

# Bayfront Park

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How can a waterfront development intervention react to its adjacent body of water as well as become an epicenter for growth and overall well-being of a community?

# Waterfront Discovery

“Nothing is softer or more flexible than water, yet nothing can resist it.”  
- Lao Tzu

## DULUTH, MN

### Bayfront Park Revitalization Project



# View from the Bluffs

Heritage of Duluth's Shipping Industry



Duluth, MN (1898)





**W**

aterfront Discovery seeks to understand the benefits of landscape design along the water's edge and how successful design can push the boundaries of sustainable practices as well as increase the overall quality of life for anyone who lives there regardless of age, sex, or religion.

**City Snapshot:**

- + Population: 84,380
- + Located at the westernmost tip of Lake Superior
- + 3.5 million tourist visitors per year
- + Area: 43,067 acres
- + Industries include tourism, healthcare, banking, mining, paper, education and shipping.

Sources:  
 1. <http://southpierinn.com/canal.park.htm>  
 2. <http://geology.com/state-map/maps/minnesota-rivers-map.gif>  
 3. All other images taken by Mike Towle



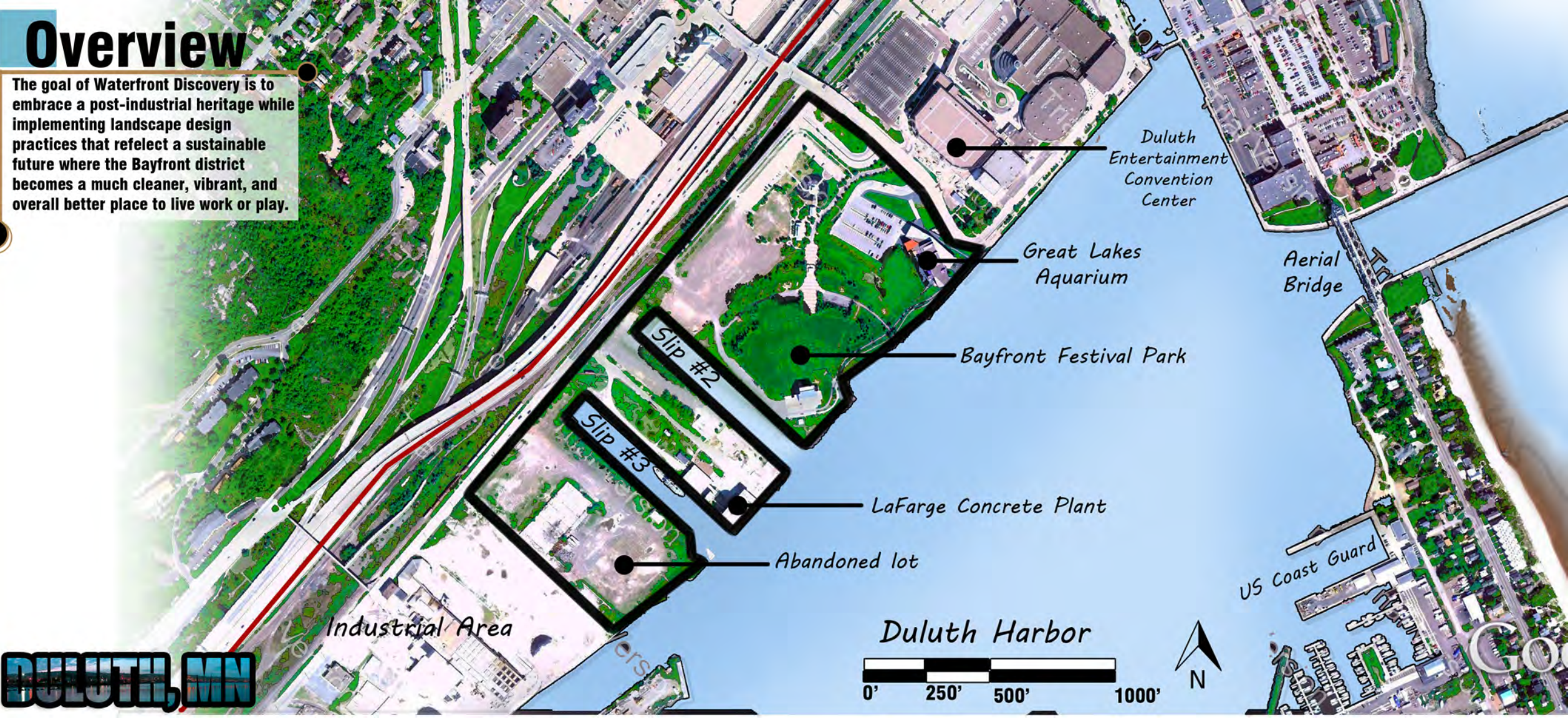
**Bayfront Park Revitalization Project**



**Overview**

The goal of Waterfront Discovery is to embrace a post-industrial heritage while implementing landscape design practices that reflect a sustainable future where the Bayfront district becomes a much cleaner, vibrant, and overall better place to live work or play.

**DULUTH, MN**







The Bayfront Site in Duluth once served as a bustling shipping port that exported such commodities as fur, wheat, and timber as far as Europe, but now lies vacant and abandoned. The overall visual appeal of the area is minimal as industrial debris, metal, and gravel are strewn across the site.

## Site issues

### Parking

Parking on site is very poorly designed as it is nothing more than a flat gravel lot without parking lines. More parking is needed to satisfy the needs for Bayfront Park.

### Concrete Barrier

The current retaining wall along the shoreline of slips #2 and slip #3 allows for minimal visitor interaction with the water and also remains an eyesore for the site.

### Industrial Remnants

The entire second and third slips are not accessible to the public as they are covered with remnants of a post industrial past. Garbage, concrete, and metal make the area very unappealing to any visitor.

## Bayfront Park Revitalization Project



View overlooking Slip #2

## Site Constraints

The Great Lakes Aquarium is a relatively new building and brings many people into the site.

The Bayfront Festival Park also constructed a large children's playground that is popular in the summer months.

Parking on site is poorly designed with too few spaces for cars, and is very unappealing to the eye.

