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SOUTH WATERFRONT PARK DESIGN, CAMDEN, NEW JERSEY.

By

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Written under the direction of

Wolfram Hoefer

And approved by

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## ABSTRACT OF THE THESIS

### SOUTH WATERFRONT PARK DESIGN, CAMDEN, NEW JERSEY.

By RADHIKA BHAGWAT

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The waterfront south region of Camden is a neighborhood that is surrounded by active industries that include a metal recycling facility, an incinerator and a massive sewage treatment plant. It is severely lacking in a usable green space. As a city with upcoming green infrastructure strategies, Camden has a dearth of spaces that can be used by the community for relaxation and outdoor entertainment. The New Jersey Department of Environmental Protection (NJDEP) along with Cooper's Ferry – a non-profit organization, has worked towards reclaiming and developing a part of the waterfront for the community. The main objective is to connect the community to its water. The goal of this project is developing a design strategy for the NJDEP which aims at creating a waterfront that offers open space recreation, waterfront access, educational opportunities, connection to Camden's history and economic development that lead to urban environmental transformation. The case studies for this project are Hoboken waterfront and Chicago Riverwalk – two successful waterfronts of recent times.

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## Introduction

Since ancient times, water has been the source of life that has driven humans to form settlements along water bodies, both big and small. From agrarian to industrial ages water has been the driving force of every occupation. Water bodies have been used extensively for agriculture, transportation, construction, energy production and recreation. The use of water as recreation has evolved over the period of time and given rise to the development of waterfronts. One such evolved waterfront is that of the city of Camden, New Jersey.

The convenient location of Camden, adjacent to Philadelphia with the Delaware River on one side and Cooper River on the other, made it an industrial city abuzz with activity and business. A strong network of ferries connected Camden to other parts of New Jersey. During the nineteenth century this connection resulted in the rise of industries in the fields of lumber, wagon manufacturing, candle factories, iron and steel manufacturing as well as tanneries. In the southern part of Camden, Capewell Glass Works, 1841 manufactured flint glass.<sup>1</sup>

The second half of the nineteenth century witnessed the most important era of Camden's development which led to the city's growth and an influx of immigrant population. Industries expanded, the city grew and people moved to this part of Jersey. Some of the state's and even the country's largest enterprises flourished in Camden, for example Joseph Wharton's Camden Metal Works later known as American Nickel Works.<sup>2</sup>

The development of ground transportation, in the case of Camden the establishment of a railroad network, was the onset of Industrial Revolution. The Pennsylvania Railroad Company monopolized the railroad system by influencing political and

economic affairs of Camden. By 1881 Camden was well connected to Philadelphia, Trenton, New York, the Atlantic shore as well as some western regions.<sup>3</sup> An electric trolley system connected Camden to neighboring towns encouraging urban and rural development.

With the growth of industries, there was a rise in Camden's population. From 1870 to 1920 Camden's population went from 20,000 to 116,000.<sup>4</sup> Ethnic communities from Germany, Ireland and Britain were in majority during the end of the 1800s.<sup>5</sup> By the beginning of the nineteenth century Italian and Eastern-European immigrants were dominating the census with a significant Polish and Jewish population.<sup>6</sup> These ethnic groups formed individual communities and built places of worship that dominated their social life. These groups influenced Camden's history, culture and architecture by establishing an individual character in their neighborhoods. The Italian population greatly influenced politics and economics. Although these early immigrant groups moved away, their churches endured and created a bridge to the past.

One of the most successful companies during World War II, the New York Shipbuilding Corporation, was also based in Camden. The shipping industry that flourished during World War I and World War II started declining in the second half of 20th century. Camden faced deindustrialization. This led to economic stagnation which caused people to move to cities with better opportunities.<sup>7</sup>

The city was plagued with crime and civil unrest. The politicians who governed Camden made attempts at economic revival by proposing to build a prison, which would bring federal and state funds to the city. Industries like an incinerator facility, a sewage treatment plant and a metal recycling facility – all together termed as “nuisance industries” were also proposed and now border Waterfront South.<sup>8</sup>

The current population of Camden comprises of low income African Americans and Hispanics. Waterfront South is an example of environmental justice issues, poor people are cut off from the waterfront due to these nuisance industries.

This thesis aims at creating a usable space for Waterfront South by providing a connection to the waterfront south community and its water, connecting people to the history of the place, and providing environmental education opportunities as well as employment opportunities.

