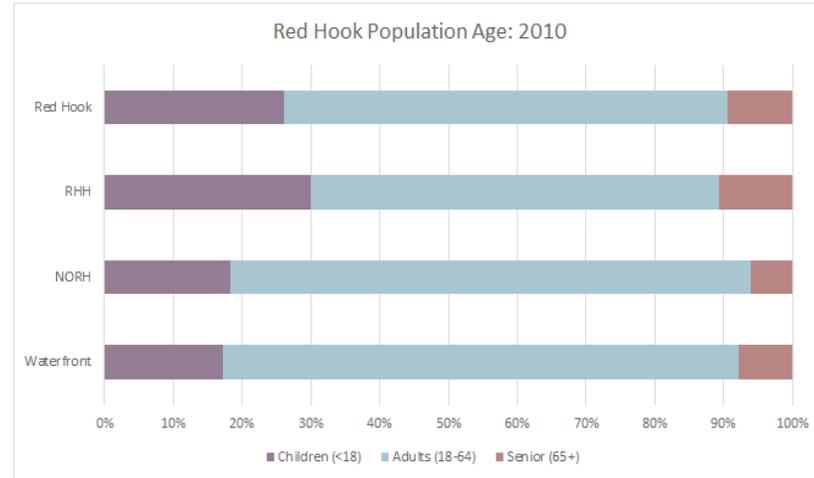
## Age

The age of the Red Hook population was reviewed from 1970 to the present for its potential impacts of an aging community on resilience. However, the percentage of the population in the senior age bracket (65+) has remained consistent at 7-9 percent. The only shift has been in the ratio of children (18 and under) and adults. While in 1970 they were relatively even, at 45 percent of the population each; as of 2010 adults (18-64) outnumber children 2.5 to 1. While the senior population remains fairly minimal now, if the current trend continues Red Hook will eventually have to address the potential for an aging population wishing to age in place.

Through analysis of the community data, the decline in population and change of demographics became immediately apparent. Since the mid-twentieth century there has been a population decline particularly in the Red Hook Houses census tract, that occurred in parallel to the overall historic trend of the white population leaving the community.

In sequence, as the population numbers started to rebound, the inequality indicators (especially income and unemployment) started to illustrate a divide between the NYCHA population and the rest of Red Hook dwellers: distribution of income, employment, education and density are not equitably distributed across the neighborhood. Another observation is that the median household income, unemployment rates, and homeownership data does not directly display the social and physical destruction caused by Hurricane Sandy in 2012. Based on data the following conclusions can be drawn:

- Data corroborates trends and patterns observed through other sources
- overall population decline since mid-twentieth century and concentration in the Red Hook Houses
- white population disproportionately left the community
- once population started to rebound, the inequality became increasingly intense and visible
- income and employment opportunities are disparate along racial groups
- distribution of income, employment, education and density is not equitable



Population by Age in Red Hook in 2010

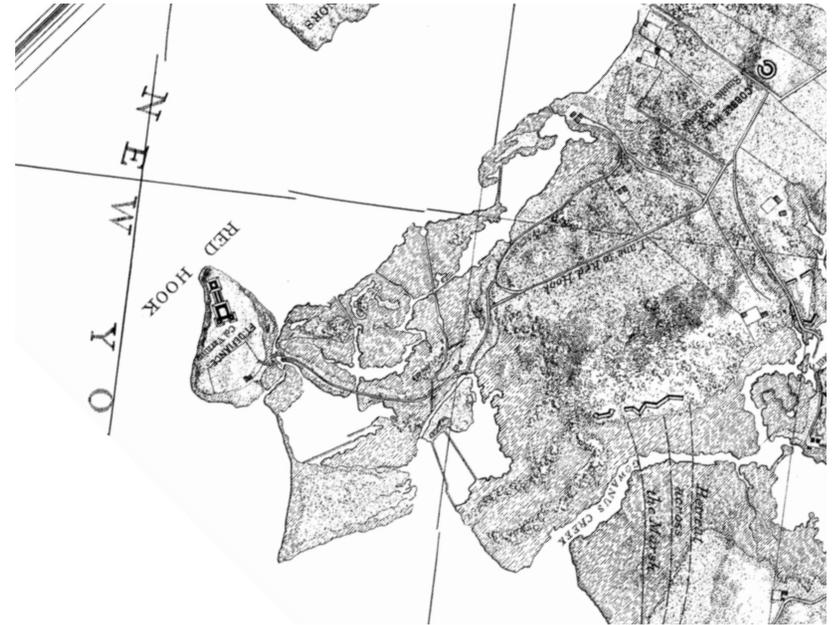


Plan of the town of Brooklyn and part of Long Island, 1767

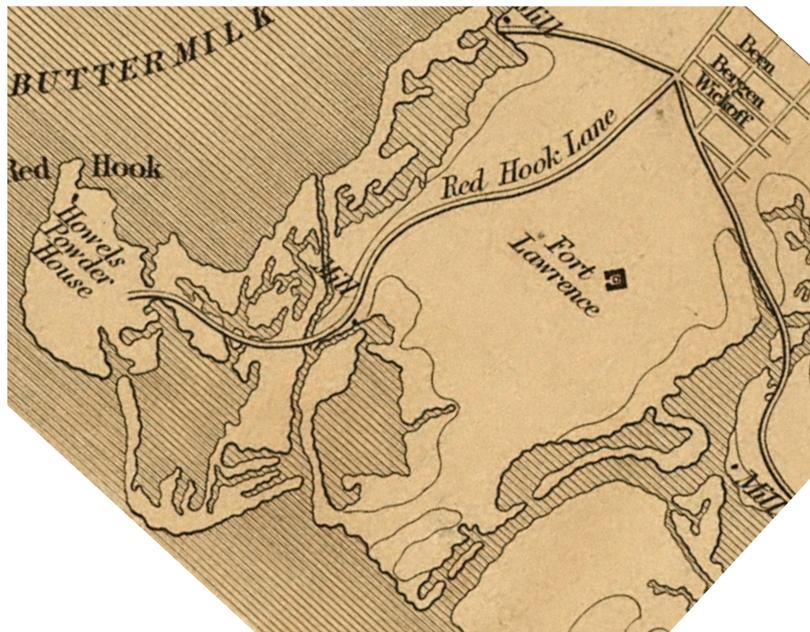
## URBAN FORM AND ARCHITECTURE, LAND, AND WATERFRONT

In the seventeenth and eighteenth centuries, Red Hook's landscape was largely coastal estuaries, and its few buildings likely were wood framed houses and mills, none of which survive today. Early maps show a jagged coastline of mostly low lying wetlands with intermittent streams, canals, and "mill dams" creating "mill ponds," as settlers began to adapt the natural terrain to their uses. One important feature is the island located between the present Valentino Park and the corner of Conover and Van Brunt Streets. This island is slightly smaller than Governors Island and has a peninsula at its western end. It was settled very early on and was the location of Fort Defiance during the Revolutionary War.

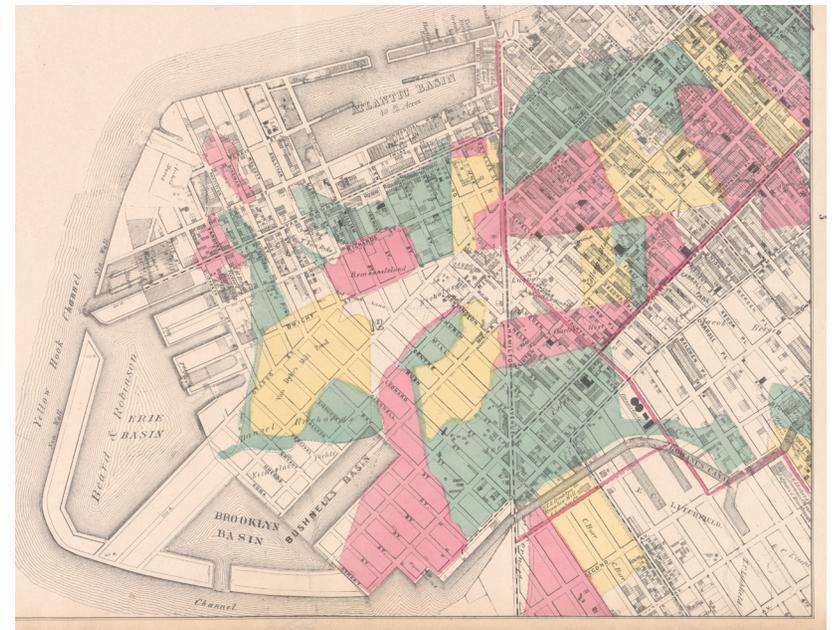
In the early-nineteenth century, maps show a single winding road called Red Hook Lane, which ran from present day downtown Brooklyn to Red Hook Point at the western end of the island. This was the only thoroughfare in Red Hook for many years. Part of this original lane still exists as a small side street between Boerum Place and Fulton Street in downtown Brooklyn, but the rest is gone. Its disappearance illustrates the scale of changes in Red Hook.



Johnston Battle of Brooklyn Map, 1776



1839 Gowanus Map



Red Hook, 1869

Several early families, including van Dyke, Remsen, and Luqueers, owned large tracts of land in Red Hook, and their holdings are illustrated on late nineteenth century atlases. Brooklyn became a city with a grid plan in 1834, but many future streets in Red Hook were still marshes late into the nineteenth century.

With the increase in shipping in the 19th century, port infrastructure upgrades changed the face of the Red Hook waterfront indelibly. From the Atlantic and Erie Basins, to dredging operations in the Red Hook Shoal undertaken in the 1890s, large scale projects were a constant (Big Dredging Contracts 1893). A comparison of multiple historic maps shows how the coastline has changed over time. This diagram shows the effects of infill and drainage of marshland and the creation of the shipping basins. It covers four specific time periods: Pre-development (1776), Post-Atlantic Basin construction (1849), Post Erie Basin and Gowanus Canal construction (1876), and the present (2019).

Brick row house construction began in the 1870s and 1880s on streets such as Coffey Street, then called Partition Street (Spellen 2017).

There was also significant informal housing or shantytowns in the late-nineteenth century. The Brooklyn Daily Eagle wrote, "Within the locality bounded by Hamilton Avenue Bridge, the Ferry House, van Brunt Street, and the Erie Basin is very large population not blessed indeed with much of the worlds goods, but for all that an industrious, and in the main a well behaved class of our fellow citizens" (Life Among the Shanties 1877). There was a shortage of quality housing in the area because of the rapid industrial growth, which outpaced even Manhattan (Spellen 2013).

Even in more formal housing, there were likely numerous violations of the 1867 Tenement Law, which specified that tenements had to have a window and a fire escape for each sleeping room (De Forest 1914). Informal residences continued into the twentieth century, with Hoovervilles in Red Hook during the Great Depression.



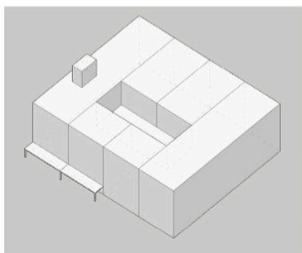
Waterfront changes over time

Building stock from the mid-nineteenth to the mid-twentieth century shows adaptations to a variety of uses: agricultural products from the midwest and Canada, along with international goods from the rest of the world. In addition, there were manufacturing and ship repair industries. Each type of factory had different features, and consequently Red Hook's industrial architecture varied.

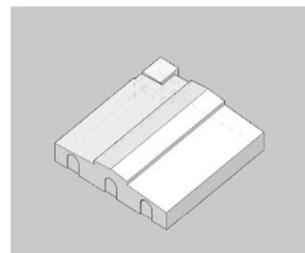
One typology shown in the diagram is the Brooklyn Clay Retort and Fire Brick Works Storehouse. This factory made bricks which were then used to make gas to use for lighting. It is constructed of ashlar schist with brick and was designated a NYC landmark in 2001 (NYC Landmarks Preservation Commission 2001). These factories provided for more people and land development increased from the late-nineteenth century into the twentieth century.

From the 1880s into the twentieth century, the trolley lines into Red Hook had a significant impact on the area's development. As in other areas of New York, housing construction is correlated to transit development. Before 1880, Red Hook was in essence developed only near the waterfront as an industrial district. From 1880 to 1916, massive development took place in the inland area, especially around the trolley lines.

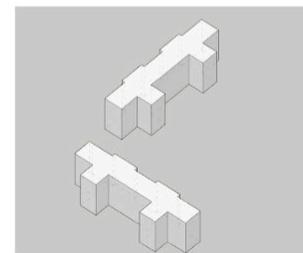
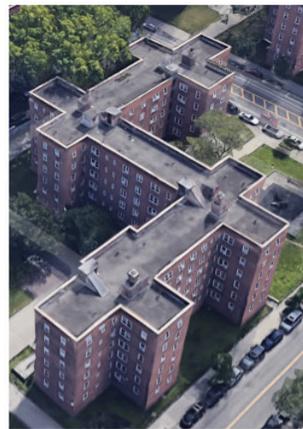
Land use continued to evolve into the 20th century, as illustrated by the following charts.