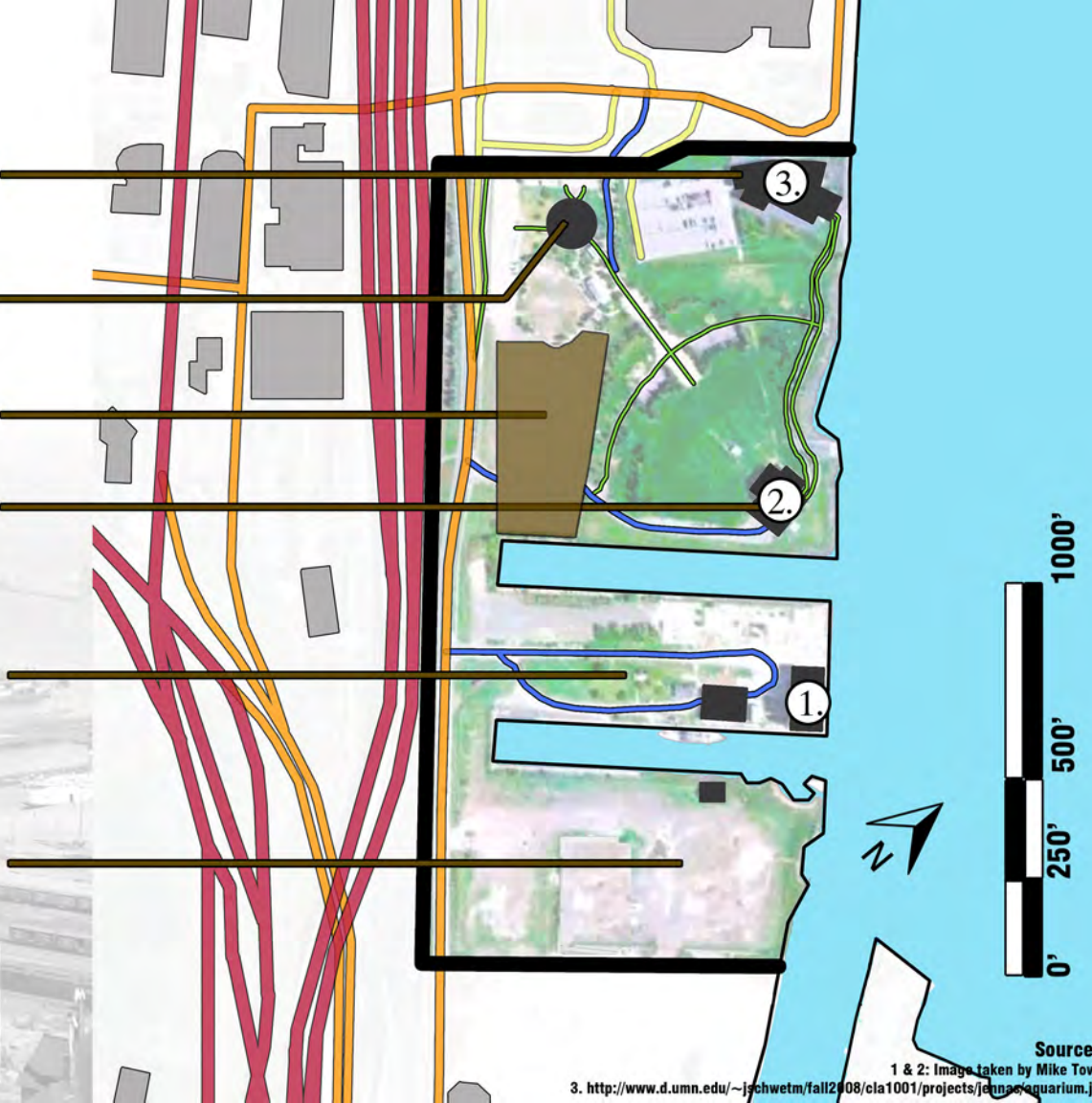
Bayfront Festival Park holds numerous events and concerts throughout the year.

Slip #2 is abandoned and not accessible to the public.

The third slip remains a post industrial wasteland of gravel, twisted steel, and scrap metal.

### Legend

- High Traffic
- Moderate Traffic
- Low Traffic
- Service Road



Sources:  
1 & 2: Image taken by Mike Towle  
3. <http://www.d.umn.edu/~jchwetm/fall2008/cia1001/projects/jenna-aquarium.jpg>





# Site Analysis



## Green Space

- + Establish Connections
- + Provide areas for active and passive recreation.
- + Build Social Capital



## Heritage

- + Preserve Historical Ship
- + Renovate LaFarge Plant
- + Use railroad cars as public art



## Hydrology

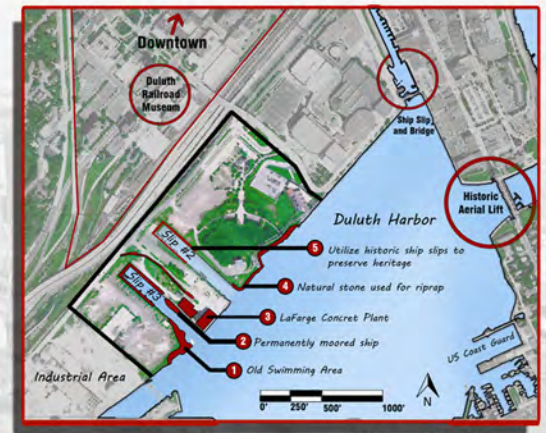
- + Remediate water
- + Establish riparian buffer
- + Provide places for visitor interaction with the water



## Bayfront Park Revitalization Project



Green Connections



Site Heritage



Site Hydrology

## Zoning Map

Currently the Bayfront area is bordered on the South by industrial, West by residential, North by Downtown/Civic use, and on the West by shopping and retail.