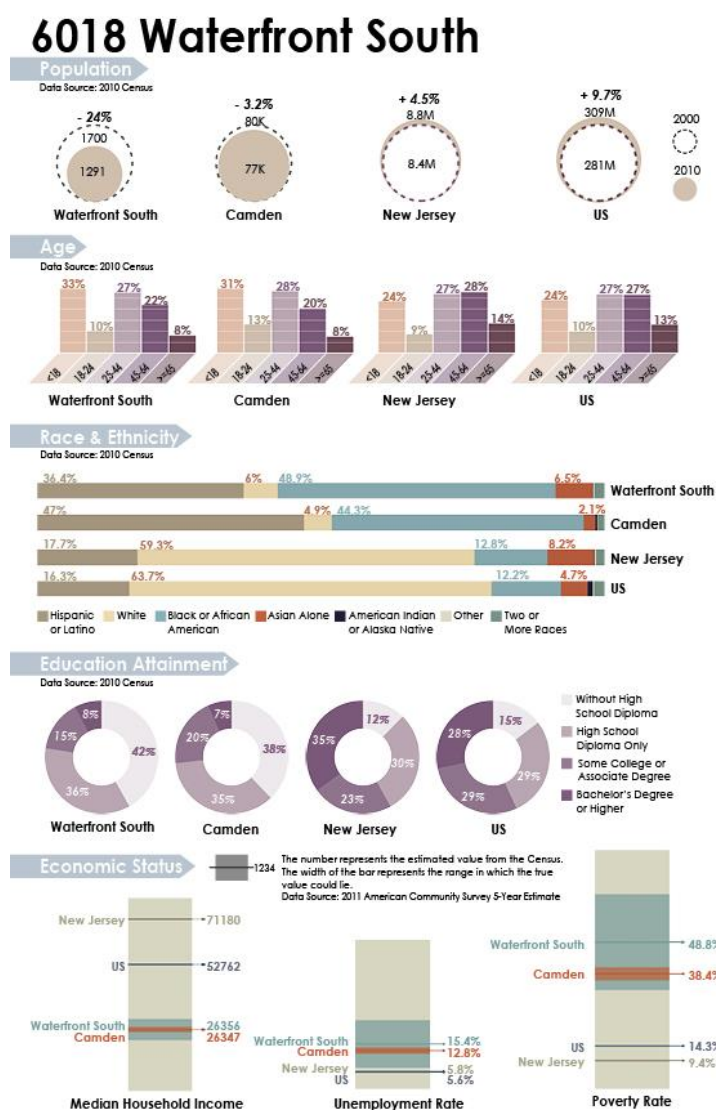


Table 1: Demographics of Waterfront South, Camden

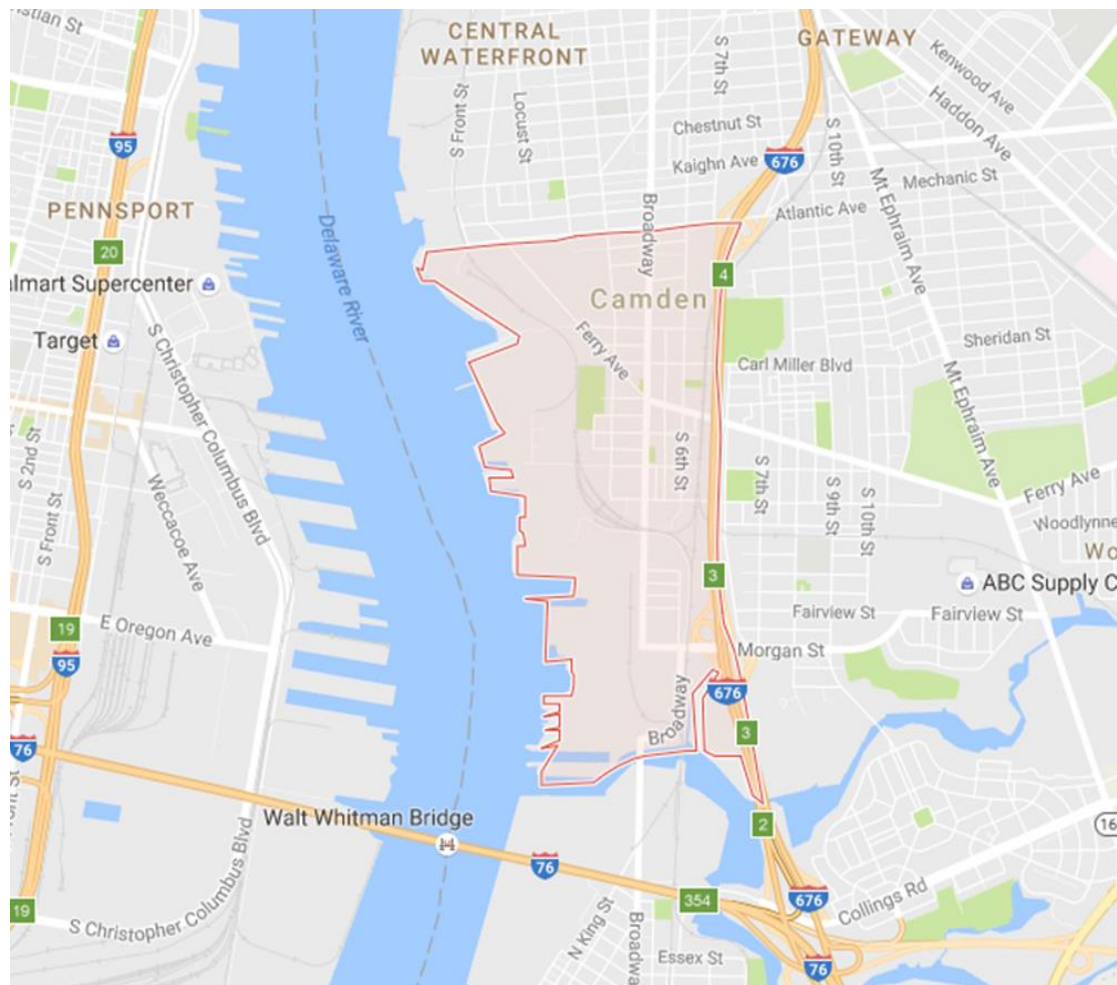


Fig. 1: *Google Maps* site location – Waterfront South outlined in red

## Inventory

The Waterfront South neighbourhood in Camden is located in the southern part of the city, south of Central Waterfront, between the Delaware River on the west and Interstate 676 on the east. Waterfront South neighborhood is known as a federal and state historic district due to its history and significant buildings that contribute to it, for example Sacred Heart Church and Star Theater building. The Michael J. Doyle fishing pier gives the community access to the Delaware River. There are three existing parks in the neighborhood one of which is the Liney Ditch Park near the school building. A newly proposed Phoenix Park next to the waterfront is in the second phase of construction. The completed part of the park is open for public access. Green infrastructure practices such as rain gardens are abundant in the area. Community gardens have also been developed by a non-profit organization.



Fig. 2: Liney Ditch Park





Fig. 3: Wildflower meadow, Phoenix Park (Phase I)



Fig. 4: A rain garden



Fig. 5: Vegetable box planters



Fig. 6: Community garden, Liney Ditch



Fig. 7: Small garden





Fig. 8: Architecture of Waterfront South



Fig. 9: The south waterfront neighborhood

## The Site

The site begins from the fishing pier and extends to Phoenix park. Three active industries that surround the site include a metal recycling facility, a sewage treatment plant and an industrial building owned by MAFCO. The sewage treatment plant is powered by a solar field which is adjacent to the walkway connecting the fishing pier and Phoenix park. A second pier which is used as an outfall area for the treatment plant is currently not for public use. This pier is covered in grass and has an old iron pipeline on one side which is not in use anymore. The outfall area of the pier towards the other end is used by the treatment facility and has active machinery. From the fishing pier to an outlook area of Phoenix Park, the entire site offers beautiful views of Philadelphia.