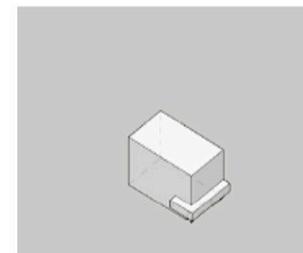
Warehouse



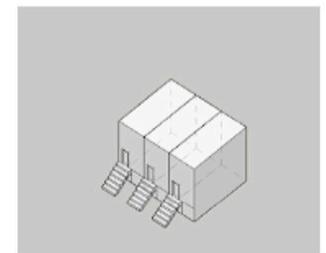
Factory



Public Housing



Storefront

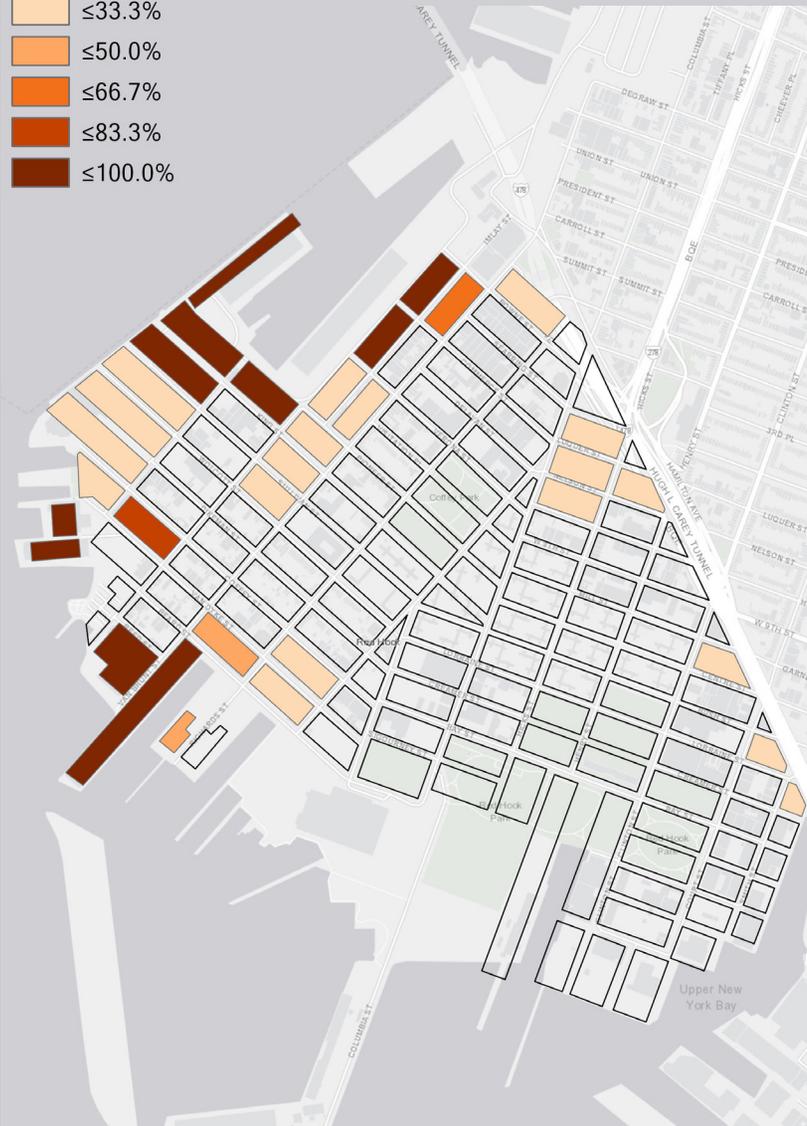
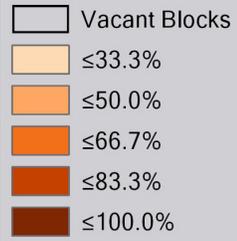


Row house

Diagram of building typologies

# BLOCKS 1880

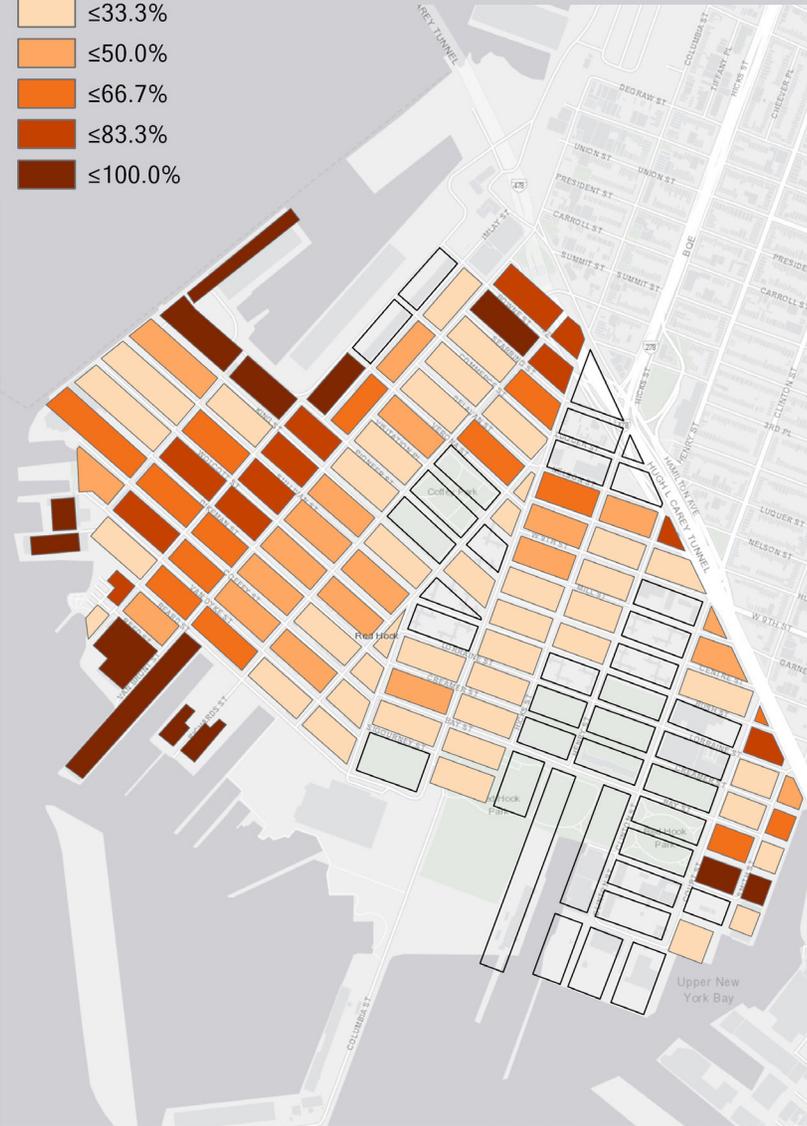
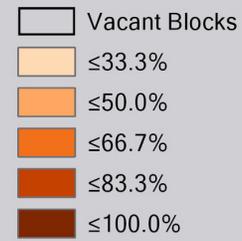
Coverage\_



Percent of land developed by 1880

# BLOCKS 1916

Coverage



Percent of land developed by 1916

In the twentieth century, largescale public works projects made a lasting impact on Red Hook's architecture and urban development. Robert Moses and Mayor La Guardia opened the Red Hook Recreation Center in 1936, and many buildings were demolished to make way for the first Red Hook Houses of 1939, designed by Alfred Easton Poor (Spellen 2017). With these developments, the government became a major landowner in Red Hook. At the

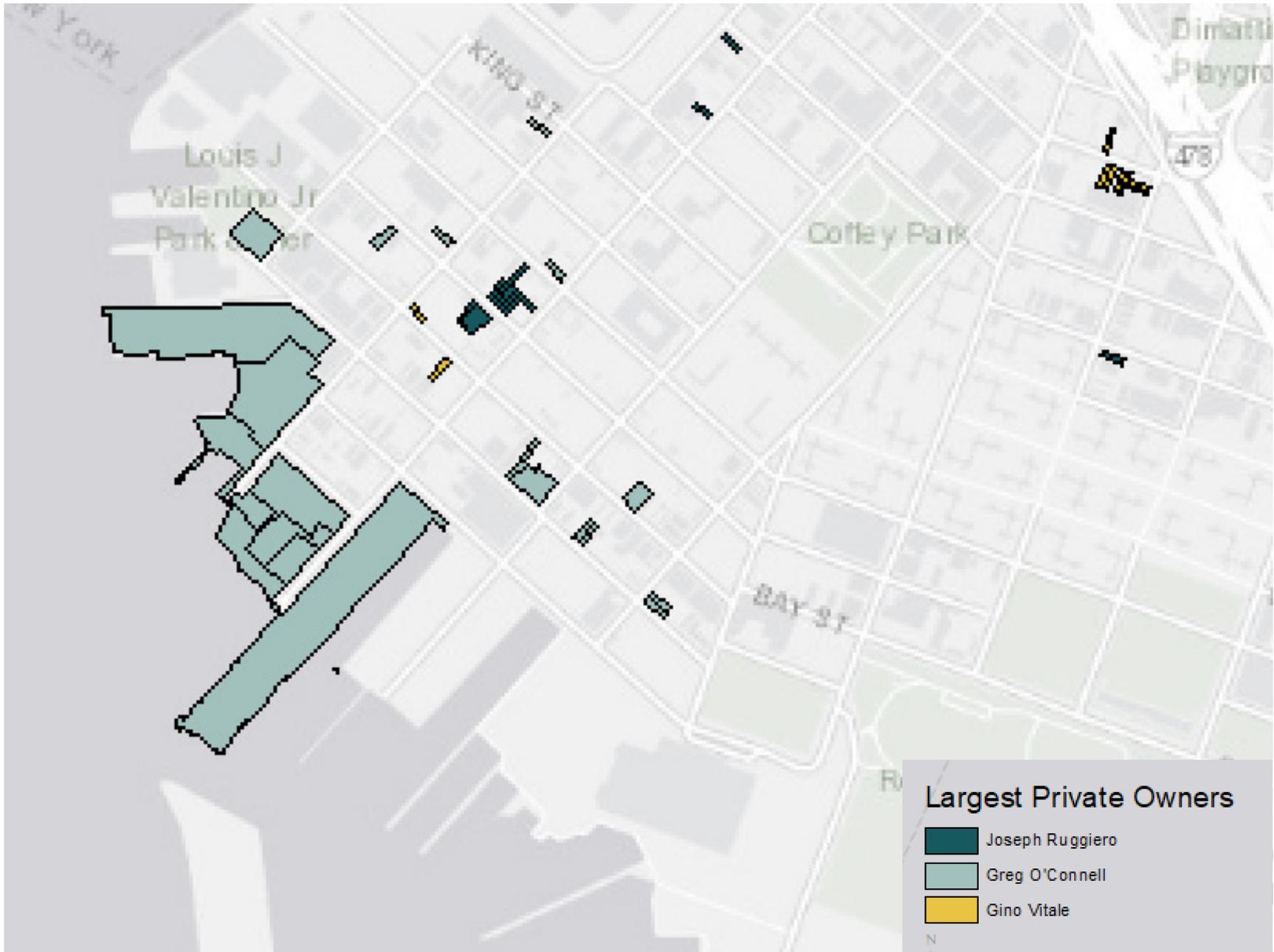
same time, with the loss of port industries, some individuals and corporations accumulated larger tracts of land. Today, some former industrial sites remain as relics, and many are surrounded by vacant lots, with occasional residential buildings in the vicinity. There are large areas of the neighborhood with single owners. Major property holders with eight or more properties are specifically noted in the map on the following page.



Land use in 1903



Land use in 1916: industry occupied waterfront, residential inland, and the commercial corridor was developed around Van Brunt Street, Richard Street and Conover Street



Major private owners in contemporary Red Hook

## DISASTER AND ENVIRONMENTAL RESPONSE

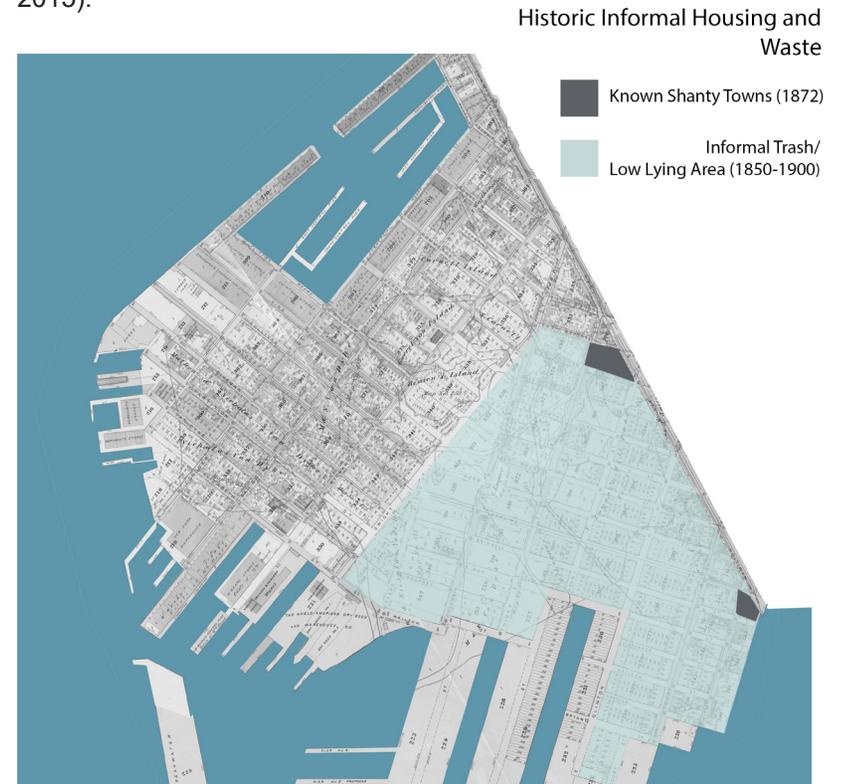
As perhaps the most visible and well-known natural disaster to have struck Red Hook in the neighborhood's history 2012's Hurricane Sandy may be perceived as the most affecting tragedy that Red Hook has faced. One year after Sandy, a study of the feasibility of implementing an Integrated Flood Protection System (IFPS) in Red Hook was conducted in order to identify the best course of action for future flood prevention; however, the scope of plans involved in the IFPS, now called the Red Hook Coastal Resiliency project (RHCR), has been minimized on numerous occasions. The current plan calls for raising streets near the Erie and Atlantic Basins to protect from a 10-year flood (Hurricane Sandy was a 500-year flood) and will likely not be completed until 2023 at the earliest (Yates 2020). At the time this studio was completed, the only flood protection measures in place in Red Hook are HESCO Barriers and Tiger Dams - temporary measures that are deployable in the event of a flood (NYC Dept. of Design and Construction 2019).

In order to evaluate the current state of flood protection in Red Hook and propose future protections, it must be understood that Red Hook has been the site of ongoing environmental and ecological disasters since its establishment as a center for waterfront transport and industrial business. As a consequence, Red Hook has a long history of environmental vulnerability and injustice that has been recently exacerbated by Hurricane Sandy and which is reflected in the neighborhood's landscape. Physical and social change within Red Hook relating to disasters and the environment can be divided into three sub-topics: environmental vulnerability, environmental justice, and climate justice.

### ***Environmental Vulnerability***

Prior to the industrialization of the waterfront, Red Hook was a wetland inhabited by the Lenape and, after 1636, the Dutch. In order to support waterfront industries, the Erie and Atlantic Basins opened in 1850, resulting in a hardening of the previously marshy shoreline (Montalbano 2019). This hardening of Red Hook's natural wetland ecology is a critical moment in the history of disasters in the neighborhood, as Red Hook's built environment must work against its natural ecology.