Images Courtesy of  
 1. <http://upload.wikimedia.org/wikipedia/commons/e/cc/TomMcCallWaterfrontPark.jpg>  
 2. Image taken by Mike Towle  
 3. Image taken by Mike Towle

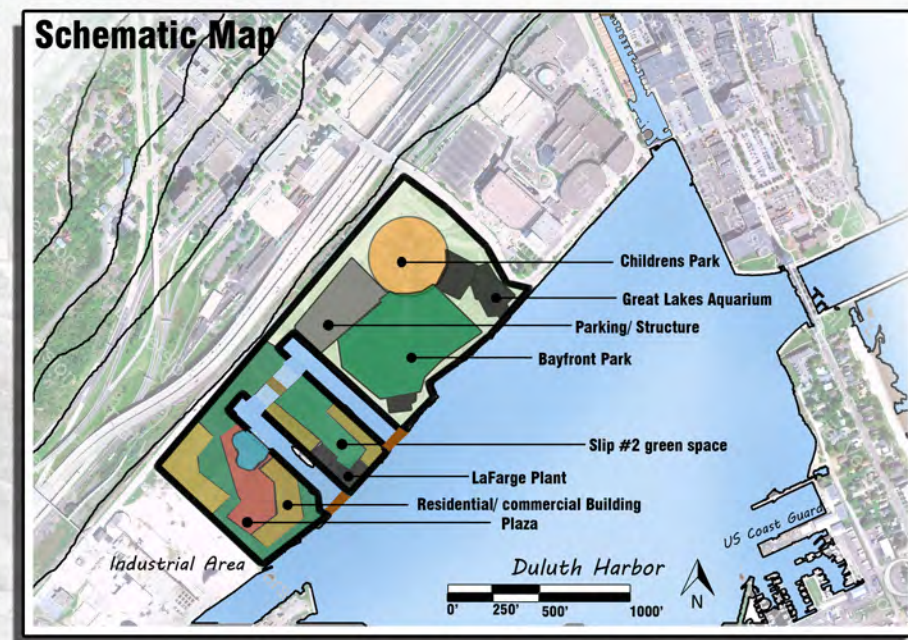
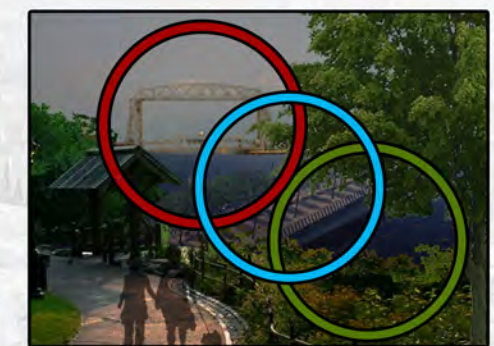




# Site potential

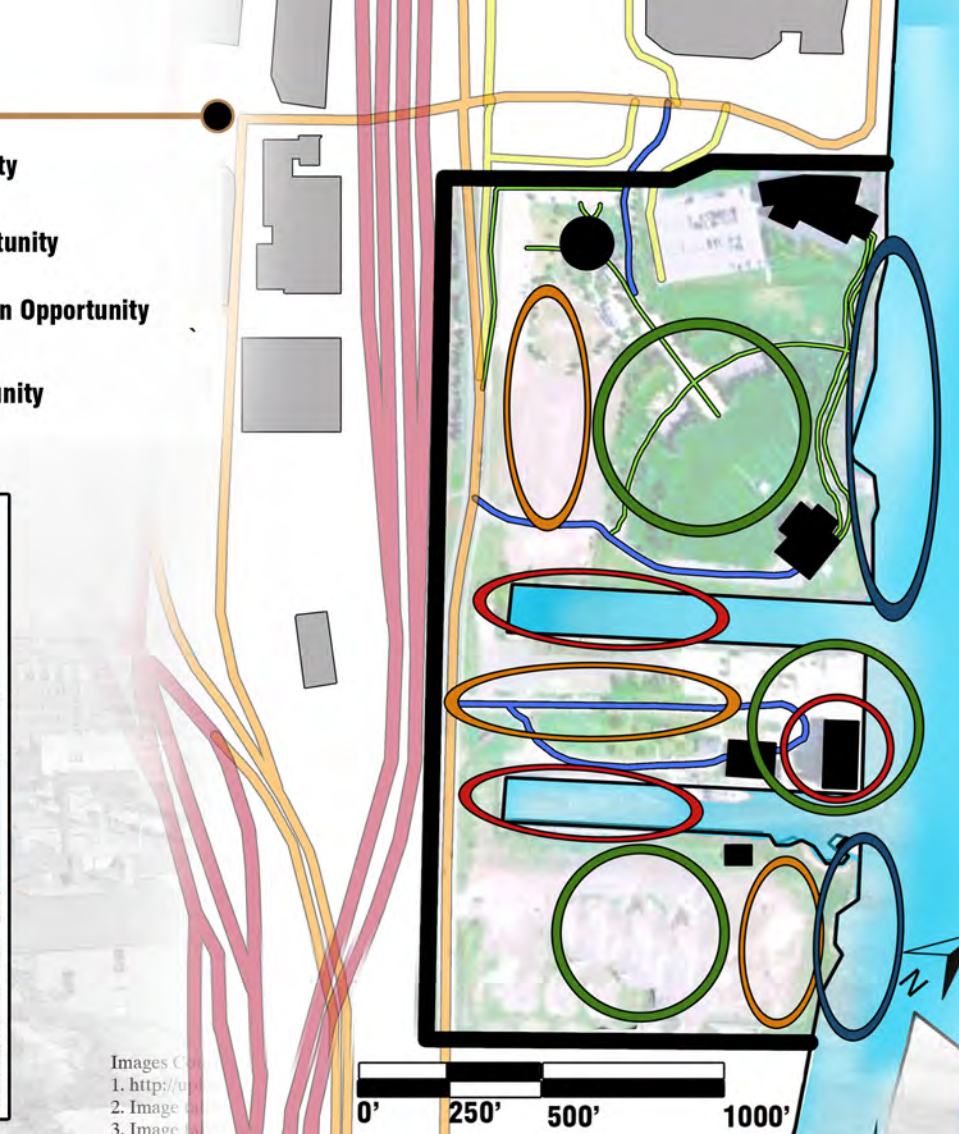
## Bayfront Park Revitalization Project

- Green Space
- Heritage
- Hydrology



### Opportunities

- Green Opportunity
- Historical Opportunity
- Water Interaction Opportunity
- Building Opportunity



### Building Development

Mixed use building development featuring retail on the first floor will allow for a combination of offices and residential apartments above. This strategy will be implemented to meet the needs of residents and tourists alike.



**Current**

1. Image courtesy of Mike Towle



**Proposed**

2. <http://www.silveracesmall.com/boardwalk/>

### Green Space

Creating green connections to other destinations is crucial for the success of Bayfront. It will also be very beneficial for the Brownfield sites to be cleaned and renovated.



**Current**

3. Image courtesy of Mike Towle



**Proposed**

4. <http://www.boston-discovery-guide.com/rose-kennedy-greenway.html#axzz1lugzsgem>

### Hydrology & Heritage

Mitigating water through the use of rain gardens, buffers, and parks will improve the current environmental conditions of the site. Reusing materials on site will also provide the park with a unique historical feel.