Fig. 10: A view of the Philadelphia skyline from the fishing pier





Fig. 11: Existing trees and benches on the sidewalk

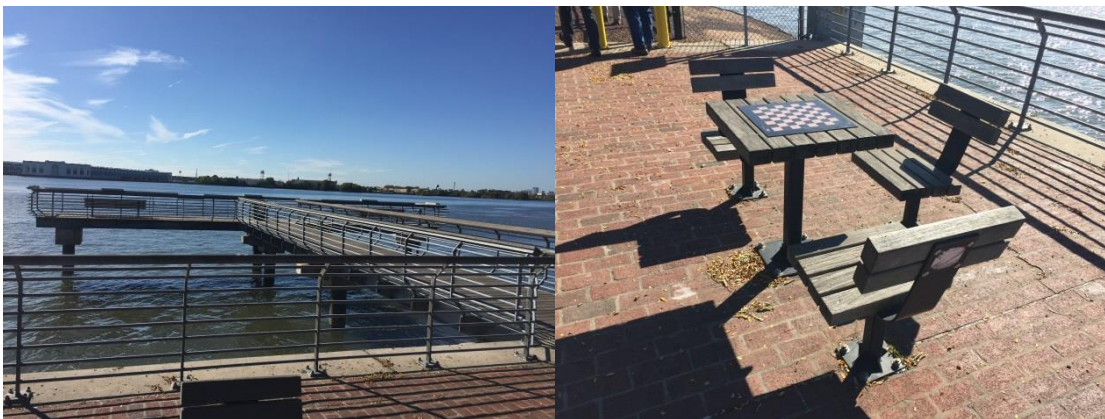


Fig. 12: Fishing pier; seating arrangement for games and conversations



Fig. 13: Walkway from fishing pier



Fig. 14: Outfall pier (no public access)



Fig. 15: Philadelphia skyline and the second pier as seen from existing walkway

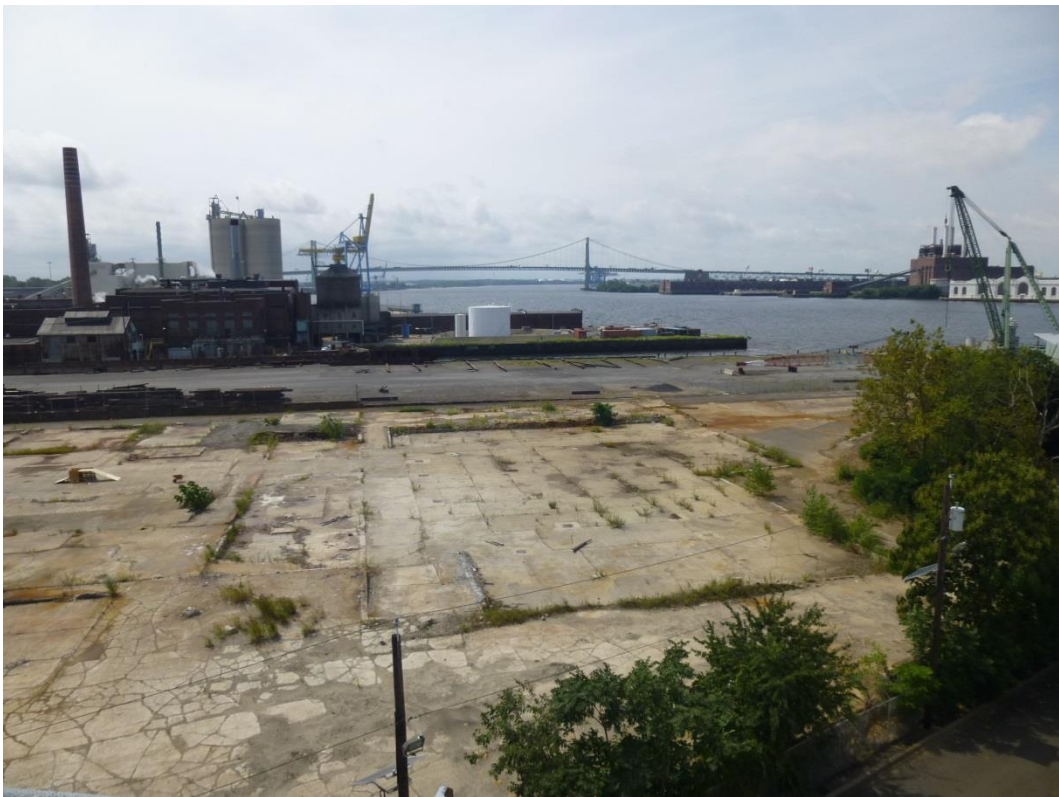


Fig. 16: Phoenix Park Site before construction





Fig. 17: Connection to fishing pier



Fig. 18: Phoenix Park Phase II site



Fig. 19: Metal recycling facility



Fig. 20: Sewage treatment plant



Fig. 21: Solar field

## Case Studies

To get an idea of a possible landscape design for a waterfront site, it is important to study existing examples. The Hoboken waterfront and the newly completed Chicago Riverwalk are two examples of waterfront design. Although South waterfront, Camden is an active industrial site in a poor neighborhood, studying post-industrial waterfronts is an inspiration to provide water connections between communities.

### Hoboken Waterfront



Fig 22: Hoboken Waterfront masterplan by Fund for a Better Waterfront, created in 1990.

The city of Hoboken in New Jersey offers stunning views of Manhattan from the other side of the Hudson River. Before the onset of industrialization the city showed traces of landscape design. In 1832 a Riverwalk led past the residences in Castle point.<sup>9</sup> At the turn from nineteenth to twentieth century, industrialization changed Hoboken's façade as it turned into an industrial and transportation hub and a major shipping dock. Some of the famous industries located at Hoboken were Maxwell coffee, Lipton, and the Tootsie Roll Company.<sup>10</sup>

After the decline in industrialization, businesses and factories left to set up base in other cities leaving a derelict Hoboken behind until it was noticed by New Yorkers as

a cheaper alternative to living in Manhattan. In the 1990s, a park was proposed and developed on one of the abandoned sites which was the starting point of waterfront renovation projects.<sup>11</sup>

## Observations

Hoboken's location, offering beautiful New York City views, is a one of a kind example of a waterfront site. The waterfront stretches from "Pier A Park" to "Maxwell Place Park". A series of individual park "pockets" forms the entire waterfront which is connected by a promenade. All the parks offer exciting views of New York City skyline. Out of the whole network of parks and walkways "Pier A Park" and "Pier C Park" are described in detail as follows.

The "Pier A Park" is situated on top of a pier that stretches out into the Hudson river. The site is divided into two parts that complement each other. A diagonal grove of trees on the rectangular pier on one side divides it into a planted area and an open space lawn area (fig. 23). Along the lawn is a pathway leading up to the other end of the pier that has a shade structure – a large gazebo for people to sit in. The park is used heavily during summer when different events are held on the lawns. One such event is the screening of outdoor movies (fig. 24).