Red Hook's marsh ecosystem could not be shut out by the hardening of the shoreline alone, as evidenced by the living conditions of "Slickville" or "Sleekeville," a shantytown bounded by Hamilton Avenue and Nelson, Luqueer, and Hicks Streets. "Slickville" was located near a creek and received its name due to the near-constant flooding that it experienced, with inhabitants "kept perpetually in a state of swampy desperation" (The Brooklyn Daily Eagle 1872). Closer to the waterfront, Red Hook east of Dwight Street consisted largely of tide pools and marshes interrupted by gridded streets. To fill in these low, watery areas, garbage was dumped into the low-lying lots between the street grid. It was this same garbage that was used to construct Red Hook's many shantytowns. Thus, many of Brooklyn's poorest residents lived in the swampy, trash-built informal housing scattered throughout Red Hook (Gbrook@pipeline.com 2015).



Historic map of Red Hook showing shantytowns and streets that lacked sewers

## Environmental Injustice

Further contributing to the decimation of Red Hook's natural ecology was the lack of complete, organized waste management system within the neighborhood. Though the City of Brooklyn established the Board of Sewer Commissions in 1857, shared outhouses in 1866 were described by the *New York Medical Journal* as having "close vaults, which, during the summer, were mostly found full, and in many instances overflowing" (Figure X) (Thayer 1866; Etherington 2016). These unsanitary conditions contributed to New York City's 1866 cholera outbreak, of which Red Hook was the epicenter (Thayer 1866). By 1885, most of the streets east of Dwight street were still not connected to the main sewer line.

The construction of an underground, combined sewage system throughout Brooklyn was not complete until the twentieth century (Colwell 2015). The Red Hook sewage treatment plant, located in the Brooklyn Navy Yard, was not completed until 1987, marking "the first time in the city's history [that] virtually no raw sewage will spill routinely into the city's waters" (Neuffer 1987). Even this plant, though, only removed "35 percent of the human waste and other pollutants from waste water" (Neuffer 1987). The construction of the Columbia St. Interceptor Sewer line to connect Red Hook's sewage to the new treatment plant proved disastrous for the surrounding area when the street and several houses collapsed due to the vibrations of pile drivers installing the sewer.

The City left the sewer ditch open for years before it was eventually covered, and many of the surrounding buildings had to be demolished because of compromised foundations (Davila 1978). Even after these were completed, problems with drainage and flood capacity led to almost constant 311 complaints in the Red Hook neighborhood following the completion of the Interceptor.

Additionally, the area of Red Hook that lacked sewage lines became the site of privately-run garbage transfer stations in the 1980s, following New York's economic crisis. Red Hook community members complained about the station's unsanitary conditions and the untenable flow of truck traffic in the neighborhood (Farrell 2000). Ultimately, the neighborhood was freed of many of these stations due to local organizations such as Red Hook Groups Against Garbage Sites and the Red Hook Civic Association (Shin 1999). The Hamilton



Map of Red Hook streets that lacked sewers in 1886



Map of Bond-Lorraine and Columbia Street sewer lines in Red Hook

Avenue Marine Waste Transfer Station opened in 2017 directly across the Gowanus canal from Red Hook and handles 1600 tons of trash per day (McGoldrick 2017).

On top of issues related to the neighborhood's waste management systems, Red Hook has also dealt with industrial pollution throughout its history. An 1873 article in *The Brooklyn Daily Eagle* discusses the dumping of oil and sulphuric acid into an empty lot by Libby & Clark's oil company (*The Brooklyn Daily Eagle* 1873). Today, air pollution from the BQE, vehicles on which release high amounts of particulate matter, is a complaint in the neighborhood (Frost 2018); however, air pollution is not a new issue for Red Hook. In 1885, the nation's first garbage incinerator opened on Governors Island, less than one mile from Red Hook (U.S. National Park Service, n.d.). Over the next several decades, many incinerators were constructed throughout New York City; in 1919, another was constructed near Red Hook, this time just across the Gowanus Canal on a site at 11th Street and Second Avenue (*The Brooklyn Daily Eagle* 1919). Despite the fact that neither of these incinerators were located within Red Hook's borders, they were close enough to the neighborhood to directly affect the air quality. Further contributing to the bad air quality were the Red Hook Houses, each of which had its own incinerator (Spellen 2017).

These incinerators faced opposition. In 1951, a Red Hook resident wrote a Letter to the Editor for the *Brooklyn Daily Eagle*, explaining that residents "are deluged in smoke right now, an oil smoke that gives one a choking, suffocating feeling" (*The Brooklyn Daily Eagle* 1951). Residents' frustration was warranted, as incinerators have since been found to emit significant amounts of mercury, formaldehyde, nitrogen oxide, sulfur dioxide, and other pollutants (Stoner 2018). Furthermore, a 2001 study found that the 11th Street incinerator emitted more particles than 22 of 23 other municipal incinerators studied.

Refuse incinerators have also been found to be large emitters of atmospheric lead, which was released both by the incinerators and by the Columbia Smelting & Refining Works (Walsh et al. 2001). Columbia Smelting & Refining Works was located at the corner of Hicks and Lorraine Streets. It began operating in the late-1920s and smelting continued until at least the late-1930s. As a secondary lead smelting plant, Columbia likely released lead dust and smoke through vents and roof stacks.

## Map of 311 Complaints in Red Hook (2010-2013)



Map of 311 complaints between 2010-2013 in Red Hook

This lead, as well as the lead released by refuse incinerators, settled in the ground (U.S. EPA, n.d.). Much of this lead settled in the soil of what is now the site of Ball Fields 5, 6, 7, and 8 of the Red Hook Recreation Area. After learning of Columbia Smelting & Refining works, the NYC Parks and Health Departments tested the soil in 2012 and found that lead levels in surface soil were four times the safe limit. Deeper soil was found to have ten times the safe limit (Stapinski 2018).

High lead levels in the Red Hook Recreation Area, whose fields are frequented by children and New York City Housing Authority residents, began to be addressed by the New York City Parks and Health departments in 2012. The Parks and Health departments treated the fields' soil by laying down a concrete pad and hydroseeding the fields and grass. The fields were open for the next season. In 2015, though, testing in the surrounding fields revealed elevated lead levels (Stapinski 2018). Consequently, nine of the twelve ball fields in the recreation area were closed for remediation (NYC Parks, n.d.). Following remediation, the fields will consist of synthetic turf over twelve inches of clean fill (Stapinski 2018). The remediation will consist of four phases, with phase 1, the remediation of Ball Fields 5-8 and Soccer Field 7, being completed in spring 2020; as of this report, all nine fields remain closed (NYC Parks, n.d.).

## Climate Justice

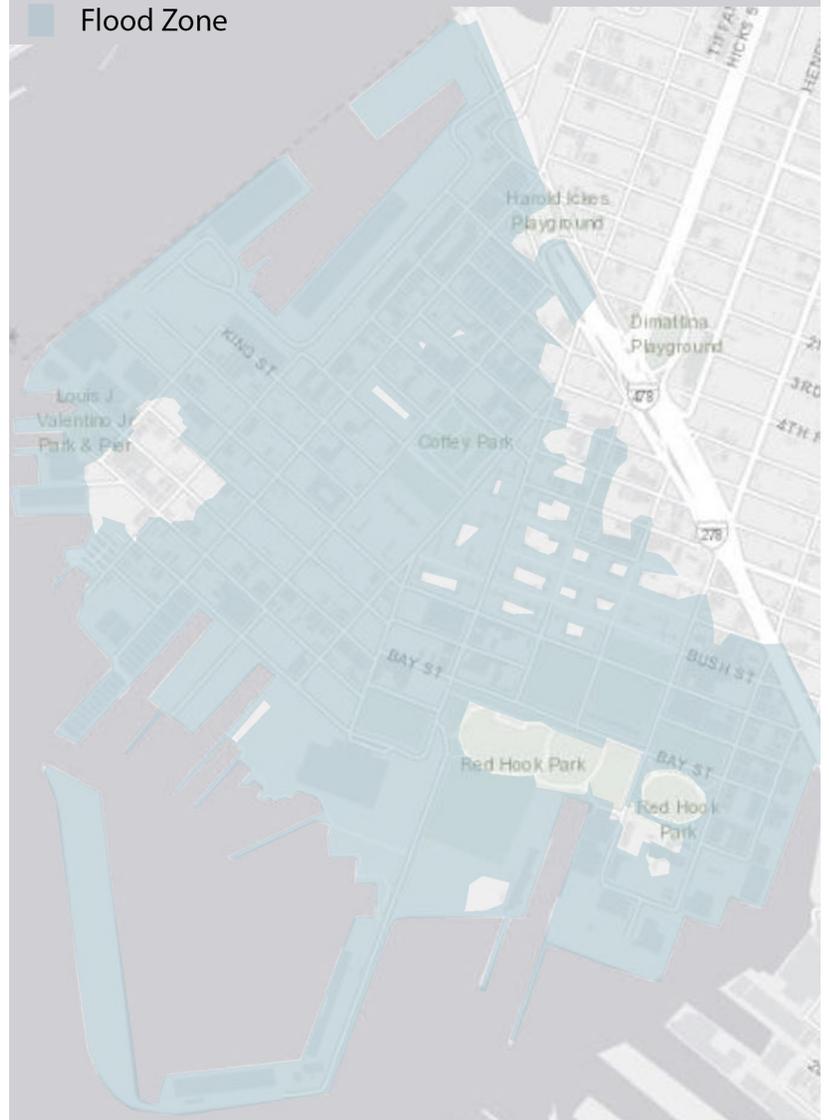
As a coastal neighborhood, Red Hook will be hard-hit by issues such as sea level rise and increased frequency of hurricanes. In an effort to combat this, the designs for Red Hook Recreation Area also incorporate bioswales. These bioswales are also intended to remove contaminants from runoff water following storm surges (Stapinski 2018). This was a vital incorporation, as Red Hook has dealt with storm surges from two hurricanes in the last decade. Though 2011's Hurricane Irene did cause minor flooding in the neighborhood along Van Brunt Street, its greatest impact was its lack thereof, creating a false sense of security during the next year's Hurricane Sandy (Bush 2011; Schmeltz et al. 2013). One resident was even quoted as saying "The storm was ridiculous,' . . . 'The next time I'm going to stay right where I am'" following Hurricane Irene (Bush 2011). Unfortunately, Hurricane Sandy had a much greater impact on Red Hook than Irene.

With a storm surge peak of 13.88 feet, Hurricane Sandy devastated Red Hook. Over 75 percent of the neighborhood was flooded- an area 1.5 times larger than predicted by FEMA's 1983 flood maps (Hewes 2015; NYC Dept. of Design and Construction 2019).

Further contributing to the flooding was the neighborhood's groundwater table, which is located only five to ten feet below the surface. This is primarily due to the land's high porosity and low elevation, consequences of filling the area's naturally swampy environment with garbage (Walsh 2017).

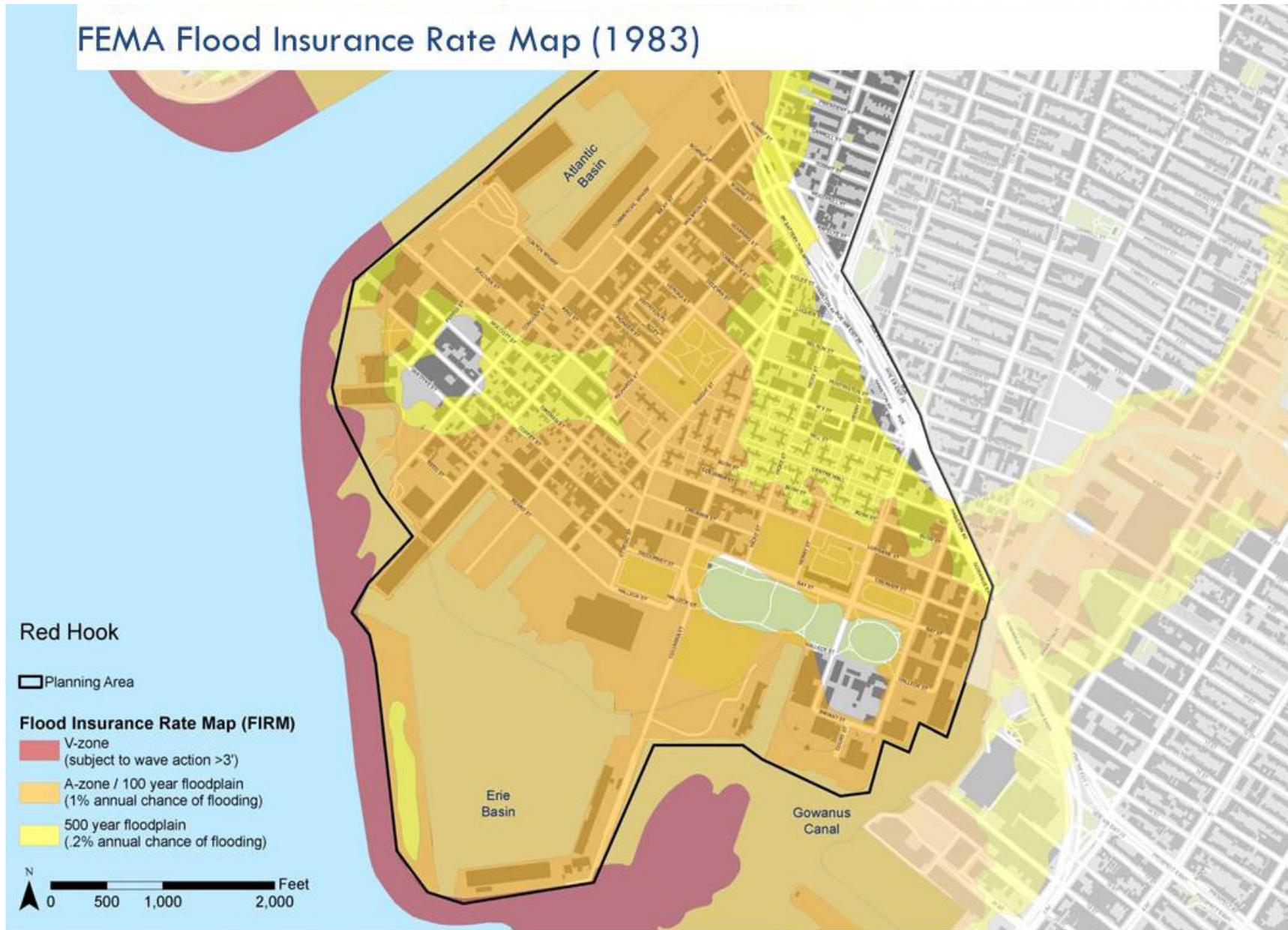
Small businesses along Van Brunt Street and Fairway experienced significant inventory losses and property damage as a result of flooding following Hurricane Sandy, but the Red Hook Houses experienced the most widespread and long-lasting effects (Wong 2017). Though the Red Hook Houses' elevators, boilers, and electrical systems were shut down two days before Hurricane Sandy hit the neighborhood, they experienced extensive damage due to the storm surge. The Red Hook Houses were without running water for eleven days; heat, for seventeen days; and electricity, for three weeks. Thus, one of the city's largest vulnerable populations was also one of the most severely impacted by a natural disaster (Schmeltz et al. 2013).