**Current**

5. Image courtesy of Mike Towle



**Proposed**

6. <http://www.arlingtonva.us/departments/parksrecreation/scripts/parks/PowhatanSpringsPark.aspx>

Images Courtesy of:  
1. <http://www.silveracesmall.com/boardwalk/>  
2. Image courtesy of Mike Towle  
3. Image courtesy of Mike Towle





# Structure Analysis



**Hotel**  
The Bayfront Inn and suites would accommodate the large volume of traffic that the Waterfront Discovery Project will bring in.



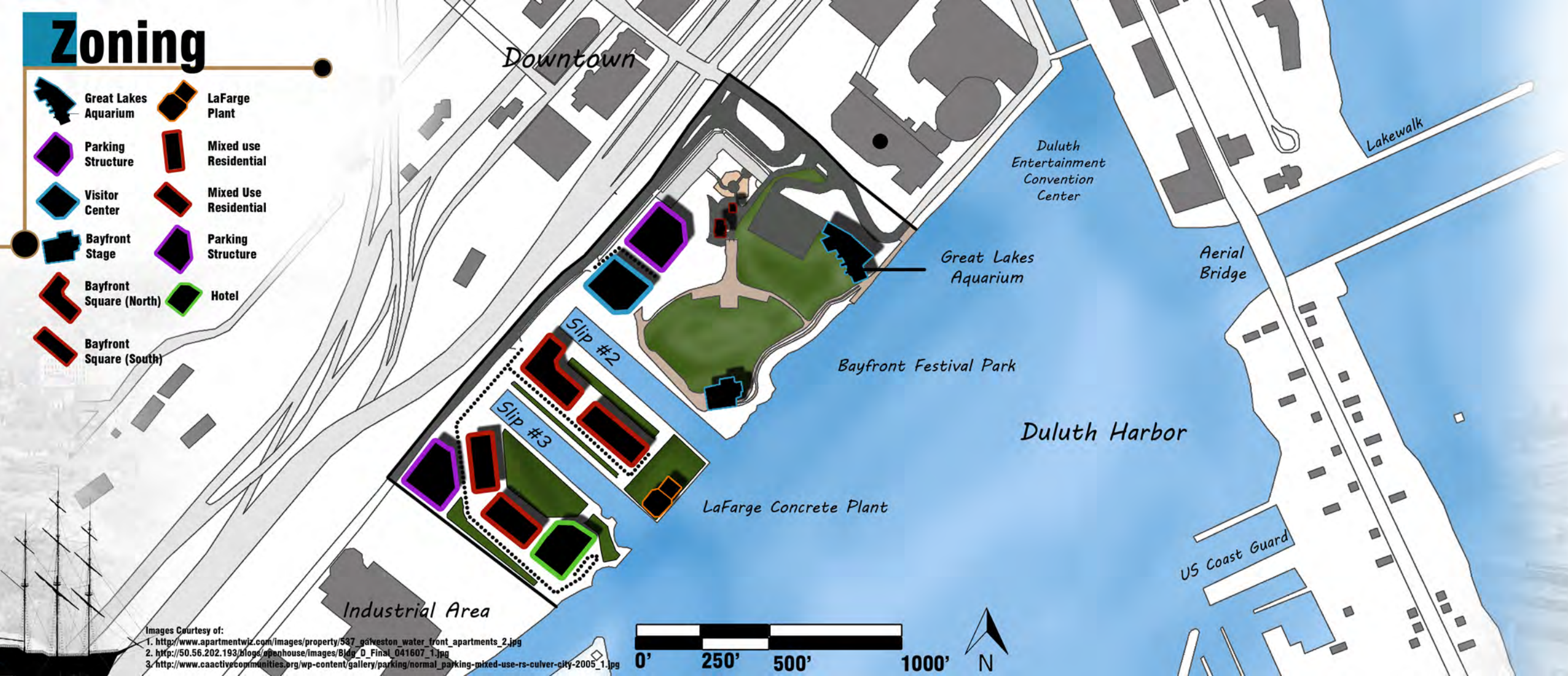
**Retail/ Residential**  
The residential apartments will feature the first and second floors of the building being designated for retail and office space.



**Parking**  
Parking on site will primarily occur at one of two structures each featuring a green roof and a first floor consisting of shops, eaterys, boutiques etc.

# Zoning

- Great Lakes Aquarium
- Parking Structure
- Visitor Center
- Bayfront Stage
- Bayfront Square (North)
- Bayfront Square (South)
- LaFarge Plant
- Mixed use Residential
- Mixed Use Residential
- Parking Structure
- Hotel



**Commercial Mixed Use**

Apartments  
 Offices  
 Commercial use/ Retail

The commercial developments will provide a variety of services from site information to concessions, while the upper levels will be used for offices and residential.

**Retail Mixed Use**

Apartments  
 Offices  
 Retail (Shops & Boutiques)

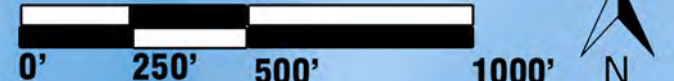
The retail mixed use buildings will feature shops, boutiques, restaurants etc. A boardwalk feel will be implemented around many of these buildings.

**Parking Mixed Use**

Parking  
 Parking  
 Parking  
 Retail/ Business

Parking structures will feature retail shops on the first floor with parking above.

Images Courtesy of:  
 1. [http://www.apartmentwiz.com/images/property/587\\_galveston\\_water\\_front\\_apartments\\_2.jpg](http://www.apartmentwiz.com/images/property/587_galveston_water_front_apartments_2.jpg)  
 2. [http://50.56.202.193/blog/openhouse/images/Bldg\\_D\\_Final\\_041607\\_1.jpg](http://50.56.202.193/blog/openhouse/images/Bldg_D_Final_041607_1.jpg)  
 3. [http://www.caactivecommunities.org/wp-content/gallery/parking/normal\\_parking-mixed-use-rs-culver-city-2005\\_1.jpg](http://www.caactivecommunities.org/wp-content/gallery/parking/normal_parking-mixed-use-rs-culver-city-2005_1.jpg)