Fig 23: Aerial view of Pier A Park



Fig 24: Outdoor events at Pier A Park



The “Pier C Park” has been designed by Michael Van Valkenburgh Associates, and is a space that caters to all age groups (fig.25). A central play area is divided into spaces separated by play instruments that are innovative and quirky. The play area has mounds covered in lawn where kids and adults can play, walk, run or just sit and enjoy the New York City skyline. A walkway offering plenty of seating space on different levels surrounds the central play area. A fishing hole next to the rectilinear pathway breaks the space making it look more inviting. A series of winding pathways are strategically placed in the space to make it feel bigger than it is. The park also offers restrooms which are completely integrated into the design. The lighting design for the park makes it equally attractive after sunset (fig. 26). A fishing pier extends out into the water. Standing at the edge of this pier and looking out over the river towards the skyline is a breath-taking experience.



Fig 25: Pier C Park masterplan by Michael Van Valkenburgh Associates



Fig 26: Pier C Park night view

## Conclusion

Hoboken waterfront's series of individual parks and the promenade connection make it an inviting place. The waterfront is an attraction for locals and tourists alike. People can be seen running, dog walking, fishing or simply sitting and gazing at the skyline. The ability to perform such activities while having city skyline views makes this place work. The second example of a waterfront design in a dense urban environment is the Chicago Riverwalk.

## Chicago Riverwalk.

The Chicago Riverwalk Project aimed at reclaiming Chicago River for economic, recreational and ecological welfare of the city.<sup>12</sup> The River flowing through the inner city is a one of a kind city attraction. Developing the riverwalk also included cleaning high levels of pollution caused by the industries on the banks.

The river walk is divided into five types of spaces – “Jetty”, “Water Plaza”, “River Theater”, “Cove” and “Marina” which are separated by over head bridges used by pedestrians and vehicles<sup>13</sup> (fig. 27). The Riverwalk is at a lower grade than the bridges such that it creates a sunken space along the river with high rise buildings on both sides (fig 28-30). The mixed use buildings include some residential towers, office buildings, retail, restaurants and cafes (fig. 36). These surrounding buildings look “into” the river as the water flows through the channel, forming the riverwalk on one edge. This unique quality of the space evokes interest and brings people to the river.