## Flooding in Red Hook During Hurricane Sandy (2012)



Flooding in Red Hook after Hurricane Sandy

# FEMA Flood Insurance Rate Map (1983)



1983 Fema flood insurance rate map. The red and orange areas show expected flooding for a 100-year storm - the type of storm that Hurricane Sandy was initially labeled as (Cooper 2018); however, much of the yellow area, only expected to flood in the event of a 500-year storm, also flooded during Hurricane Sandy

It is important to note that other natural disasters have hit Red Hook throughout its history. In 1821, a hurricane producing estimated ten- to eleven-foot surges hit New York; however, this was before the area's low-lying marshlands and tide pools were filled. It is therefore likely that the neighborhood's natural ecology was able to absorb much of the storm surge (Gbrook@pipeline.com 2015). The next major storm to hit New York City was Hurricane Donna in 1960 (Walsh 2017). Hurricane Donna resulted in significant damage to New York City's waterfront, causing high tides, heavy rains, and small stream flooding (U.S. Dept. of Commerce 1960). Hurricane Donna, though, seems to have had a greater impact on Lower Manhattan than on Red Hook (Lysiak et al. 2012).

### ***Legacies and Conclusions***

Through the destruction of Red Hook's natural ecology and the failure of the Cities of Brooklyn and, later, New York to extend adequate sewage and stormwater management to the neighborhood, Red Hook became a neighborhood vulnerable to disaster. In particular, the neighborhood is susceptible to flooding because of the lack of its natural wetlands, which provide protection from disasters such as hurricane storm surges, and the combined sewer system, which overflows stormwater and human waste when dealing with large amounts of precipitation (Belle, Collins, & Jordaan 2018).

Further, by allowing some of the city's poorest residents to reside in a garbage-built neighborhood without organized waste disposal and treatment, the city created an unsanitary environment that resulted in public health consequences. Though the cause of the negative health effects in Red Hook community members have changed over time, these consequences continue today. In the nineteenth century, Red Hook faced a cholera epidemic; in the twentieth century, residents suffered from breathing problems due to industrial pollution; and today, residents are faced with pollution from the BQE and the toxic lead particles left in the soil by the neighborhood's industrial past (Frost 2018).

Patterns of the injustice of these issues are visible today as well: the location of shantytowns built upon porous, trash-filled land is now home to the Red Hook Houses, which was greatly affected during Hurricane Sandy (Gbrook@pipeline.com 2015; Schmeltz et al. 2013). The location of lead-contaminated soil is also adjacent to

the Red Hook Houses, and the BQE is releasing a large amount of particulate matter into the historically disadvantaged neighborhood (Belle, Collins, & Jordaan 2018; Schmeltz et al. 2013; Stapinski 2018; Frost 2018).

Though emissions from the BQE and Red Hook's high water table and low elevation affect the entire neighborhood, it is notable that the environmental issues in Red Hook are split between the front and the back of the neighborhood. The back of the neighborhood, centered around Van Brunt Street, experienced more issues with flooding due to the combined sewer system than the front of the neighborhood. Meanwhile, the front of the neighborhood must grapple with the soil contamination left by the neighborhood's industrial past (Sternbergh 2007).

Altogether, the issues faced by Red Hook - environmental vulnerability, environmental justice, and climate justice - were exacerbated or caused by the neighborhood's industrial history, and the legacies of these issues live on. The area's marsh ecology was hardened and filled in for the waterfront shipping industry, resulting in less natural resistance to storm surges and high levels of precipitation. The neighborhood's industries and poor municipal waste management systems resulted in pollution, some of which remains in the soil of Red Hook as contamination. Finally, as a neighborhood situated against the coast due to its history with waterfront industry, Red Hook will be increasingly affected by sea level rise and catastrophic climate events such as Hurricane Sandy. Thus, the neighborhood's industrial history, which was not without problems during its peak, continues to have consequences for Red Hook today.

## PERCEPTIONS OF RED HOOK OVER TIME

Today, Red Hook is depicted as one of Brooklyn’s “coolest” neighborhoods with its Instagram-worthy food along Van Brunt Street, views to the Statue of Liberty, and music and art scenes (Benjamin 2019). It is considered a place to get away from but remain within New York City—isolated from the skyscrapers, congestion, and subways that dominate quotidian life in other neighborhoods (Benjamin 2019.) Yet, while twenty-first century Red Hook is a trendy destination, late-nineteenth and twentieth century Red Hook was a place many sought to avoid. In a century and a half, the perceptions of Red Hook have transitioned from fear to admiration, influenced by key portrayals of Red Hook that followed broader neighborhood trends over time.

Early depictions of the neighborhood, ranging from the late-nineteenth century to the 1920s, were anything but favorable. In

these depictions, Red Hook was characterized as a slum with squalor, lawlessness, and vice. The Brooklyn Daily Eagle published an article on Red Hook entitled “Thirty Years in the Slums” in 1872 highlighting how Red Hook “stands out...as being the grand central and amalgamated cesspool and sink of low life in Brooklyn” (Brooklyn Daily Eagle 1872). This characterization continued for over fifty years, even as Red Hook gained a reputation as a prominent shipping port. In his 1927 short story “The Horror at Red Hook,” H.P. Lovecraft called Red Hook a “tangle of material and spiritual putrescence the blasphemies of an hundred dialects assail the sky” (Lovecraft [1927] 2005, 22). Notably, both of these descriptions cited the activation of the waterfront and presence of immigrants as reasons for the neighborhood’s poor conditions. Lovecraft attributed many of Red Hook’s downfalls to ethnic diversity resulting from the smuggling of devil-worshipping “aliens” through the port, and the Brooklyn Daily Eagle called out the illicit activities of immigrants along the docks (22, 27; Brooklyn Daily Eagle 1872).

## CHANGING PERCEPTIONS OF RED HOOK OVER TIME



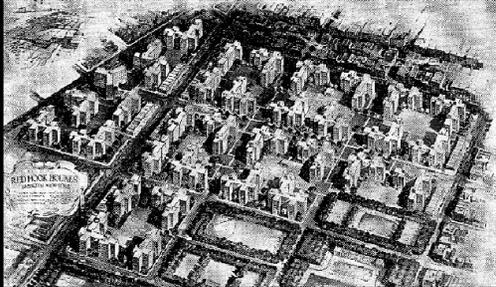
Photo Sources (left to right):  
iPhioscoe, 2017, “On the Waterfront: 1954,” Basement Rejects, February 21, 2017.  
Eugene Richards, 1988, “Crack: Downfall of a Neighborhood,” Life Magazine 11, no. 8 (1988): 100.  
Colin Clark, 2019, “A Brooklyn Burger that Conjures Old New York,” New York Times, October 2, 2019.

Timeline of changing perceptions of Red Hook over time

## CHANGING PERCEPTIONS OF THE RED HOOK HOUSES OVER TIME

**1938**

*New York Times* coverage  
Mildred Adams- "Red Hook's Houses"



"Red Hook houses, where the city's poorer people will be able to live at rents little or no higher than they are paying in slums."

**1988**

Life Magazine, "Crack: Downfall of a Neighborhood"  
George Howe Colt with photos by Eugene Richards



"There are only two kinds of people left in the project — them and us," says a 30-year-old man. "They have guns and money and run the streets. They kill each other and anybody in the way. We just try to stay out of their way, and that usually means never going out of your apartment. This is no way to live." In Red Hook's war against crack, crack appears to have won."

**2012**

*Red Hook Summer*  
Spike Lee et al.



"You know, they built this place in 1938 for the dock workers. 7,000 of them. And then they stuffed the poor here. The Irish first. The Italians. The blacks and the Puerto Ricans. Folks was supposed to use this place as a stepping stone. But then there was no place to step to, because they gave it all away."

The majority of Red Hook residents live in the Red Hook Houses; therefore, the Red Hook Houses have featured prominently in the media and popular depictions over time. Immediately during and after their construction, the Red Hook Houses completely dominated media coverage of and publications featuring the neighborhood. The *New York Times* frequently commented on the development and popularity of the Red Hook Houses, and the Works Progress Administration praised the development as an impressive fight against existing slums and associated poverty (W.P.A. 1939, 464).

However, unlike for the rest of the neighborhood, perceptions of the Red Hook Houses have not become increasingly favorable. Whereas perceptions of Red Hook as a whole have moved gradually from horror to hipness, perceptions of the Red Hook Houses have shifted drastically from optimism to horror. And, unfortunately, the association of the Red Hook Houses with drugs, violence, and crime has remained consistent since the 1980s. Ongoing attempts to improve recreation and community opportunities in the Red Hook Houses largely are overlooked in the media and popular portrayals of the housing development – furthering the negative perception of a vibrant part of the Red Hook community.

**Moving forward, how can the Red Hook Houses be portrayed more accurately?  
Who should have the power to decide?**

Photo Sources (left to right):  
New York Times, 1938, "To Be of 6 Stories," February 21, 1938.  
Eugene Richards, 1988, "Crack: Downfall of a Neighborhood," Life Magazine 11, no. 8 (1988): 93.  
Blu-ray.com, 2012, "Red Hook Summer Blu-Ray," December 21, 2012.

While it is true that immigrants have been a consistent part of Red Hook's history, these portrayals of the neighborhood overlooked the positive impacts of immigrants and presented Red Hook as dangerous, corrupted, and unfit for habitation. Around the time of and the decade after the publication of "The Horror at Red Hook," depictions of Red Hook began to center around slum clearance and the construction of a new housing development. In 1927, Louis H. Pink, a member of the state Housing Commission who suggested a public housing project on the eventual site of Red Hook Houses, called for the rejuvenation of the neighborhood despite its association with crime. He stated that "giving a dog a bad name won't cure the dog, and by the same token, giving Red Hook a criminal record will not make this section a better place to live in" (Brooklyn Daily Eagle 1927). Discussion of housing developments, specifically the Red Hook Houses, rather than further defamation of Red Hook dominated the media in the 1930s. The Works Progress Administration (WPA) saw these houses as a positive addition to the neighborhood—a perception that would change as the Red Hook Houses became the setting of many later depictions of the neighborhood.

(WPA 1939, 464). In their 1939 guide to New York City, the WPA claimed that the Red Hook Houses would combat "squalid and overcrowded blocks" (463). Additionally, they tried to dispel the "sinister associations" of Red Hook, as seen in "The Horror at Red Hook," by explaining that its name was rooted in the color of the soil rather than in malice (464). With these depictions, Red Hook was associated more with the potential for progress than the presence of crime.

Yet portrayals of Red Hook in the 1940s and 1950s regressed to a criminal narrative. Red Hook became synonymous with the Italian mafia. Following his murder and disappearance at the hands of the mob in 1939, insurgent longshoreman Peter Panto became the focus of and inspiration for numerous plays and books (Ward 2019). He inspired the book *The Raw Edge* in 1958 which told the story of a Brooklyn dock worker who fought back against racketeering. His story made it to Broadway in 1941 in the play *Brooklyn USA*, written by two former crime reporters. Even esteemed playwright Arthur Miller wrote a screenplay entitled *The Hook* about Panto in 1947, but this play was not produced until 2019 due to its political implications (Ward 2019). Although based on a single person, all of these portrayals of Panto solidified the vision of Red Hook as home of the

waterfront mob and its associated murder, violence, and corruption.

Two of the most famous depictions of the mafia at Red Hook, and Red Hook in general, are Elia Kazan and Budd Schulberg's *On the Waterfront* (1954) starring Marlon Brando and Arthur Miller's *A View from the Bridge* (1957). Based loosely on Malcolm Johnson's 1949 Pulitzer-prize winning series of articles entitled "Crime on the Waterfront," *On the Waterfront* depicts Terry Malloy's struggle to resist the mafia's power over the waterfront industry (Johnson [1949] 2005, xxiv; Kazan et al. 1954). Although filmed in Hoboken, New Jersey, the movie is set in Red Hook and portrays the neighborhood as a tough place where people could not ask questions about the mob or waterfront without losing their lives (Kazan et al. 1954). *A View from the Bridge* showcases similar themes. Miller supposedly wrote this play based on stories that Vincent Longhi, an anti-mob waterfront lawyer in Red Hook, told him (Ward 2010). Once again, Red Hook is portrayed as a slum where "people in the neighborhood lack elegance, glamour" and many "were justly shot by unjust men" (Miller [1957] 1977, 4). Both of these depictions started to emphasize acts of justice in Red Hook but overwhelmingly continued the primary association of Red Hook with crime.

The next major characterization of Red Hook was not until the 1970s and 1980s. Portrayals of Red Hook in the 1960s were relatively quiet, possibly due to the decline of the waterfront resulting from the formalization of containerization in 1962. Depictions of Red Hook in the 1970s and 1980s mirrored 1940s and 1950s portrayals in their emphasis on crime—albeit this time regarding the crack industry rather than the mafia. As aforementioned in the historic context section, George Howe Colt's 1988 depiction of Red Hook in *Life Magazine's "Crack: Downfall of a Neighborhood"* had devastating effects on public perceptions of the neighborhood. It severely racialized and exaggerated the effects of the crack industry in Red Hook. In this special feature, Colt equated the Red Hook Houses with drugs, gangs, guns, and violence. Yet, more significantly for later portrayals, this article began emphasizing the separation between front and back Red Hook, or rather the Red Hook Houses versus the increasingly wealthy area by the waterfront. And, unlike in the 1930s depictions, the Red Hook Houses were no longer portrayed as a place of opportunity but rather as a place of failed opportunity (Colt 1988, 92-100).