# Waterfront Discovery



## Focus Areas

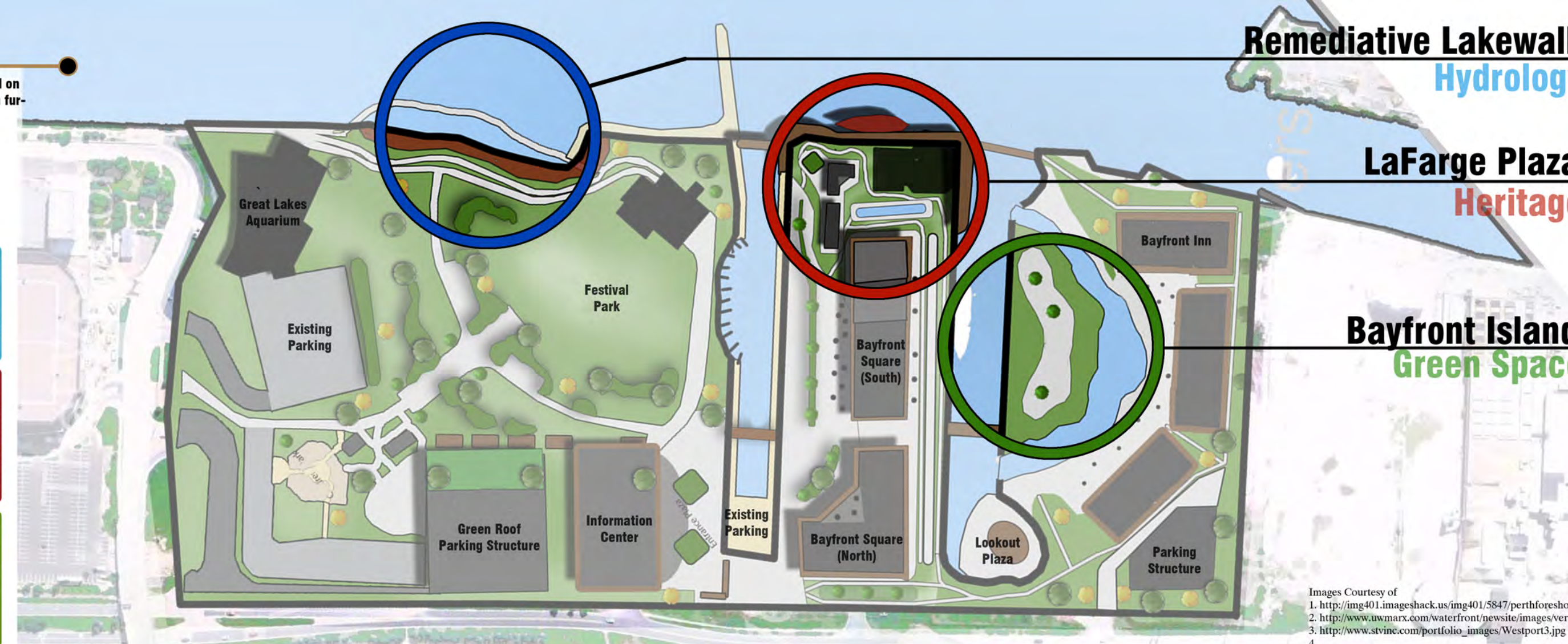
The Waterfront Discovery Project focused on three primary elements to be examined in further detail:

1. Remediative Lakewalk
2. LaFarge Plaza
3. Bayfront Island



## Objectives:

- + Establish unique interaction with water
- + Create strong mixed use developments
- + Provide additional parking
- + Make year round spaces
- + Preserve the sites industrial heritage
- + Create views that enhance the Harbor



Images Courtesy of  
 1. <http://img401.imageshack.us/img401/5847/perthforeshorebn2.jpg>  
 2. <http://www.uwmarx.com/waterfront/newsite/images/version3.jpg>  
 3. [http://www.stvinc.com/portfolio\\_images/Westport3.jpg](http://www.stvinc.com/portfolio_images/Westport3.jpg)  
 4.





# Waterfront Discovery

## Bayfront Park

Masterplan



### Goals:

- + Create a year round entertainment destination for tourists & residents.
- + Establish strong on and off site connections especially to Canal Park.
- + Build social capital through visitor interaction and repeat visits.

### Final Plan

The final masterplan illustrates how the concepts of heritage, hydrology, and green space were inter woven in the design of Waterfront Discovery.

Hydrology  
Green  
Heritage  
Space

### Bayfront Amenities

- |                           |                                |
|---------------------------|--------------------------------|
| 1 Great Lakes Aquarium    | 9 LaFarge Observation & Dining |
| 2 Existing Parking        | 10 Lookout Point               |
| 3 Concert Stage           | 11 Bayfront Island             |
| 4 New Parking             | 12 Bayfront Inn & Suites       |
| 5 Information Center      | 13 Mixed Use residential       |
| 6 Sunken Plaza            | 14 New Parking Structure       |
| 7 Bayfront Square (North) |                                |
| 8 Bayfront Square (South) |                                |



Images Courtesy of  
 1. <http://img401.imageshack.us/img401/5847/perthforeshorebn2.jpg>  
 2. <http://www.uwmarx.com/waterfront/newsite/images/version3.jpg>  
 3. [http://www.stvinc.com/portfolio\\_images/Westport3.jpg](http://www.stvinc.com/portfolio_images/Westport3.jpg)  
 4.