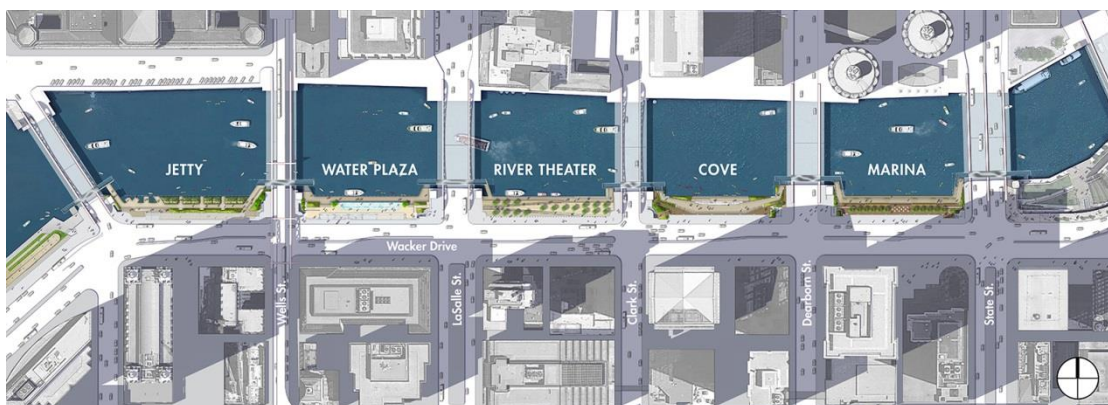


Fig 27: Chicago Riverwalk masterplan by Sasaki Associates



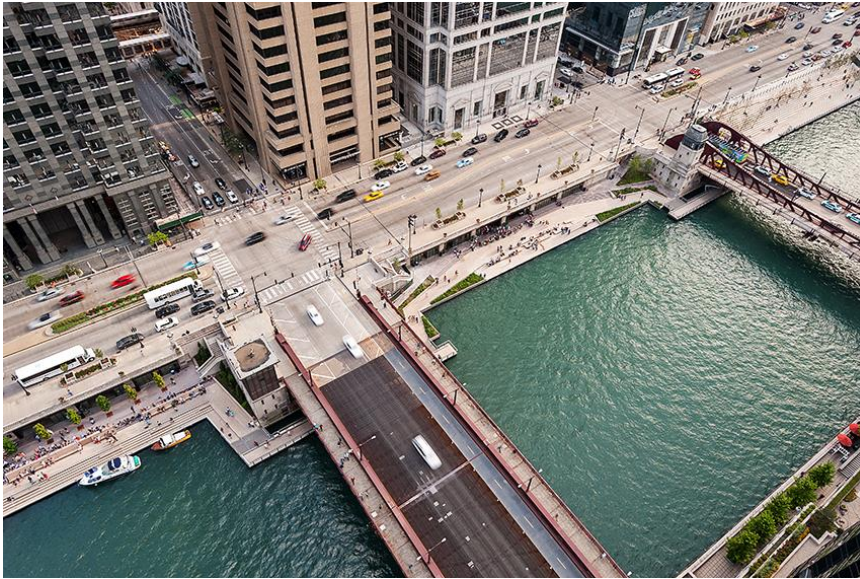


Fig 28: Chicago Riverwalk with overhead bridges



Fig 29: Chicago Riverwalk on a busy summer day



Fig 30: Chicago Riverwalk – connection to water





Fig 31: Chicago Riverwalk - River Theatre



Fig 32: Integrated steps and ramp



Fig 33: Extended "Jetty" platforms



Fig 34: Water plaza



Fig 35: Walking path



Fig 36: Restaurants along the river

## Observations

The Riverwalk is categorized into spaces that beautifully break down the narrow river bank. Each space has a special character associated with it. Each space provides a unique way to access water. The “Jetty” has a series of overlooks that extend into the water (fig. 33). People are seen taking photos, or simply looking at the water watching boats go by, from these platforms. The “Water Plaza” brings water to the opposite side of the walkway. Water trickles down over a smooth rectilinear stone surface into the bottom edge of a curb stone that accompanies the walkway (fig. 34). The “River Theatre” is a series of integrated steps and ramps that intertwine beautifully to provide ADA access and break the monotony of having only rectangular steps (fig. 31). People sitting on the steps are the audience and water is the performer. The “Cove” and “Marina” areas of the Riverwalk are used as spill over space by a winery and a café. People can be seen enjoying a glass of wine on outdoor bar counters facing the river. These areas are also regularly used by runners and joggers, dog walkers, as well as small boat owners. Kayaks can be launched from one point on the Riverwalk, this provides a spectacular view of the entire site. Tourist river cruises are launched from one end of the Riverwalk in the summer. The Chicago Riverwalk is most active in summers, when tourists and locals flock to the river to enjoy everything it has to offer. This, once unclean and polluted industrial site has now flourished into a highly used space. A once dirty and desolate riverfront is now beautified and abuzz with activity.

## Conclusion

The two post-industrial waterfronts - Hoboken and Chicago, serve as great examples for the master plan of Waterfront South, Camden as they have a similar history as Camden, which still has high levels of pollution. With the help of programming and landscape design the South Waterfront in Camden can be beautified in a similar way, while keeping in mind the current active industrial land use as well as environmental justice issues that the community faces.

## Site analysis

South Waterfront is located below central waterfront as seen in fig. 37. The Central waterfront is a well-developed site with a waterfront park, a battleship exhibit and a large pavilion. It is used by locals and is also a tourist attraction in South Jersey. The map shows the land use of Camden city. Camden has a significant amount of residents and a dense urban/mixed use land cover. The amount of green cover is insignificant compared to other land uses. The map also shows that there is scope for improvement by finding potential green space areas which can be used as recreational spaces for residents. Waterfront South is one such potential green space.