A key shift in the character and the perception of the neighborhood occurred in the 1990s following Principal Patrick Daly's murder. This tragedy received widespread news coverage from major outlets, and is still referenced as a defining moment in the neighborhood's history. After Daly's death, the neighborhood vowed to crack down on crime, improve overall neighborhood safety, and revive the waterfront (Fried 1993). Nevertheless, as seen in the media portrayals, this era has been referenced as the start of the neighborhood's gentrification. Red Hook became "RedHo" to some but others feared this new label (Marchese 1994). With the arrival of artists, the New York Times asked if the "square mile of urban blight on the southwestern elbow of Brooklyn [could] turn into the next neighborhood for the black-clad bohemian sect" (Marchese 1994). However, some stakeholders, including developer Greg O'Connell, worried that "bohemian" could become "boutique," as seen in SoHo (Marchese 1994). In a plea against gentrification in a New York Times article, a long-time resident foreshadowed Red Hook's future: "I can see the little espresso bars and cafes here someday" (Ravo 1995).

Larger businesses changed the perceptions of Red Hook again in the early-2000s prior to the arrival of these espresso bars and cafes. The Brooklyn Cruise Terminal and Fairway Market opened in Red Hook in 2006 and Ikea opened in 2008 (NYC.gov 2006; Marritz 2008). According to Ikea traffic engineer Sam Schwartz, Ikea and other incoming businesses had the potential to "wake up" a "sleepy community" (Marritz 2008). However, portrayals of this time period explicitly deny that Red Hook needed to be awoken and that these businesses had a positive impact on the Red Hook community. In her 2013 book *Visitation Street*, former Red Hook resident Ivy Pochoda portrays how a bodega owner's optimism about the incoming cruise liners quickly turned to disappointment when he realized the passengers had no intention of spending time in Red Hook (Pochoda 2013, 285-86). Likewise, in Spike Lee's 2012 movie *Red Hook Summer*, one of the children suffers from asthma described as a symptom of the pollution from the cruise ships (Lee et al. 2012). The arrival of new businesses and stakeholders produced at times conflicting perceptions regarding the potential for and implications of neighborhood improvements.

It is critical to note that, despite media and popular portrayals, big businesses and the Red Hook community are not antithetical. Omissions in the media regarding the actions of these businesses have created this false perception. For example, Ikea served as a

shelter for Red Hook residents during Hurricane Sandy in 2012, but Ikea's generous actions did not receive coverage in a single major media outlet (Bus tour with Carolina Salguero 2020). Even smaller newspapers failed to cover this event. Next City discussed why Ikea survived relatively intact during the superstorm but did not comment how it helped others survive (Goodyear 2013). Omissions in the media regarding Red Hook are not exclusive to Hurricane Sandy and highlight how public perceptions of Red Hook have been curated through portrayals with specific agendas.

Depictions of Red Hook since 2012 have focused significantly more on gentrification than on Hurricane Sandy and the neighborhood's need to rebuild. A few major articles about Hurricane Sandy, however, were published in the immediate aftermath of the superstorm. Time published an article about how Hurricane Sandy was an "apocalypse" for Red Hook. (Karon 2012). Business Insider, likewise, called post-hurricane Red Hook "so depressing" and "a complete mess" (Groth 2012). Both articles commented on the strength of the community in the midst of the tragedy, and Business Insider went a step further to call out NYCHA for not doing enough to help residents of the Red Hook Houses (Groth 2012). That being said, articles about Red Hook and Hurricane Sandy focused on the back of the neighborhood more than the front and many brought the conversation back to the neighborhood's increasing trendiness. For example, a Time article mourned the loss of some of the neighborhood's "quirkiness" which had attracted "scores of young hipsters" (Karon 2012).

Discussions of gentrification in books and movies about Red Hook often focus on the changing character of the neighborhood as a result of the influx of new businesses and demographics. In a profound quote from *Visitation Street*, Pochoda writes that there are "new bars cannibalizing the old ones" amongst the "skeletons of forgotten buildings" (Pochoda 2013, 167). A similar idea is echoed in the 2018 movie *Hearts Beat Loud* in which the protagonist is forced to close his record shop after nearly two decades due to rising rents. This movie juxtaposes new and old Red Hook through setting some scenes in *Baked on Van Brunt* and others in *Sunny's Bar*, a local institution (Haley et al. 2018). While the past two depictions indirectly criticize gentrification, *Red Hook Summer* shows two children from the Red Hook Houses vandalizing newly-poured cement on a luxury block in a protest against gentrification (Weichselbaum 2012; Lee et al. 2012).

A key trend that has emerged in the conversations about gentrification is the inequitable development and opportunities in front versus back Red Hook and the divide between the Red Hook Houses and Red Hook. The back and front of Red Hook are not shown to have the same amount of liveliness, and the Red Hook Houses are portrayed as stagnant with ongoing drug crimes and violence. In *Red Hook Summer*, a character points to the Red Hook Houses and proclaims “everything about this place is dead” (Lee et al. 2012). Another character later discusses the “reverse migration” of black people who can no longer afford to live in Red Hook or New York City (Lee et al. 2012). Pochoda also comments on the lack of opportunities for Red Hook Houses residents despite new developments in Red Hook. She frequently alludes to the false incrimination of African American children in the Red Hook Houses due to racial biases and the perception that children from the Red Hook Houses are more dangerous than children from other parts of the neighborhood (Pochoda 2013; Lee et al. 2012).

Modern web and media coverage are less critical of and nuanced about the changing character of Red Hook. The *New York Times* commented that “Fringe is In, for New Development” alongside a picture of Red Hook (Ukmar 2019). Despite the lack of tourists to Red Hook via cruise liners, local visitors are invited for good food in a trendy environment. The \$25 burger at Red Hook Tavern has received widespread media coverage, listed on the exclusive *New York Times* “Top 10 New York Dishes of 2019” (Wells 2019). *NYC: The Official Guide* encourages people to visit “this waterfront neighborhood” with “sweeping views of New York Harbor, great seafood, and an industrial aesthetic held over from a previous life. Its cobblestones are now home to museums, restaurants and homespun shops” (NYC.gov, n.d.). The waterfront, once portrayed as rough and dangerous, is now considered a cultural hub.

Yet Red Hook’s previous life is not entirely in the past. Some perceptions have remained consistent throughout time. In nearly every depiction of Red Hook since the late-nineteenth century, the neighborhood has been portrayed as isolated without adequate transportation, revolving around the waterfront, and being the only place with views to the Statue of Liberty’s face (Intrater 2006). Violent crime remains a focus of the portrayal of Red Hook in the media, even though this coverage is secondary to that regarding new trends. And, critically, the waterfront and Van Brunt Street remain entirely separate from the Red Hook Houses in portrayals

of the neighborhood. This separation is further emblematic of how perceptions of the Red Hook Houses have been the inverse of overall neighborhood perceptions. Whereas perceptions of the neighborhood gradually have become more positive, depictions of the Red Hook Houses quickly became more negative.

New threats to Red Hook continue to change the perceptions of the neighborhood. Sea-level rise has become an issue as significant as gentrification. The *Guardian* called Red Hook “the hip New York enclave caught between gentrification and climate change” (Berner 2018). Additionally, with the upcoming closure of Fairway Market, Red Hook faces a potential food security challenge (Paybarah 2020). As Red Hook continues to change so will the perceptions of it. Nevertheless, depictions of Red Hook will continue to embody only fragments of Red Hook’s true character that will shape how Red Hook is remembered for years to come.



**APPENDIX C**  
**ANALYSIS OF RED HOOK PLANNING AND POLICY CONTEXT**

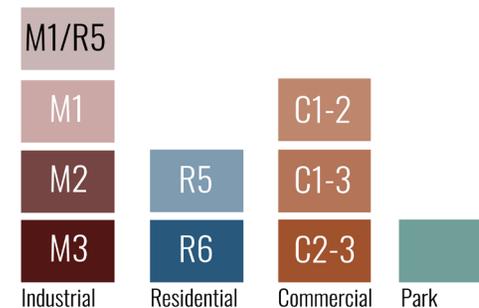
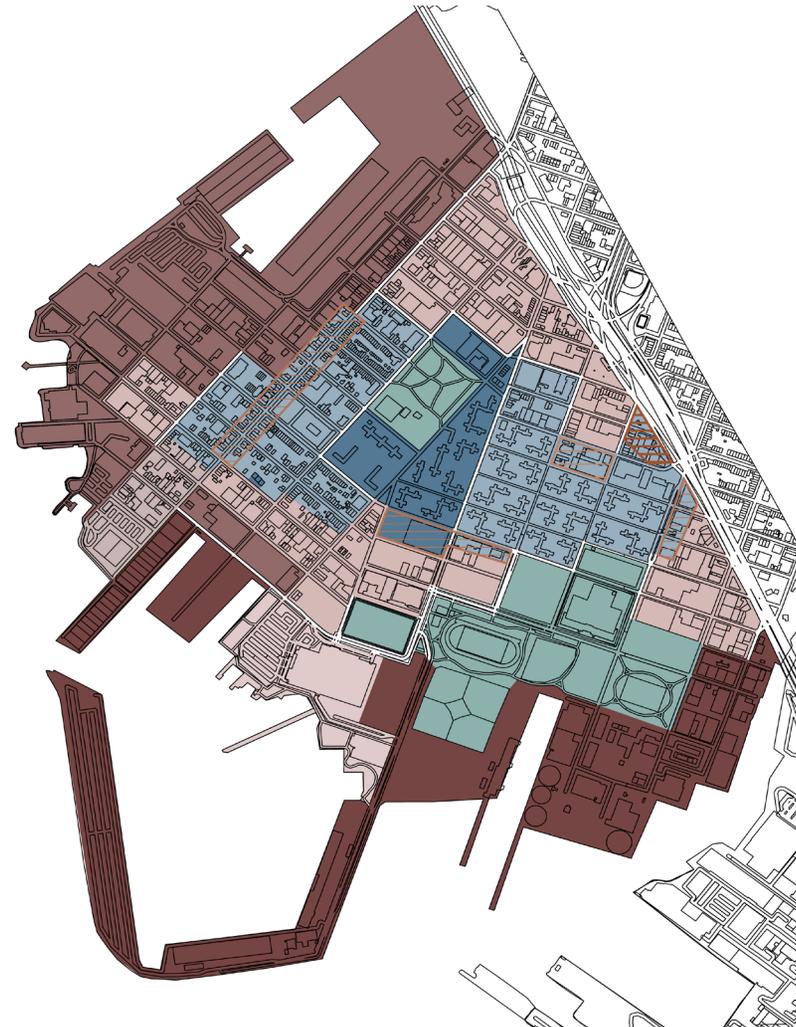
In order to understand potential future uses and development in Red Hook, it is vital to examine the current zoning, regulations, and policies in place in the neighborhood. As a historically industrial neighborhood, Red Hook is currently navigating the challenges of evolving economically while working within its built heritage (the majority of which is not designated for preservation), and preparing for future flood events. However, designation of Red Hook's historic buildings could, potentially, benefit the neighborhood in terms of adaptation and recovery through increased recognition, eligibility for funding, and regulatory protection.

Barring future changes to the existing regulations in Red Hook, any plans and proposals for the future of the neighborhood - from those intended to increase the neighborhood's resiliency to future flood events to those intended to preserve the neighborhood's heritage - must abide by the current policies established by the New York City Department of City Planning. The existing planning and policy conditions in Red Hook have been categorized as either zoning or proposals.

## ZONING: PERMITTED USES AND FAR IN RED HOOK

The NYC Dept. of City Planning has three fundamental zoning districts: manufacturing, residential, and commercial. These districts regulate use, floor area ratio (FAR), distance between lot lines, parking, and, where applicable, dwelling units and special features (NYC Planning, n.d., A). Due to the nature of future development plans and visions within the neighborhood, the key regulations in Red Hook are use and FAR.

The zoning districts and overlays regulate the land use in Red Hook and illustrate the current goals and expectations for the area. Red Hook is zoned primarily for manufacturing/industrial and residential use. Commercial overlays are applied to residential areas within the neighborhood, creating corridors for local commerce. Industrial uses are permitted within the manufacturing zoning districts in Red Hook. As the primary purpose of these districts in Red Hook is industry, these manufacturing/industrial districts will be referred to as industrial zoning or industrial districts.



A map of the current zoning districts within Red Hook

The entirety of Red Hook's waterfront area is zoned for industrial uses, framing the neighborhood.

The first of these land uses, M1, permits light industry, which is characterized by warehouses, as well as wholesale and storage facilities. Hotels, offices, and retail uses are also permitted in M1 districts. This zone is meant to serve as a buffer between heavier industrial uses and residential and commercial areas. M1 zones are generally further inland than other industrial uses and are adjacent to commercial and residential zones more often than the other industrial districts (NYC Planning, n.d.).

The second industrial use, M2, permits intermediary industry. This zoning reflects the 1961 Zoning Resolution, which introduced uses (residential, commercial, and manufacturing) to the NYC zoning code (NYC Planning, n.d.); The New York Preservation Archive Project, n.d.); therefore, M2 waterfront manufacturing districts have been grandfathered into the current zoning code (NYC Planning, n.d.). These districts have less stringent performance standards, the "minimum requirement or maximum allowable limit on noise, vibration, smoke, odor and other effects of industrial uses," than M1 districts, except when these M2 districts are adjacent to residential uses (NYC Planning, n.d.; NYC Planning, n.d.). Notably, a large section of the Red Hook's M2 district lies adjacent to a zoned-residential area.

The third industrial use zoned within Red Hook is heavy industry, M3. M3 zones include heavy industries that generate noise, traffic, and/or pollution. Public utilities are a common use within M3 zones, and these areas are not typically directly adjacent to residential uses. This is the case in Red Hook, though the neighborhood does have an M3 district adjacent to the Red Hook Recreation Area (NYC Planning, n.d.). Ultimately, the placement of M1, M2, and M3 industrial zones within Red Hook requires that the waterfront property continue to be used for industrial purposes. These purposes have been shifting towards "lighter" uses, such as warehousing and makerspaces. Furthermore, the placement of these districts reinforces historic inequities in the neighborhood, with "heavy" industry (M3) being permitted in the "front" of the neighborhood - an area that has historically housed less advantaged members of the community - while "lighter" industry (M1 and M2) is permitted in the "back."