# Masterplan



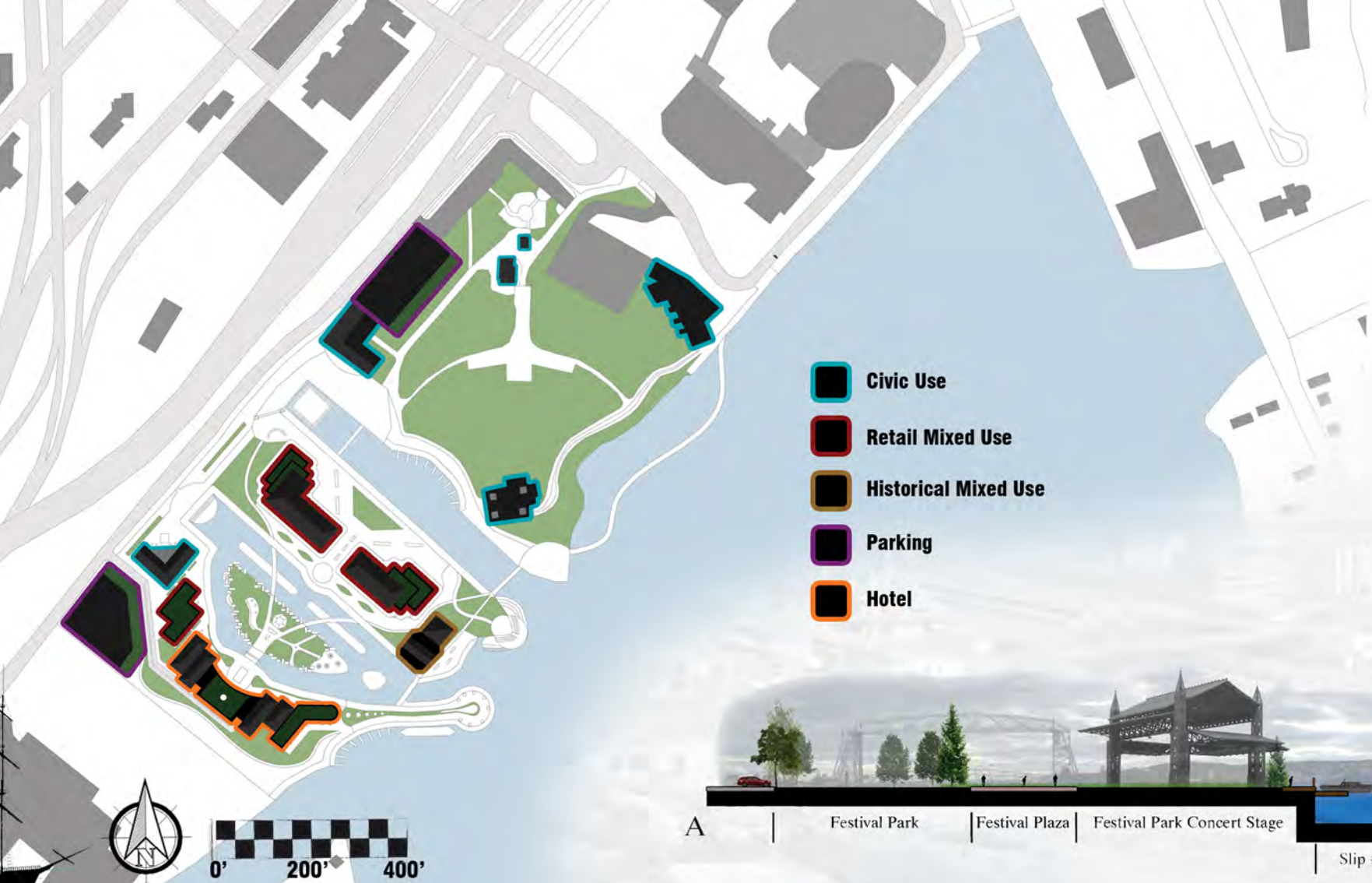
## Bayfront Park



### Building Uses

Bayfront zoning will primarily occur along each slip with the area North of Slip #2 representing civic use, the LaFarge slip is primarily retail and office space, and the area South of Slip #3 is primarily residential and hotel.

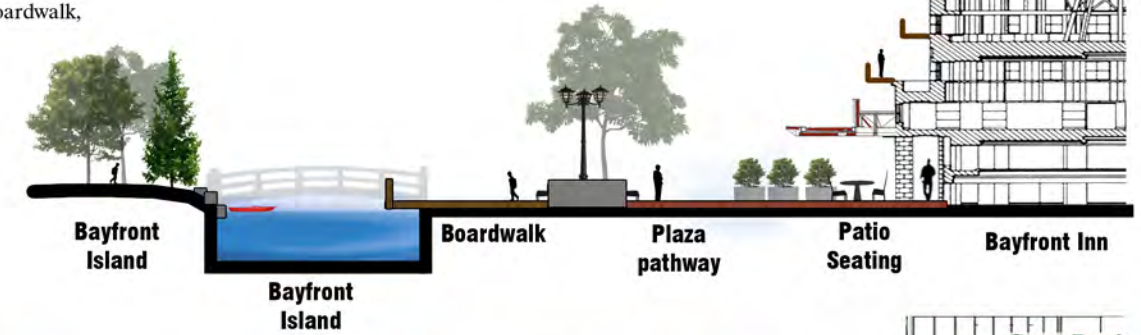
- Great Lakes Aquarium
- Parking Structure
- Concert Stage
- Bayfront Square
- Bayfront Square
- LaFarge Plant
- Visitor Center
- Parking Structure
- Residential Mixed Use
- Bayfront Inn & Suites



- Civic Use
- Retail Mixed Use
- Historical Mixed Use
- Parking
- Hotel

### Boardwalk Section

This section cut through Bayfront Island and slip #3 illustrates the relationship between the outdoor dining, boardwalk, and kayak landing areas.



### Building Use Analysis

Utilizing mixed use development the Bayfront Village Square will primarily use the lowest two floors for retail and office space, while the upper three floors would consist of residential apartments.



Bayfront Village Square

### Building Use Analysis

The Bayfront Inn building would also place retail location on the lowest floor with offices above, however the floor above the offices would primarily consist of a few rooms with several convention halls. The bayfront Inn's top 3 floors would be hotel rooms with a green roof above.