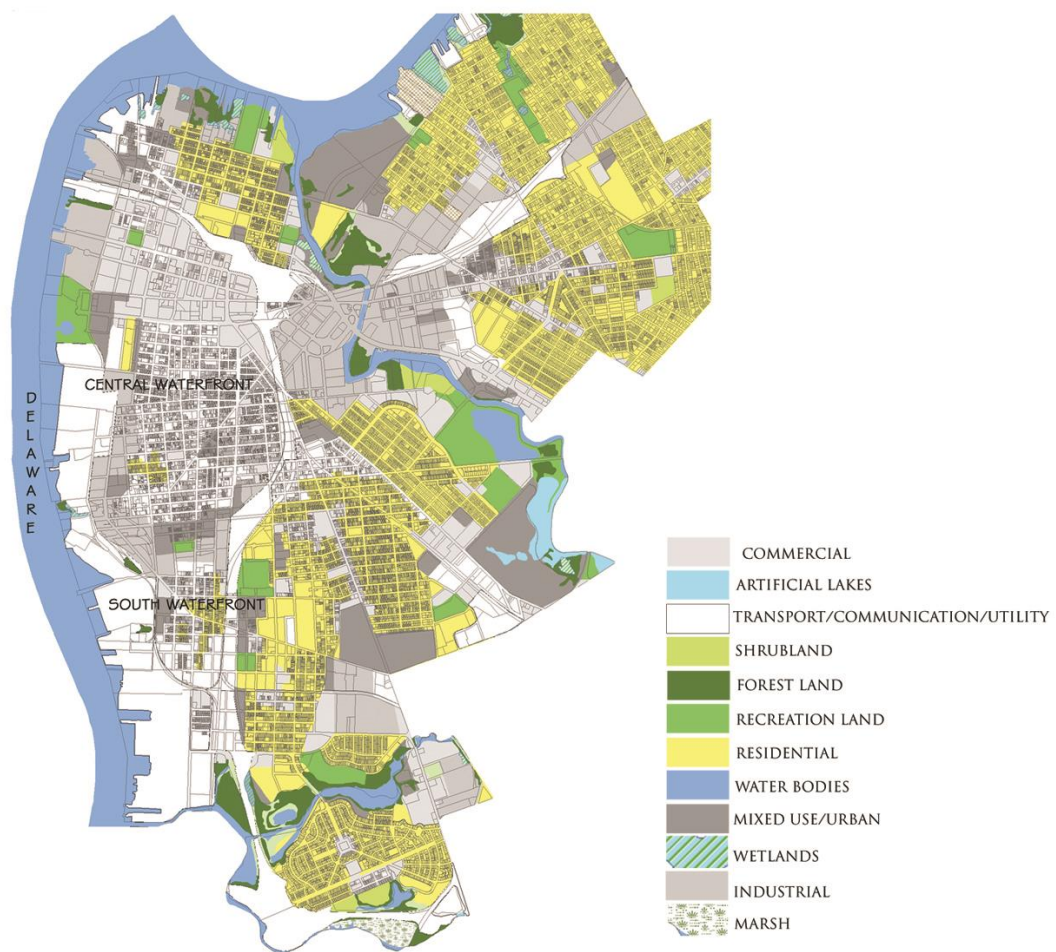


Fig 37: Land use map of Camden city prepared using GIS data



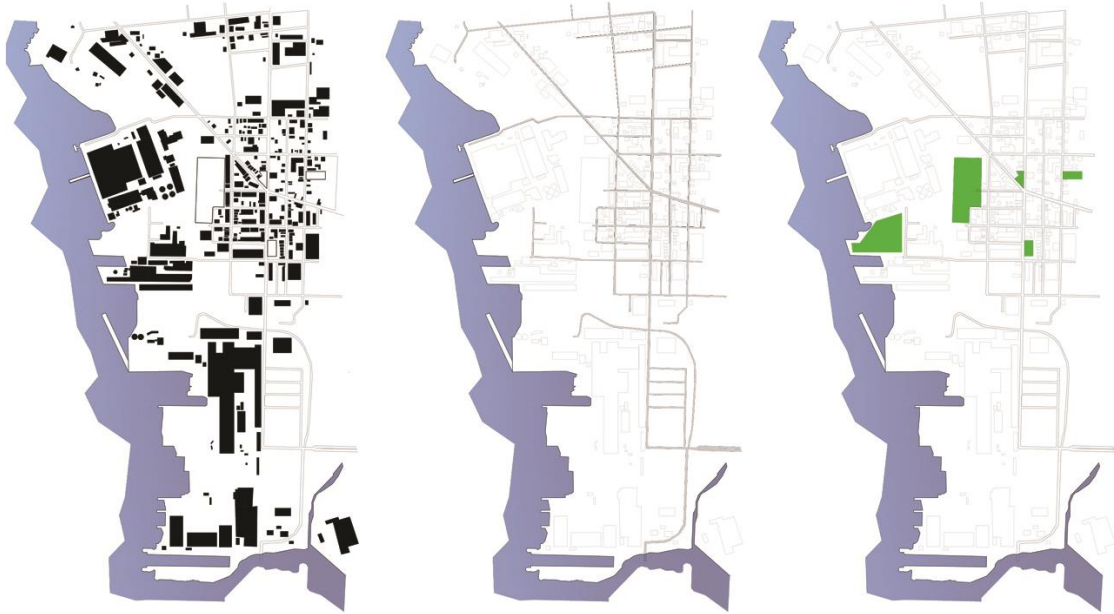


Fig 38: Diagrammatic analysis of building footprints, road cover and green space in South waterfront area of Camden

The white space in the above diagrams shows the potential sites for parks along the water's edge. Currently there are only two-three parks in the entire neighborhood. The red line in fig. 39 shows the only water access people have – which is the fishing pier and a walkway connected to Phoenix park. The black marks show areas where the odor from the sewage treatment plant is the strongest.

The scope of design extends from the fishing pier to Phoenix Park.



Fig 39: Site access and odour map

## Master plan

The master plan (fig. 40) shows the proposed programming of Waterfront South.

The main objectives of the design are -

- Connecting the waterfront south community to its water
- Connecting people to the history of the place
- Providing environmental education opportunities and employment opportunities

The approach road to the pier has a parking space which is currently used by locals as a social gathering spot, even though the location is impacted by odor from the treatment facility. People usually sit on the existing benches and use the area around the pier as an interaction space. This is a good spot to have food trucks and food carts – this will generate employment and also serve as a good eating spot. There are very few food sources in the area other than a couple of bodegas. The fishing pier shall be retained as it is being used by the people and works well in this location. A walkway provides connection to a second pier – the skyline pier; which is an excellent design opportunity because it has direct and unobstructed views of Philadelphia over the water. Liney Ditch Park is located near the school and has a children's play area as well as a community garden. A proposed bike path can connect the neighborhood parks and historic buildings like the church and the theatre and the school to the proposed waterfront park. There is already a proposed railway crossing at grade here which will directly connect Phoenix Park with the neighborhood, once completed. The big design idea is to provide a boardwalk connecting central and south waterfronts, which can be used as a walkway as well as a bikeway.

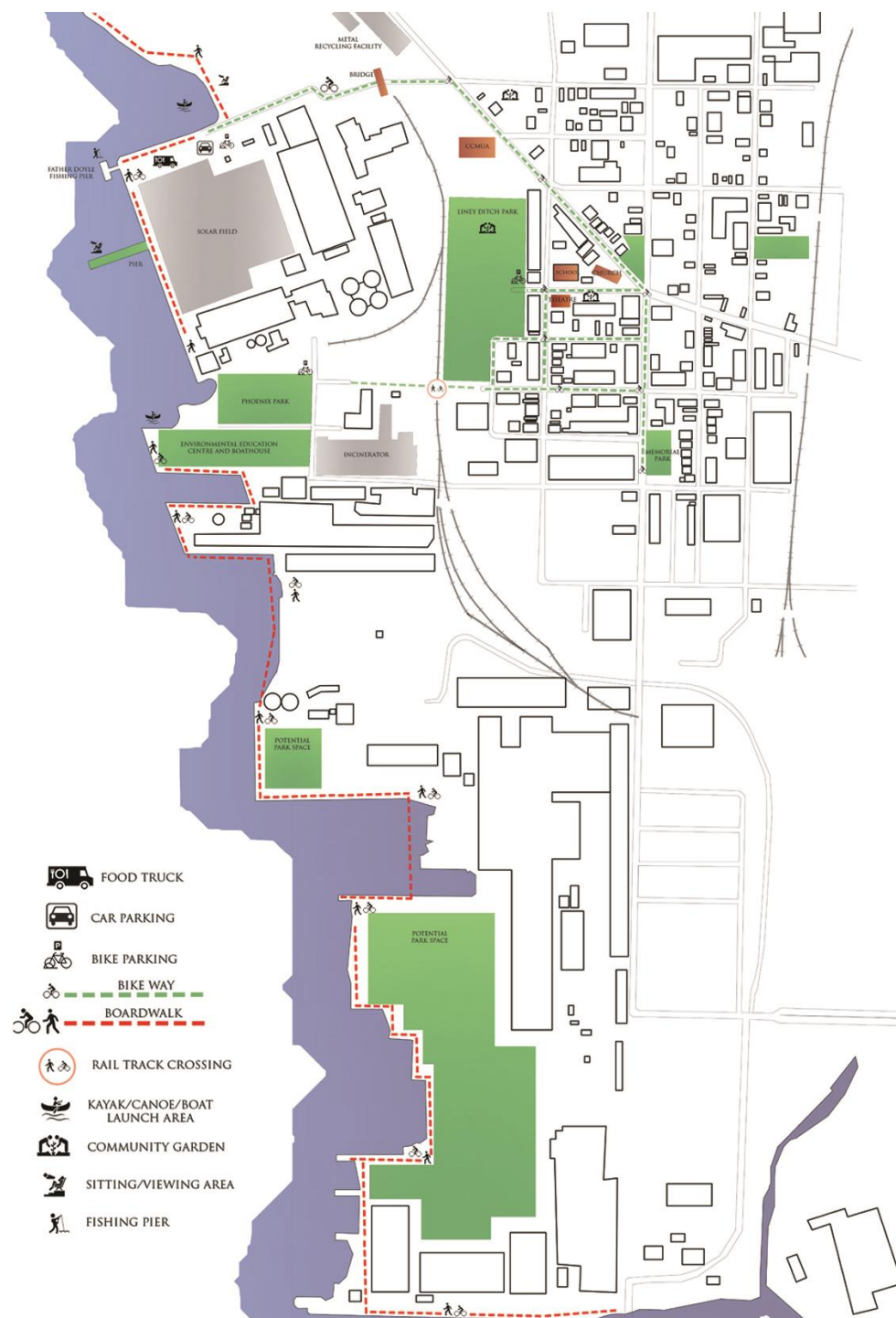


Fig 40: Proposed master plan of the waterfront, South Waterfront.