The final industrial zone within Red Hook is the special M1/R5 zoning district containing the neighborhood's Fairway and a housing development. This district was made possible through a zoning incentive for residential development in industrial areas, and is the only district of its kind in the city. While in the "Front" of the neighborhood, the Red Hook Houses, parks were meant to serve as a buffer between the industrial and residential uses, there is no buffer between the M2 industrial uses and residential uses in the "Back" of the neighborhood (NYC Planning, n.d.). It is worth noting that, even as buffer zones between modern industrial and residential uses, some parks are sitting on land that was contaminated by historic industry. These sites are currently undergoing soil remediation (Stapinski, 2018).

## ***Residential Zones***

Red Hook residential zoning is dominated by R5 districts, with the Westernmost Red Hook Houses, known as Red Hook West, being zoned R6.

Both R5 and R6 districts consist of transitional, medium-density residential housing. R5 districts typically produce "three- and four-story attached houses and small apartment houses," while R6 districts consist of a more diverse mix of building types (NYC Planning, n.d.; NYC Planning, n.d.). In the case of Red Hook West, though, NYCHA produced a "tower in the park" development, which is a common development type within R6 districts (NYC Planning, n.d.).

The city is relaxing zoning regulations for communities located within floodplains to allow for adaptation in place. Regulations for residential features such as height, yard size, building envelope are being relaxed to allow existing buildings to be retrofitted and new buildings to be constructed with adaptations for current flood height predictions, as well as flood height predictions that incorporate sea level rise. For instance, the floor area will be exempted from floor area regulations if buildings' ground floors are floodproofed. Under the city's Zoning for Coastal Flood Resiliency plan, these adaptations are not only permitted, but also encouraged (NYC Planning, 2019). Under the same incentives for retrofitting and adaptation in place, now mechanical equipment can be relocated away from basements, below grade or below flood plane and into permanent structures



Images of a new construction medical facility and townhomes in Red Hook whose primary entrances are raised above flood level, a zoning-permitted adaptation

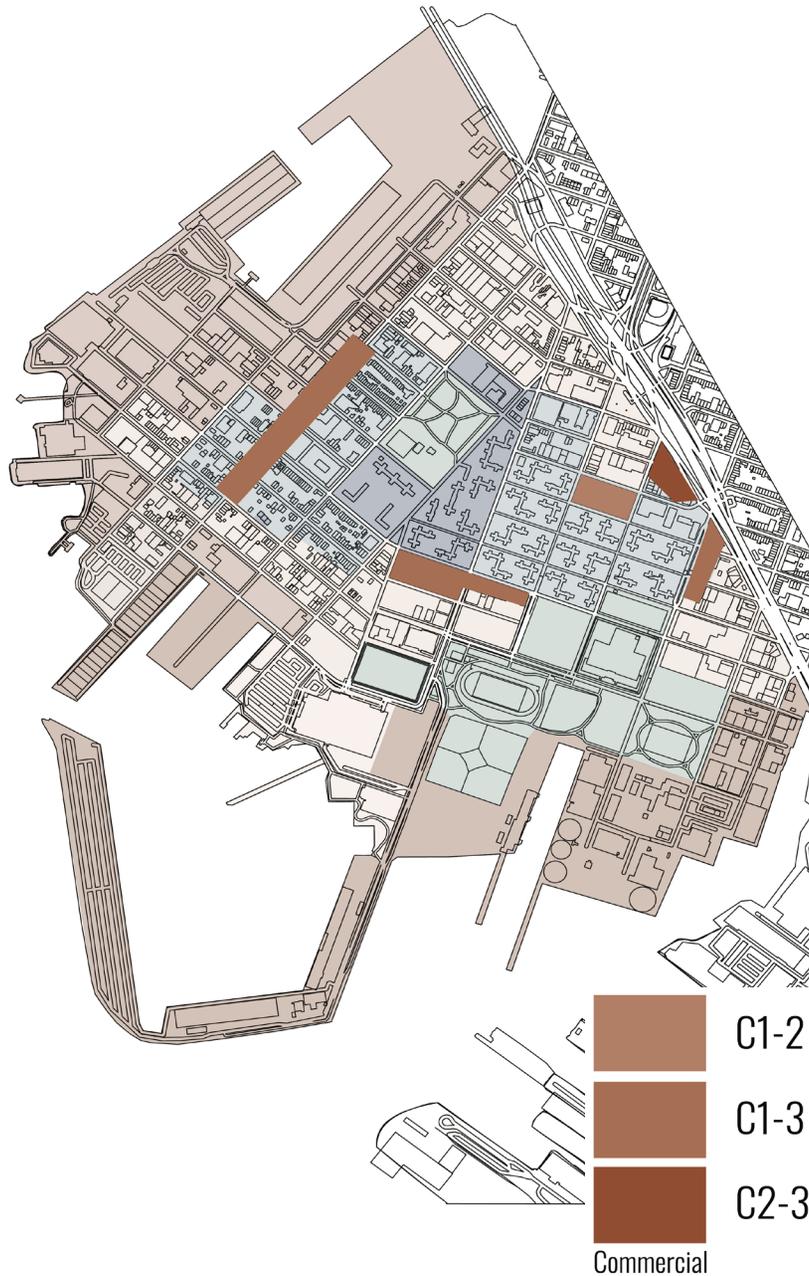
within the lot - actions which are currently in the works for the Red Hook Houses (NYC Planning, 2019; AIA New York, 2017). Regarding structures' elevations, a focus has been made on establishing rules to mitigate blank walls of elevated buildings through landings and steps on the access facade (NYC Planning, 2019).

Through the zoning district analysis, there is not much of an inequitable placement or distribution of residential permissible uses, other than the formalization of higher density housing for low income residents. Most of Red Hook's population is concentrated in the NYCHA development, but the primary problem with the location of this housing is its proximity to the M3 heavy industrial districts, rather than the R5 and R6 zoning regulations themselves.

### ***Commercial Zones***

The neighborhood of Red Hook does not contain any purely commercially-zoned districts; instead, the neighborhood features commercial overlays, or commercial districts mapped within residential districts meant to serve local retail needs (NYC Planning, n.d.). The C1 and C2 commercial overlays present in Red Hook create two distinct commercial corridors, which cater to the NYCHA population and the residential population of the "Back" of the neighborhood, as well as an overlay district on the northeast of the neighborhood.

The distinction between C1-2, C1-3, and C2-3 zoning districts is their requirement for accessory parking. As a general rule, a lower numerical suffix equates to a greater requirement for off-street parking; thus, C1-2 districts typically require more off-street parking than C1-3 districts. All of the commercial zoning districts in Red Hook, though, are designed to serve local retail needs, either in small-scale commercial buildings or as commercial infill in residential developments (NYC Planning, n.d.).



Map highlighting the commercial overlays, shown in orange, within Red Hook

## Available FAR

The available floor area ratio (FAR) is categorized as either commercial, industrial, or residential, in parallel with zoning uses. Notably, FAR is available for some buildings for uses that are not permitted by the zoning code. This is likely due to shortcomings of the city's management system for land use data, and available FAR that is incompatible with the zoning cannot be used; however, that does not mean that rezoning cannot be pursued by community members and developers in order to make use of a developable area. In Red Hook, the available FAR for commercial use is concentrated along the waterfront, Atlantic and Erie Basins, and Gowanus Bay, in areas currently zoned for manufacturing uses.

Due to the zoning use restrictions in place, much of the commercial FAR is not actually usable right now; however, developers and community members may seek to pursue rezoning to make use of this space. The available industrial FAR is concentrated along the blocks immediately inland from the waterfront and in the area North of the Red Hook Houses (NoRH).

Properties with available industrial FAR surround the current residential area of Red Hook, allowing these properties to be used for light industrial purposes (M1 zoning). It is notable, though, that a significant amount of properties within the residential area of Red Hook, including the Red Hook Houses, have available industrial FAR. This can be due to legacy data or an inaccuracy in the PLUTO data but, if accurate, still means that this available industrial FAR is precluded from being exploited by the current zoning. While rezoning is possible, it is unlikely that these properties will be rezoned for industrial uses.

Finally, available residential FAR within the neighborhood is concentrated within the neighborhood's residential districts. This indicates that much of the residential area within Red Hook is vulnerable to redevelopment into higher-density complexes, as there is developable space and these areas are already zoned for residential use. It is also noticeable that the special M1/R5 zoning district (see Figure 2) has available FAR for all three uses. While the exact zoning incentive used to encourage residential development in this industrial area is unclear, this incentive in concert with available FAR likely makes this area incredibly vulnerable to redevelopment.



Map indicating available Commercial FAR in Red Hook. A darker color indicates more developable commercial space



Map indicating available Industrial FAR in Red Hook. A darker color indicates more developable industrial space



Map indicating available Residential FAR in Red Hook. A darker color indicates more developable residential space

## ***Waterfront Zoning and Revitalizations***

In 1993, special zoning regulations were adopted for the city's waterfront areas, the blocks adjacent to or intercepted by the shoreline. These regulations require that new developments provide publicly accessible areas along the waterfront, while also regulating use, form, size, and location (NYC Planning, n.d.). Of these requirements, the provision for public access. These features may not be consistent with Red Hook's industrial character, and as more new development or redevelopment comes into the neighborhood, Red Hook's waterfront could be significantly altered (NYC Planning, n.d.).

Furthermore, the entirety of Red Hook's M3 industrial districts are located within the Coastal Zone Boundary (CZP) of the city's Waterfront Revitalization Program (WRP).

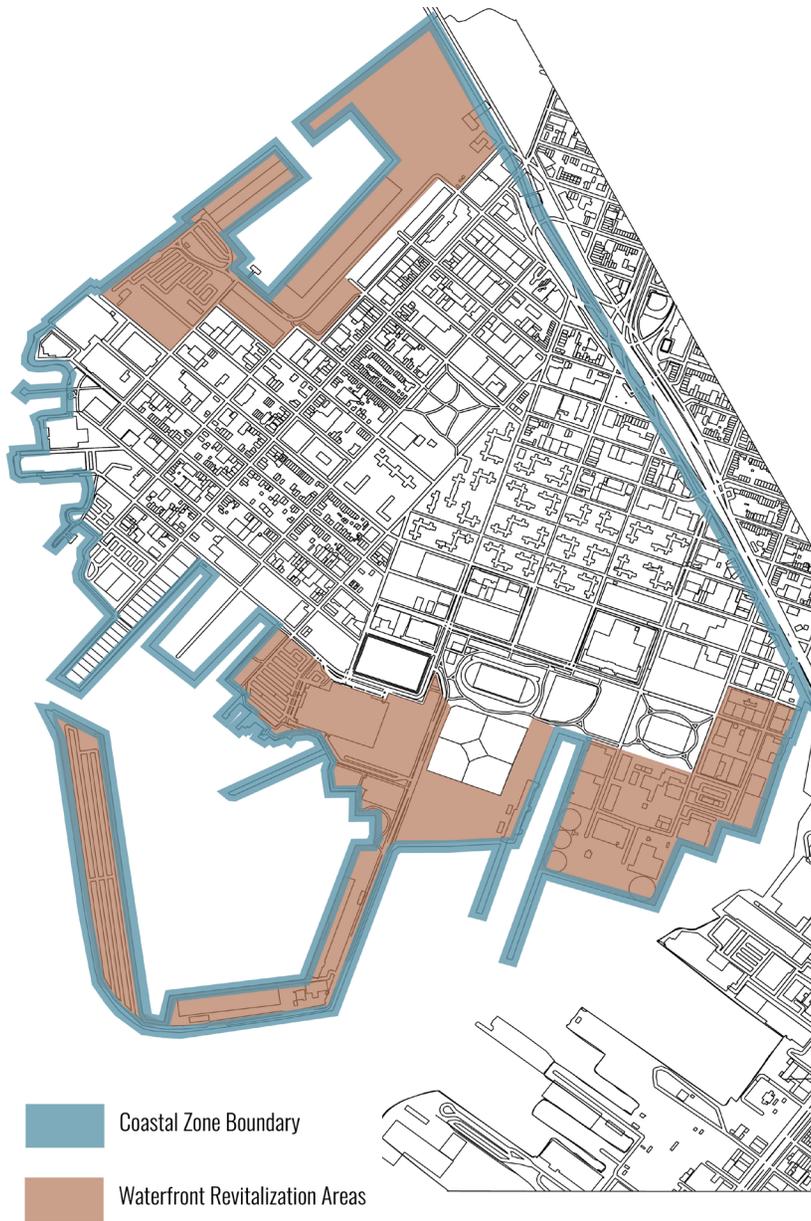
It is critical to note that the entirety of the neighborhood is identified as a Coastal Zone, which may yield increased attention from the federal government in the case of another significant natural disaster. Additionally, the WRPs located within Red Hook are "Significant Maritime and Industrial Areas" (SMIAs), where water-dependent and

industrial uses are encouraged for future development. It is key to highlight, though, that the city's waterfront zoning regulations do not require public access when new development is industrial in nature (NYC Planning, 2016); therefore, the goals of the SMIAs in Red Hook may be incompatible with those of waterfront zoning. Finally, much of Red Hook's waterfront is also an Industrial Business Zone (IBZ).