Bayfront Inn & Suites



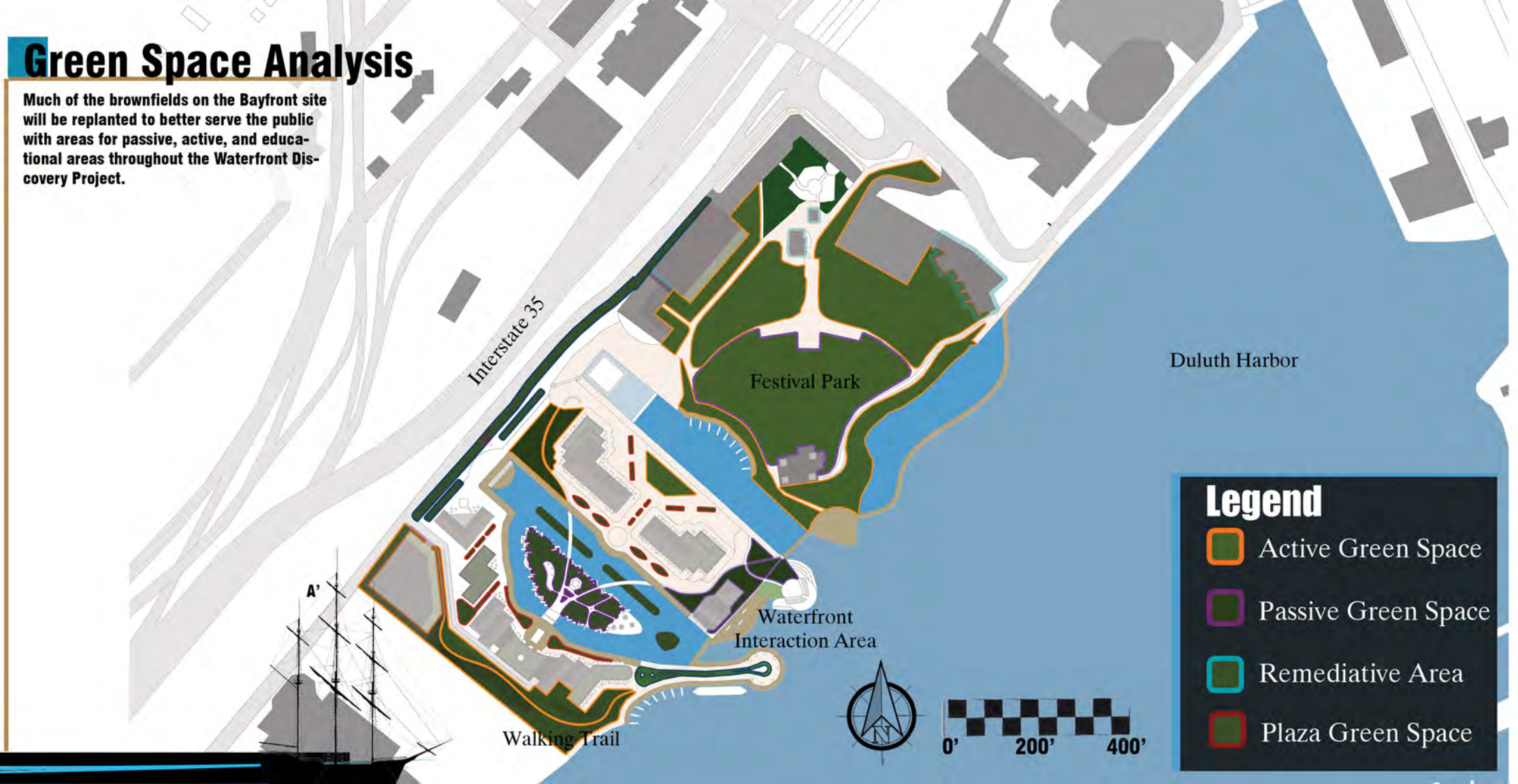
A | Festival Park | Festival Plaza | Festival Park Concert Stage | Slip #2 & Boat Docks | Boardwalk Park | Bayfront Square Building S | Boardwalk | Slip #3 & Floating Islands | Channel | Bayfront Island | Railroad Plaza & Bayfront Inn | Walking Park | A'





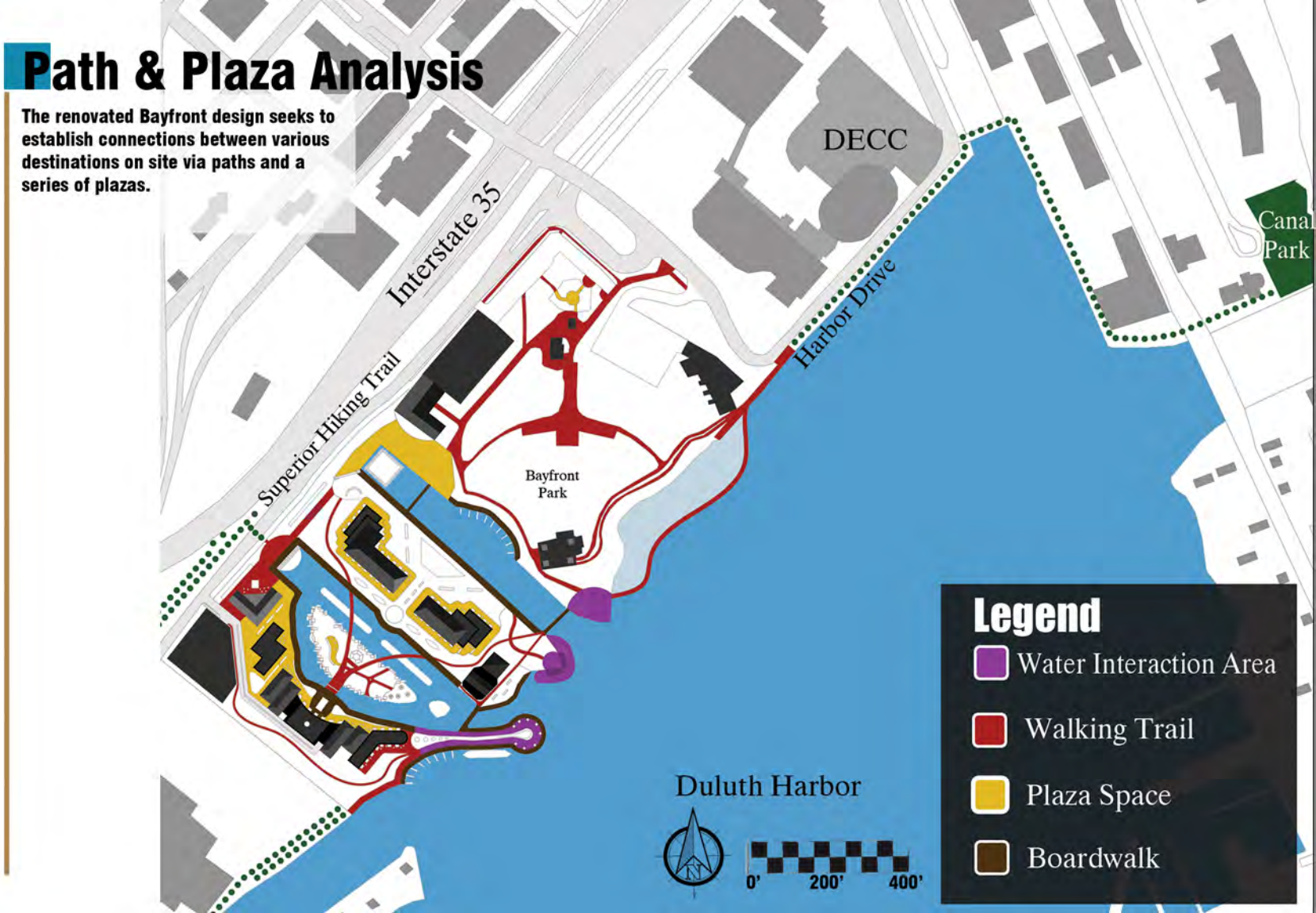
## Green Space Analysis

Much of the brownfields on the Bayfront site will be replanted to better serve the public with areas for passive, active, and educational areas throughout the Waterfront Discovery Project.