## Site Plan

The site plan shown in fig. 41 explains the design interventions in detail. While approaching the site, a water amphitheater – a series of steps and ramps that lead to the surface of the water, is proposed near the recycling facility. This area can be used for launching kayaks. Providing a stronger planting design on both sides of the street in the existing parking lot can improve the space. This can be achieved by planting similar shade trees, providing planter beds for shrubs and refurbishing existing benches with incorporated aromatic plantings. The fishing pier and the second pier (referred to as skyline pier) are connected by a promenade. A line of shade trees along the walkway can serve as a visual buffer from the treatment plant. The detailed design of skyline pier is shown in the next plan (fig. 42). To break the linearity of the walkway, three proposed overlooks come out over the water diagonally. These are excellent skyline viewing points. The walkway connects to Phoenix Park that has its own large overlook area and a kayak launch ramp. The addition of a walkway makes a connection to the larger concept of having a boardwalk from central waterfront to waterfront south. The space next to Phoenix Park is ideal for a boathouse which can also function as an environmental education center for the community. The boathouse will be designed using shipping containers. These containers are easily available locally in that area and go well with the city's industrial image. The green lawn area can be used as an outdoor classroom for students and for community gatherings or events. A dedicated parking lot with a centrally located rain garden can be used by people visiting the boathouse.



Fig 41: Proposed site plan of the waterfront, South Waterfront.

## Skyline Pier

The skyline pier (fig. 42) is divided into 3 spaces – a lawn and deck area, central walkway and alternating planting beds. The central walkway leads to an overlooking platform. This is an exciting feature of the site. 1 or maximum 2 persons can climb up the stairs onto this cantilevered platform and get a view of the entire waterfront. The platform is built over active machinery which is used for the outfall from the treatment facility. The height of this platform keeps visitors away from the machine while providing access to authorized personnel.

Other design elements of the pier include interesting seating arrangements. Benches designed by suspending them from the existing cast iron pipeline are a piece of history in the design. The proposed plant beds on the sides will have cherry trees and flowering perennials to provide seasonal interest. The slightly elevated deck on the pier will have an outdoor bar type seating and counter.

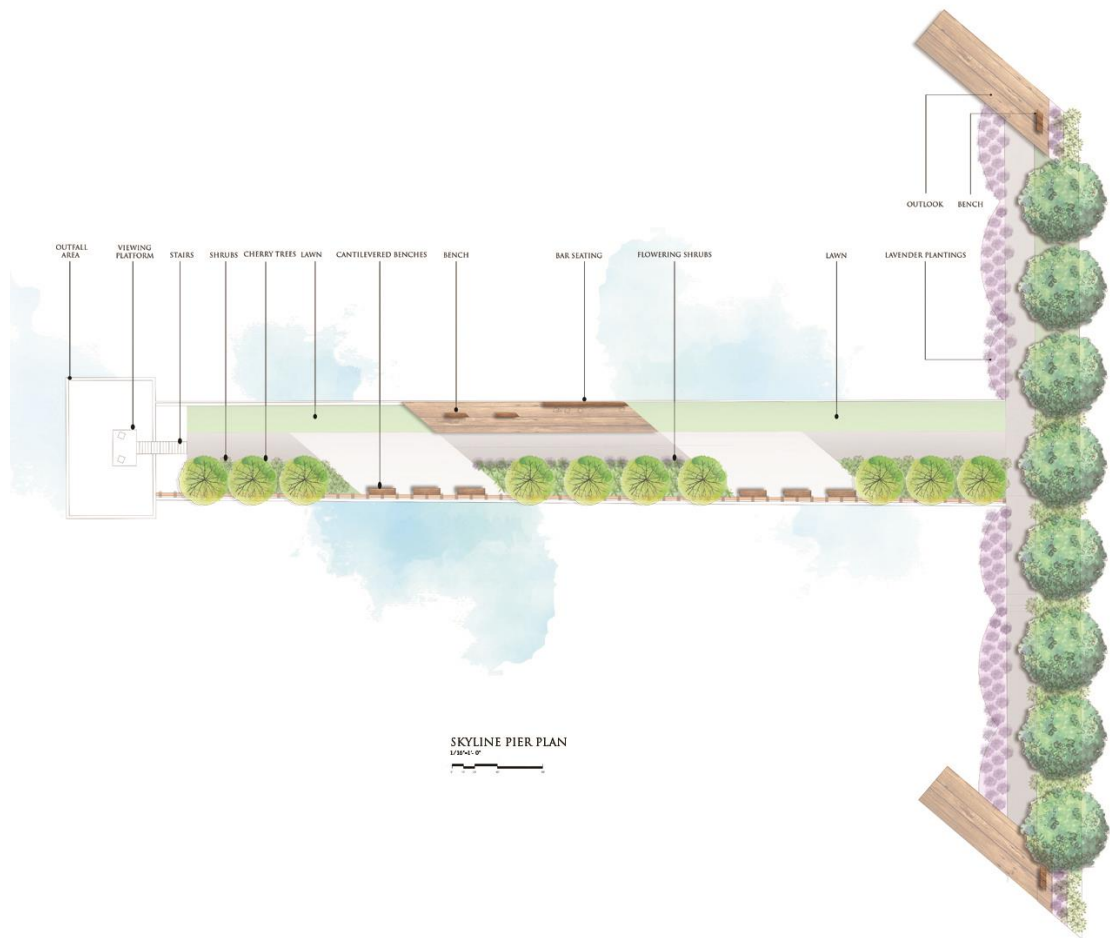


Fig 42: Detailed plan of skyline pier



Fig 43 (left): Sectional elevation through skyline pier

Fig 44 (right): Sectional elevation through fishing pier and approach road



## Design Developments

The section in fig. 43 explains in detail the walkway, seating spaces on the pier like the outdoor bar seating, benches, and towards the end the cantilevered viewing platform. People can use these spaces to sit and view the skyline or passing boats; they can grab food from the food trucks and eat while sitting at the outdoor counter. The viewing platform provides the opportunity to be at a height from where one can see the solar field, the metal recycling factory and the other side of the river. Active machinery remains under the platform out of reach for general public.