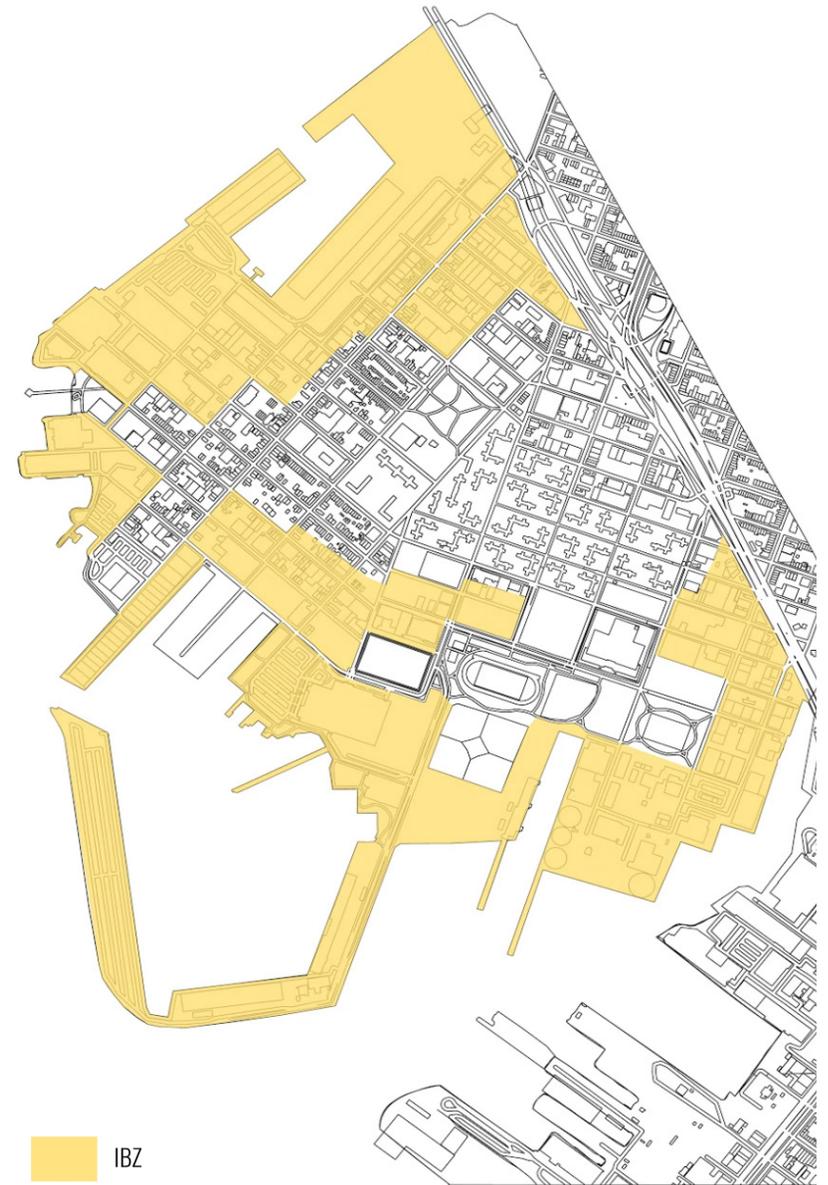
IBZs are special manufacturing and industrial zones within the boundaries of which the City will not support attempts at rezoning for residential purposes. Industrial and manufacturing firms that choose to relocate to IBZs are also eligible for tax credits (NY). Thus, due to the various policies in place meant to protect the character of Red Hook's waterfront, it will likely continue to serve as an industrial and manufacturing district and future development may not abide by the city's requirements for waterfront public access. This means that open spaces relationships in Red Hook's waterfront area may not change with new development, or that they may change at a slower rate than other waterfront areas in New York City.



Before and after showing Red Hook's Todd Shipyard and Graving Dock, which began undergoing demolition in 2006, and IKEA, constructed on the same site in 2008



Waterfront Revitalization Program's Coastal Zone Boundary in Red Hook



Industrial Business Zones within Red Hook

## PROPOSED PLANS AND VISIONS FOR THE FUTURE OF RED HOOK

Numerous proposals for future development and adaptation within Red Hook have been made since Hurricane Sandy made landfall in 2012; however, few of these proposals have actually begun to be implemented and none have been completed. A point that has been consistent throughout these proposals was a lack of concern for the preservation of the industrial heritage prevalent on the waterfront, or any heritage sites at all. Even the Municipal Art Society of New York, which was mobilized during the inclusion of the Brooklyn waterfront in the America's 11 Most Endangered Places list in 2007 (National Trust for Historic Preservation 2020), had shifted their attention to the protection of buildings that are eligible for National Register listing specifically along the Gowanus canal, rather than proposals that would include the eligible Red Hook Buildings (MAS 2019). The proposals that are experiencing implementation at the time of writing will be referred to as "plans," while proposals that have been

discussed but have not begun to be executed at the time of writing will be referred to as "visions."

### ***Plans: In-Process Changes in Red Hook***

At the time of writing, three plans are being implemented within Red Hook. These plans were proposed and are being enacted by NYC municipal government partnerships, and each is intended to increase the physical resiliency of the neighborhood during future flood events.

One of these plans is a joint project between NYC Parks and the US EPA to remediate the high lead levels in the Red Hook Recreation Area's ballfields. The plan, which began implementation in 2019 and is slated for completion in 2023, is to cap the contaminated ballfields with twelve inches of soil (rather than excavate the contaminated soil), a drainage layer, and synthetic turf. The entire field will then be enclosed by a retaining wall (NYC Parks, n.d.; NYC Parks 2018).



The lead-contaminated soil in the Red Hook Recreation Area ballfields will be capped by a demarcation layer, clean fill, a drainage layer, and synthetic turf while being enclosed by a retaining wall

Because the resultant fields will be raised above flood elevation (though the EPA's definition of "flood elevation" for Red Hook is unclear) and covered by nonpermeable synthetic turf, the designs include bioswales and more than 6000 new plantings (NYC Parks 2018).

While this plan only covers a limited area within the neighborhood - the Red Hook Recreation Area - it is intended to increase Red Hook's resiliency by preventing lead intoxication in residents and incorporating flood-adaptive features (the flood walls, bioswales, and drainage layers). It is unclear, though, how the multi-year closure of multiple neighborhood ballfields and the trade of large swaths of permeable land for drainage and bioswales will affect the neighborhood in terms of social and physical resilience, respectively.

Another ongoing plan is a joint project between NYCHA and Kohn Pederson Fox (KPF) to increase the resiliency of the Red Hook Houses via a variety of design adaptations. Efforts began in 2017 with a \$63 million renovation of the Red Hook Houses' roofs, parapets, and railings. The new roof is intended to have better insulation and reduce water intrusion (Wong 2017). The roof replacements, though, are only the first phase of the large-scale project, which will include "two free standing buildings for boilers raised above ground level," one of which will incorporate a planted roof (the West plant) and the other of which will include social spaces and a translucent exterior (the East plant) (AIA New York 2017; KPF n.d.). The plan also includes "14 'utility pods' throughout the campus to distribute heat and electricity," which will protect "the community against future storms by decreasing the likelihood of widespread utility failure" - a problem experienced after Hurricane Sandy's landfall (AIA New York 2017). The designs also plan to raise the Red Hook Houses' courtyards through a "lily pad" landscape solution, developed by landscape architecture studio Olin Studio in association with KPF and NYCHA. This "lily pad" solution will create permanent flood barriers to the entrances of the Houses and be supplemented by passive barriers that will automatically deploy during flood events (AIA New York 2017).

Altogether, these design interventions are intended to increase social capital and physical resiliency by creating welcoming social spaces that double as flood adaptations. Although they are exclusive to the Red Hook Houses, these interventions will likely have a considerable impact on the neighborhood, given the large proportion of Red

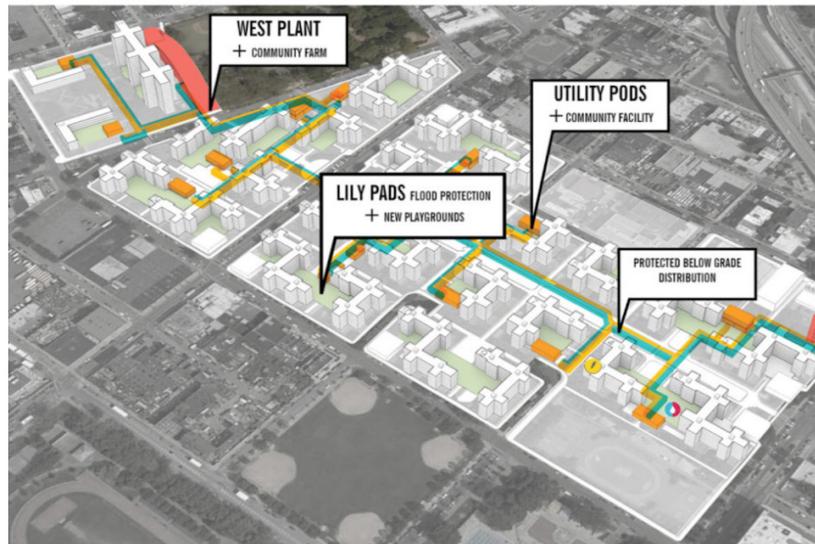
Hook's population that lives in the NYCHA properties as well as the large physical area that the Houses occupy.

The final ongoing plan in the neighborhood is the Red Hook Coastal Resiliency (RHCR) Project, "an integrated coastal protection system that will reduce the risk of coastal flooding, maintain access to the waterfront, and create improved public spaces" (NYC Red Hook Coastal Resiliency Project, n.d.). RHCR incorporates the expertise of numerous municipal and state agencies, including: Dept. of Design and Construction, Mayor's Office of Resilience, Emergency Management, Dept. of Environmental Protection, Dept. of transportation, Economic Development Corporation, Mayor's Office of Environmental Coordination, Dept. of City Planning, Dept. of Parks & Recreation, and NYS Division of Homeland Security and Emergency Services. The Project is focused on community engagement and has conducted feasibility assessment analyses, ultimately reaching the conclusion that two points within the neighborhood, along Beard Street and the Atlantic Basin, are "most vulnerable to coastal storm surging and sea level rising" (NYC Dept. of Design and Construction 2019).

These sites will be the focus of the RHCR Project's flood adaptation and interventions. Currently in place or ready to be deployed per the project are Interim Flood Protection Measures (IFPMs), including HESCO barriers, Tiger Dams, and Flood Panels, which will provide up to four feet of above-ground protection. These measures, are to be supplemented or replaced with new, FEMA-approved flood protection measures that are still being designed; the design phase is currently slated for completion, including FEMA approval, by December 2021 (NYC Dept. of Design 2019).



Rendering of NYCHA and KPF's "lily pad" design during flood conditions. A raised courtyard, combined with a deployable flood barrier, would allow water to pool without entering the Red Hook Houses



Map of the community facilities planned by NYCHA and KPF



Rendering of the Red Hook Recreation Area remediation designs showing the various features, such as bioswales and accessible ramps, that the designs incorporate

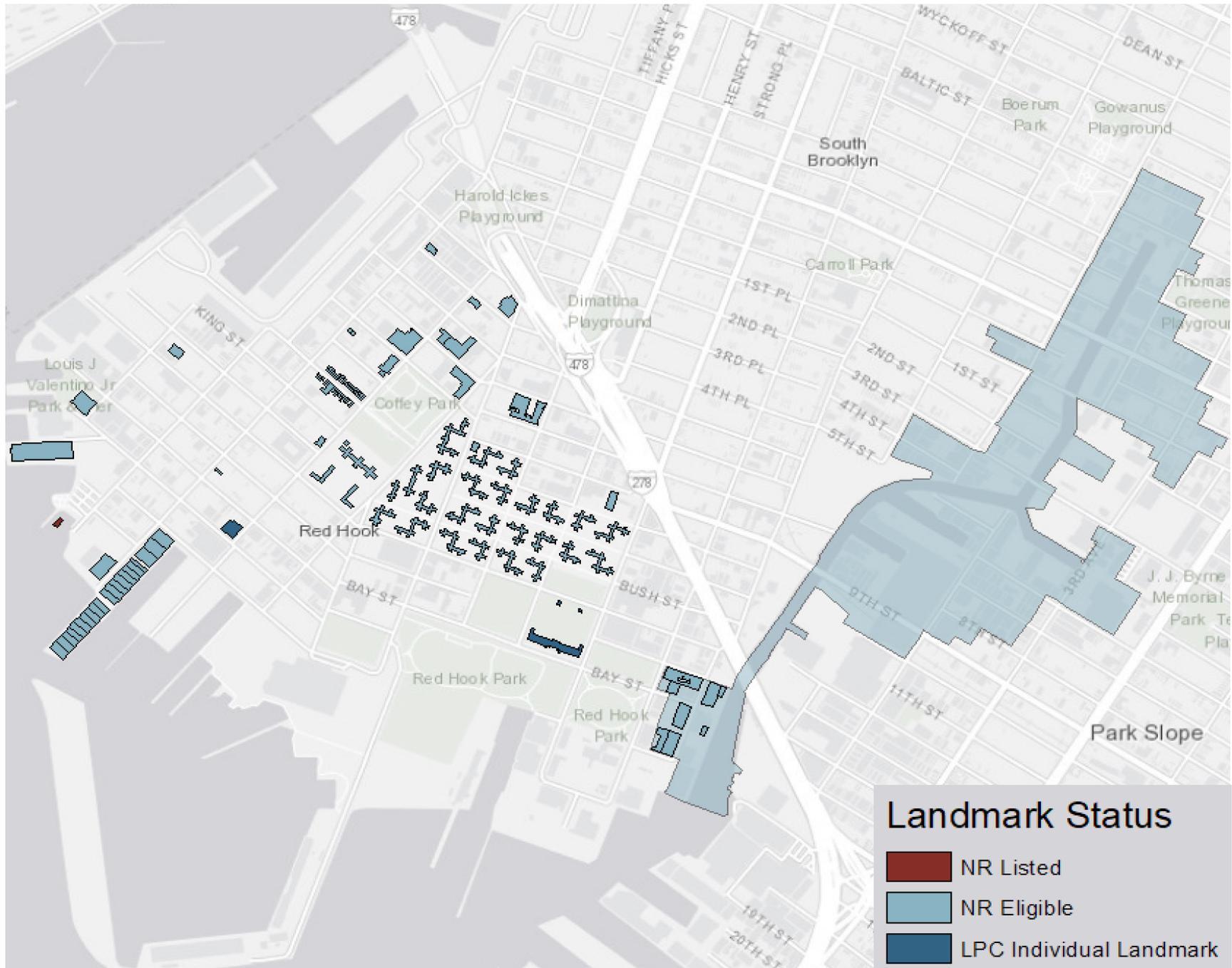
## ***Visions: Ideas for the Future of Red Hook***

In the years since Hurricane Sandy's landfall, a vast number of proposals have been made regarding the future of Red Hook; however, only a few have had significant media coverage or the support of key community stakeholders and government officials. A development plan proposed by AECOM has, perhaps, received the most media attention. This proposal is an all-encompassing plan for the neighborhood that includes affordable housing (though the corporation's definition of "affordable housing" is vague), flood protection measures, and increased transportation to the neighborhood. This plan has the support of New York Governor Cuomo and was drafted in accordance with NYC Mayor Bill de Blasio's OneNYC equitable growth plan (AECOM 2016; Geiger 2018). Another plan that has received significant media attention is Alex Washburn's "Red Hook Island" proposal. This proposal, which has the support of key community stakeholders and has been the subject of a TEDx Talk, is to complete the construction of an island off of Red Hook based on legislation passed in 1923. This island would protect the neighborhood from sea level rise while adding a significant amount of land for residential, commercial, and industrial development (Washburn 2017).