The second section (fig. 44) shows the fishing pier, food trucks, approach road and a waterfront south mural or art space. The section also shows refurbished benches in the same spot as existing ones. These benches will have incorporated aromatic plantings.

The sectional elevation (fig. 45) shows the entire site starting from the fishing pier on the left to the overlook areas and finally the boathouse on the right. Educational boards explaining Camden's history and the environment are placed along the promenade. The programming of the site is such that people can use it for walking, running, fishing, kayaking, biking or simply for sitting and enjoying the outdoors.

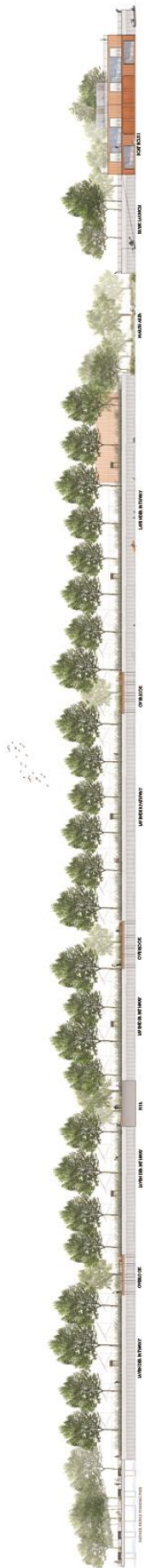


Fig 45: Sectional elevation of site- fishing pier to boathouse

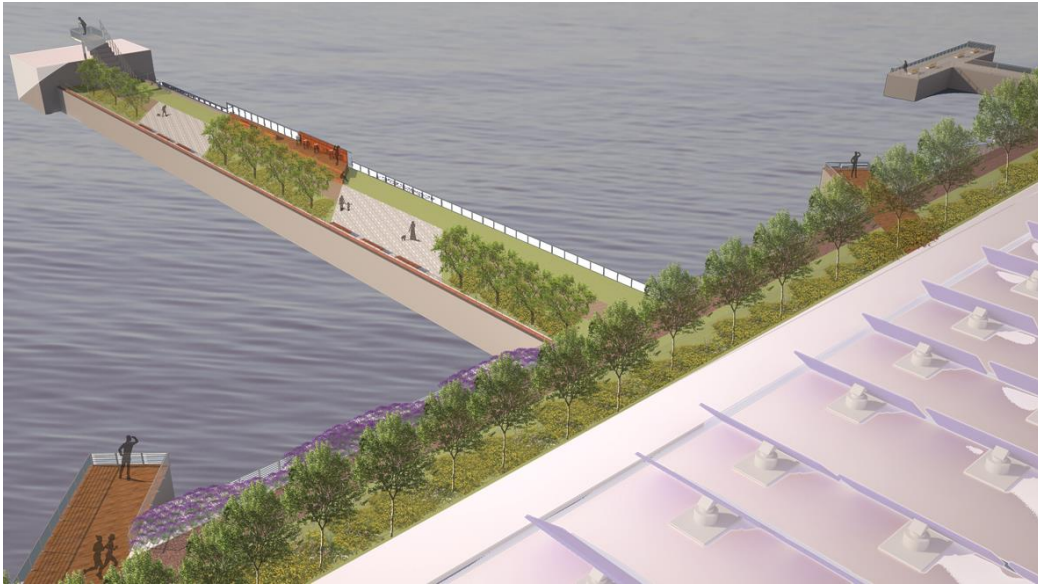


Fig 46: Aerial view of Skyline pier, overlook area and fishing pier

The renderings show how people can use the skyline pier (fig. 48); the first aerial view explains the locations of the fishing pier with respect to skyline pier and the overlook areas (fig. 46). The second aerial shows a view of the site as seen from the viewing platform (fig. 47).



Fig 47: Aerial view of site as seen from viewing platform



Fig 48: Perspective – Skyline pier





Fig 49: Photo simulation – walkway to Skyline pier

The photo simulations show the planting design idea of having mass plantings of lavender bordering the entire walkway, which will help in eliminating the odor up to a certain extent. Cherry trees on the skyline pier (fig.49) can provide Spring interest. Existing trees on the approach road with refurbished benches to incorporate aromatic and fragrant plantings add to the planting design of the site (fig. 50).



Fig 50: Photo simulation – benches with planters on existing walkway

## Conclusion

The proposed waterfront park provides visual and physical connections to the Delaware River. The landscape design provides usable green spaces that the neighborhood is currently lacking in. Ease of access to the waterfront is important to bring people to the water. The programming aims at providing easy access and places to perform different activities in order to improve the quality of life of the people in the neighborhood. It is an attempt to bring more people to the water's edge by creating a space that can be used by all age groups in the community. This design concept provides a vision to create beautiful parks for places like waterfront south, Camden which have active industries and residential dwellings co-existing within a 1 mile radius.



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1. *Google Maps* site location  
<https://www.google.com/maps/place/Waterfront+South,+Camden,+NJ+08104/@39.9177682,75.1400292,14z/data=!3m1!4b1!4m5!3m4!1s0x89c6c8cc335e1b9d0x349695e024d15c5c!8m2!3d39.9211976!4d-75.12243> (accessed October 14, 2016).
2. Liney Ditch Park  
 Photo by author (taken May 12, 2016)
3. Wildflower meadow, Phoenix Park (Phase I)  
 Photo by Camden County Municipal Utilities Authority
4. Rain Garden  
 Photo by author (taken October 7, 2016)
5. Vegetable box planters  
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22. Hoboken Riverfront masterplan by Fund for a Better Waterfront, 1990  
<http://betterwaterfront.org/fbw-waterfront-plans/plan-for-the-hoboken-waterfront/> (accessed April 13, 2017)

23. Aerial view of Pier A Park  
<http://www.paulcowieandassociates.com/pierapark.html> (accessed January 25, 2017)
24. Outdoor events at Pier A Park  
<http://www.paulcowieandassociates.com/pierapark.html> (accessed January 25, 2017)
25. Pier C Park masterplan by Michael Van Valkenburgh Associates  
<http://www.mvvainc.com/media/files/53805c6e49369e7e3dcea150f18b2c3e.jpg> (accessed January 25, 2017)
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<http://www.sasaki.com/project/134/chicago-riverwalk/> (accessed March 04, 2017)
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Table 1. Demographics of Waterfront South, Camden  
Camden County Municipal Utilities Authority,  
(<http://camconnect.org/fact/wfsouth01.html>)