Numerous other plans have been proposed, including a design proposed as part of the US office of Housing and Urban Development's (HUD) "Rebuild by Design" competition (which was not selected for funding) and a plan for creating a greenway along the neighborhood's waterfront as a bike path and flood barrier; the current bike path being built there features less greenspace and flood protection than the original proposal) (Rebuild by Design, n.d.; NYC DOT, n.d., A; NYC DOT, n.d., B). Each of these plans, including the other proposals not mentioned here, has failed to receive a significant amount of support or funding.

There are also numerous properties within the neighborhood eligible for listing on the National Register of Historic Places (only two properties are currently listed). Most eligible buildings have residential uses, such as the Red Hook Houses, along with the residential developments along Pioneer Street. The properties eligible for listing along the waterfront, in line with the zoning districts and historic uses, are of industrial archetypes such as warehouses and port facilities.

If these properties were to be listed, federal projects (or projects using federal funds) that impacted these properties would have to undergo the Section 106 review process; however, these properties may also be prioritized for FEMA assistance and Small Business Administration loans (FEMA, n.d.). This could significantly alter disaster response in Red Hook, as efforts by FEMA and other federal agencies would certainly impact the neighborhood's historic properties (Advisory Council on Historic Preservation, n.d.). The precise impact that the Section 106 process would have on the neighborhood is unclear, though listing on the National Register would increase regulatory control on designated properties. This would add a hurdle to adaptation measures, as the bureaucratic processes would slow the interventions and increase the difficulty of altering the properties. For example, landmarking of the Red Hook Houses can prevent the implementation of the NYCHA/KPF resiliency project; conversely, the implementation of this project may preclude the Houses from designation. Additionally, listing both on the National Register and by the NYC Landmark Preservation Commission results in facade regulation, meaning that any flood adaptations to historic properties would have to undergo design review (National Register of Historic Places 2020; Eggleston 2019; NYC LPC 2019). This would increase the length and cost of the adaptation process.



2020 Landmark and National Register designation status of properties and sites in Red Hook



# APPENDIX D

## COMMUNITY INTERVIEW AND SURVEY QUESTIONNAIRE



Interview Questionnaire:

1. What communities or neighborhoods is your organization primarily focused on working with? Is it primarily Red Hook or does it include other areas in Brooklyn or a broader NYC audience?
2. We are interested in looking at intersections of preservation/ heritage, environmental justice, resilience and equity. Does your organization do work in one or more of these areas? If so, how?
3. Was your organization impacted by Hurricane Sandy?
4. If so, in what ways was it affected?
5. Did your organization play a role in recovery after Hurricane Sandy?
6. During Sandy and the immediate recovery efforts, were there communities or places in Red Hook that your organization felt were most vulnerable and particularly needed protection?
7. For Space/Building related organizations ONLY: Were there communities or places in Red Hook that you felt were the focus of preservation efforts (ie. to protect or save)?
8. Were there particular places or organizations beyond your own within the community that were integral to the recovery efforts in the immediate aftermath of Sandy?
9. Who did they help and serve?
10. After Sandy, what areas of the neighborhood became accessible first, e.g. passable streets and open access to home and businesses?
11. What spaces or businesses reopened most quickly after the storm (e.g. schools, particular businesses, churches)?
12. Were there particular places or organizations beyond your own within the community that were integral to the long-term recovery of the neighborhood?
13. How has your organization made the community stronger in the face of future events like Sandy?
14. Have environmental clean-up measures and protective or resilience measures taken since Sandy favored any particular area, space, or organizations/groups within Red Hook?
15. From your perspective, is Red Hook better equipped for an extreme weather event today than it was in 2012?
16. From your perspective are there any important buildings or spaces that are particularly vulnerable to another extreme weather event or to sea level rise?
17. Are there any spaces that could be vulnerable to continued or new environmental injustices?
18. Looking beyond the effects of climate change and extreme weather events, to environmental justice in Red Hook, are there particular threats that your organization believes are most critical to Red Hook?
19. Does preservation have a role to play in the resiliency of Red Hook?
20. Is there a particular post-Sandy remembrance marker, monument or event that your organization was part of creating or feels is most meaningful for the community?
21. If so, what/which?
22. In terms of community relationships, do you feel your organization's work engages both the "front" and "back" of Red Hook or do you feel that these areas function as two distinct communities?
23. What do you see as the challenges to confronting social and physical separations in Red Hook?
24. And what are some opportunities that you think could bridge any divides within the community?
25. What does your organization believe are the biggest challenges that the community has encountered in the recent demolition campaigns and subsequent residential and commercial development, as well as the economic changes occurring in the neighborhood?
26. Within your organization's focus area, what initiatives do you believe would most benefit Red Hook today?
27. What are two or three words you would use to describe Red Hook?

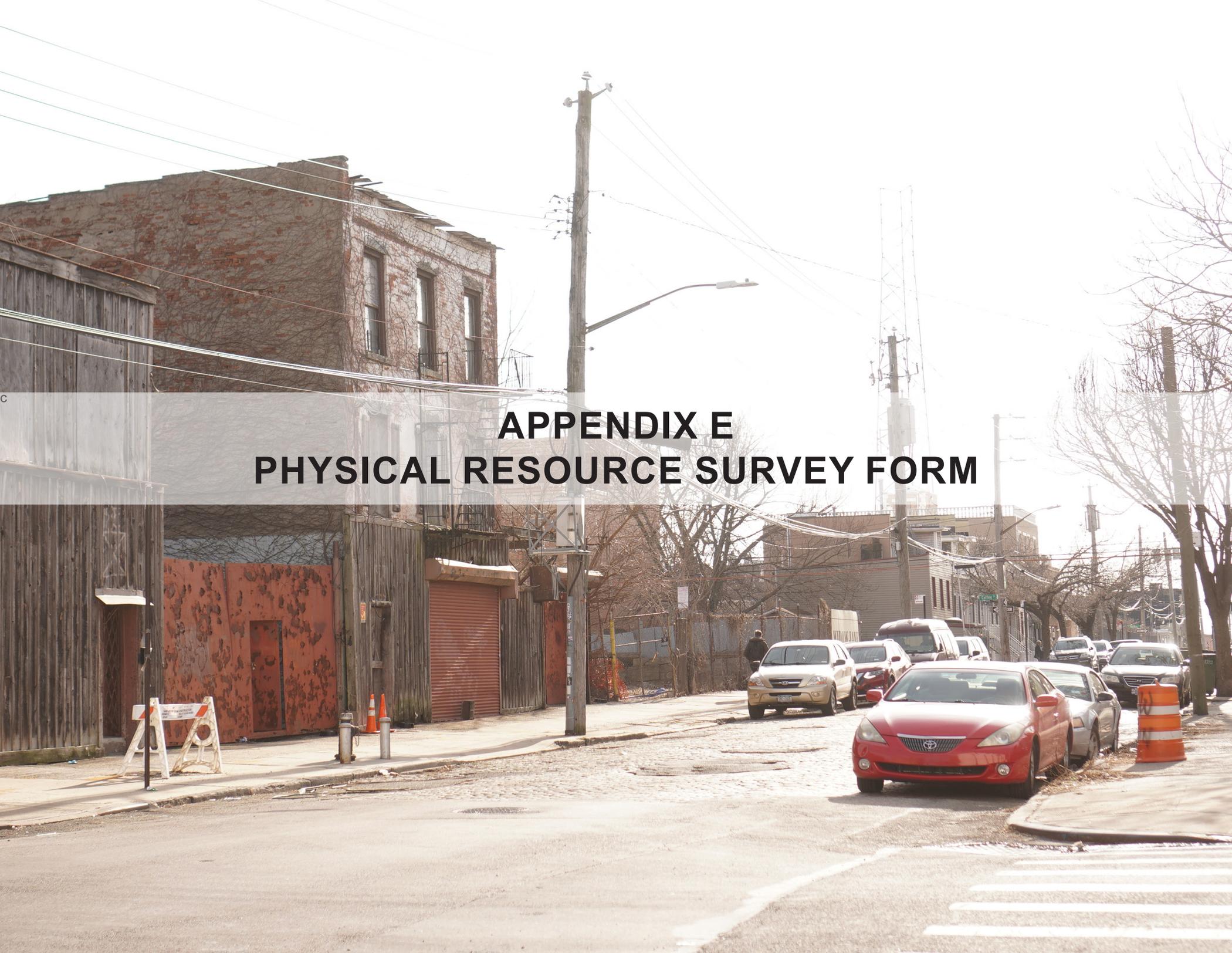
Survey Questionnaire:

1. Which of the following activities do you do in Red Hook?
  - grovery shop
  - visit a Doctor or Dentist
  - Have your children attend school
  - Attend church or other religious institution
  - Attend social organization or sports activities
  - Visit outdoor space for physical activity or pleasure
  - Visit Museums or Galleries
  - None of the above
2. How often do you visit the following public spaces within the Red Hook neighborhood? (Selections: Never, Rarely, Occasionally, Frequently, All the time)
  - Coffey Park
  - Pier 44 Waterfront Garden (Fairway Park)
  - Ikea Park
  - Joseph Miccio Community Center
  - Red Hook Recreation Center Park & Pool
  - Valentino Park
  - Other Waterfront or Recreation Area
3. Do you think the following are important for enhancing public space in Red Hook?(Selections: Not at all important, Not important, Neutral, Somewhat important, Very Important)
  - Red Hook Park: Clean-Up and Re-Open Sports Fields
  - Atlantic Basin: Creation of more public waterfront access
  - Erie Basin: Creation of more public waterfront access
  - Red Hook Piers: Creation of more public waterfront access
  - Creation of more public access in other areas of Red Hook
4. Would you like to see more affordable housing options be available in Red Hook?
  - Yes
  - No
  - I don't know
5. Would you like to see more public transportation in Red Hook?
  - Yes
  - No I don't know
6. If yes, how useful would additional service on these types of transportation be?(Selections: Not at all useful, Somewhat Useful, Very Useful, I'm not sure)
  - Bus
  - Trolley (e.g. the BQX)
  - Subway
  - Ferry
  - Shareable Options (e.g. Bikes, Scooters, Vespa)
7. How concerned are you about the following environmental issues in Red Hook?(Selections: Not at all Concerned, Not Very Concerned, Neutral, Somewhat Concerned, Very Concerned, This is my Primary Concern)
  - Increased Flooding Due to Sea-Level Rise
  - Asbestos and Lead Clean-Up
  - Re-Zoning of Gowanus
  - Trucking and Traffic
  - Air Pollution
8. How long did it take for you to feel like you were back to normal after Sandy?
  - Less than 1 month
  - 1 month to 1 year
  - More than 1 year
  - Still don't feel back to normal
  - I was not in Red Hook during Hurricane Sandy
9. Do you think that Red Hook is prepared for an extreme weather event like Hurricane Sandy today?(Selections: Not at all Prepared, Not Prepared, Neutral, Somewhat Prepared, Very Prepared)
  - Physical Preparedness (Flood protection measures, Mitigation plans, etc.)
  - Social Preparedness (Community organization, emergency planning, etc.)
  - Overall Preparedness

10. If there were another extreme weather event like Sandy, what would most likely be your response?
- Stay in Red Hook, Repair and Rebuild
  - Relocate to Another Area
  - I don't know
  - Other
11. Historically, there have been significant cultural and economic divisions between those who live near the waterfront ("the back") and those who live inland ("the front"/the Houses). Do you feel these divisions still exist today?
- Yes
  - No
  - I don't know
12. If yes, do you feel these divisions impact Red Hook's ability to prepare for another extreme weather event?
- yes
  - No
  - I don't Know
13. How important are each of these narratives to recognize or preserve when planning for Red Hook's history?  
(Selections: Not Relevant, Not Important, Somewhat Important, Very Important)
- Maritime/Industrial History on the Waterfront
  - History of Multiple Publics (e.g. Indigenous People, African Americans, Latinz) in Red Hook
  - History of Redlining and Public Housing
  - Experiences During and Recovery After Hurricane Sandy
  - Environmental Justice Issues in Red Hook
  - Immigrant History
14. If you had to describe Red Hook to someone who had never lived there, what two or three words would you use?  
(Please provide one word on each line below.)

c

# APPENDIX E PHYSICAL RESOURCE SURVEY FORM



Physical Survey:

1. Is there a structure?
  - Yes
  - No
2. Is the structure vacant?
  - Yes
  - No
  - Indeterminable
  - N/A
3. What is the primary use of the lot?
  - Recreation
  - Parking
  - Other
  - N/A
4. Building Type?
  - Rowhouse
  - Multi Unit Residential
  - Storefront
  - Office Building
  - Religious Building
  - Warehouse
  - Public Facility
  - Other
  - N/A
5. Building Use?
  - Residential
  - Mixed use commercial/residential
  - Commercial
  - Industrial
  - Public Facility
  - Religious
  - Storage
  - Parking
  - Other
  - N/A
6. Entrance Level?
  - At sidewalk
  - Below Sidewalk
  - 1-3 steps above sidewalk
  - 4-6 steps above sidewalk
  - 7 or more steps above sidewalk
  - N/A
7. Is there a secondary entrance?
  - At sidewalk
  - Below sidewalk
  - 1-3 steps above sidewalk
  - 4-6 steps above sidewalk
  - 7 or more steps above sidewalk
  - N/A
8. Does the structure have public or private access?
  - Private
  - Public
  - Semi-public
  - Indeterminable
  - N/A
9. Is the property Handicap Accessible?
  - Yes
  - No
  - Indeterminable
  - N/A
10. Building Structure Materials?
  - Load bearing masonry
  - Wood Frame
  - Concrete Frame
  - Steel Frame
  - Indeterminable
  - N/A
11. Visible Signs of water damage?
  - Yes
  - No
  - Indeterminable
  - N/A
12. Visible signs of flood repairs?
  - Yes, repairs in progress
  - Yes, repairs appear completed
  - No
  - Indeterminable
13. Is there public art on the site?
  - Yes
  - No
14. What type of art?
  - Wall art
  - Free standing
  - Other
  - N/A
15. Plaques and information boards?
  - Historical Person(s)
  - Historical Event(s)
  - Historical Industry
  - Hurricane Sandy
  - N/A
16. Is there a High Water Marker?
  - Yes
  - No
17. Open Notes:



**APPENDIX F  
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No Parking  
Monday - Sunday  
8:00am - 6:00pm  
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**APPENDIX G  
IMAGE CREDITS**

All photos were taken by members of this studio between January and March 2020 unless noted below. All contemporary maps and graphs were created by studio members. Data sources for map creation are noted below.

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