## Path & Plaza Analysis

The renovated Bayfront design seeks to establish connections between various destinations on site via paths and a series of plazas.





# Mitigating the Harbor

## Hydrology

Heritage  
Public Space

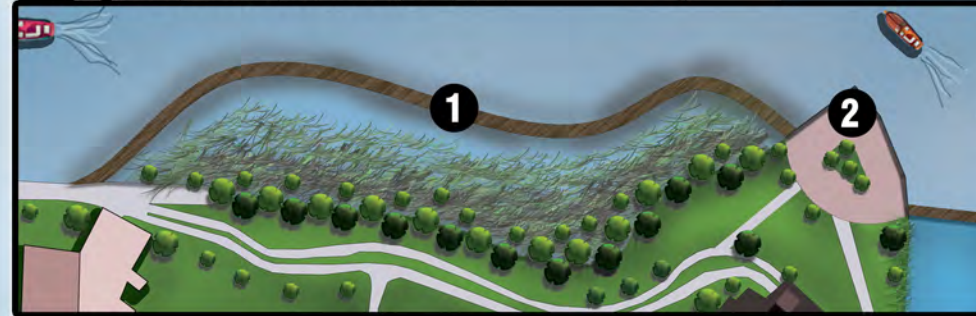


Motion of water across site



Images Courtesy of  
1. <http://www.floatingislandinternational.com/products/biohaven-technology/>

### Bayfront Lakewalk



#### Objectives:

- Establish Riparian Buffer
- Bring visitors out over the water
- Filter and remediate runoff
- Create area for wildlife habitat
- Soften the transition from natural water to the built environment
- Enhance overall beauty

### Riparian Buffer



Festival Plaza



# Remediation



# LaFarge Plaza

Hydrology

**Heritage**

Public Space

Plan Details

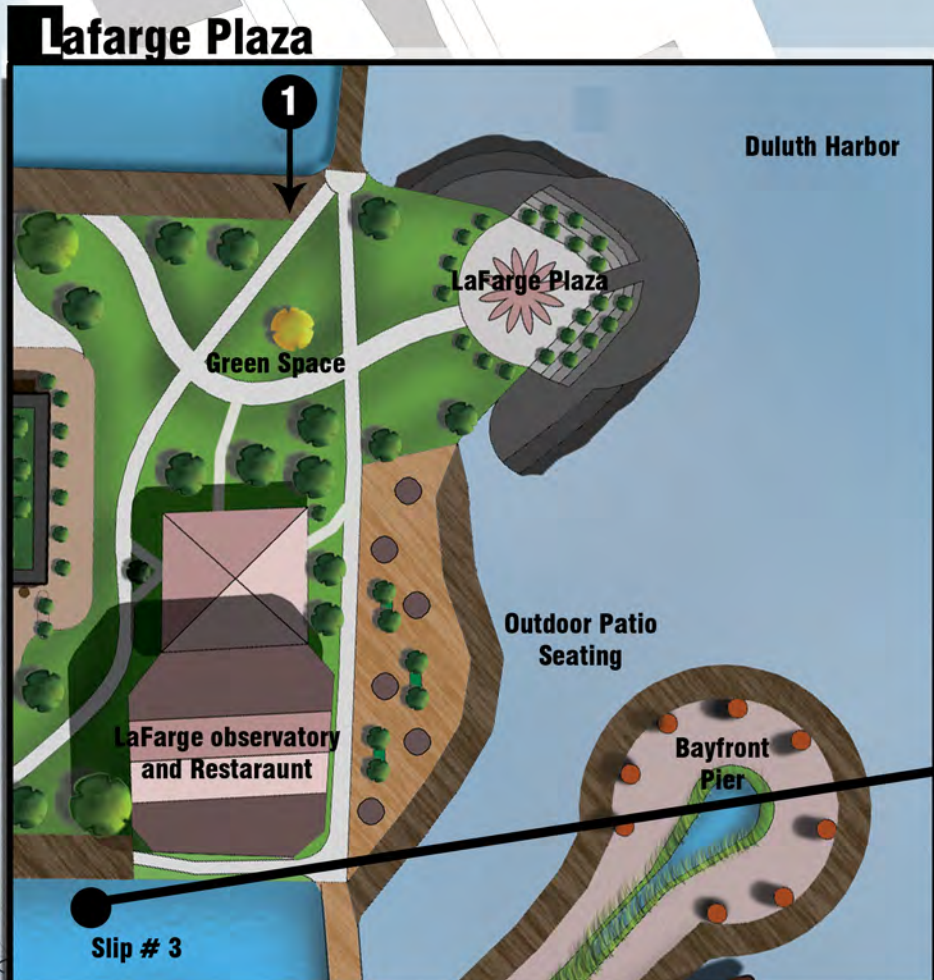


Map of historical areas on the Bayfront Site

Waterfront  
Discovery



0' 200' 400'



Slip # 3

Duluth Harbor

Outdoor Patio Seating

Bayfront Pier

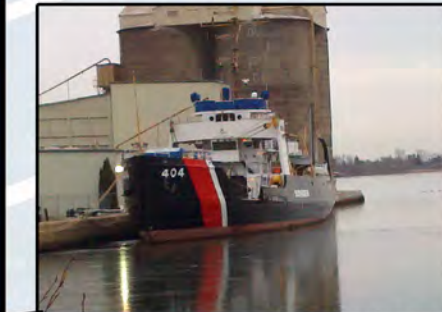
LaFarge observatory and Restaurant

Green Space

LaFarge Plaza

1

- Objectives:**
- + Establish area for visitor interaction with the water
  - + Provide adequate seating for outdoor dining to accommodate the LaFarge restaurant
  - + Use bridges to establish connections between the slips
  - + Establish views from both plazas



The permanently moored historical ship would be moved to the South side of the pier.



0' 50' 100'



Heritage

1





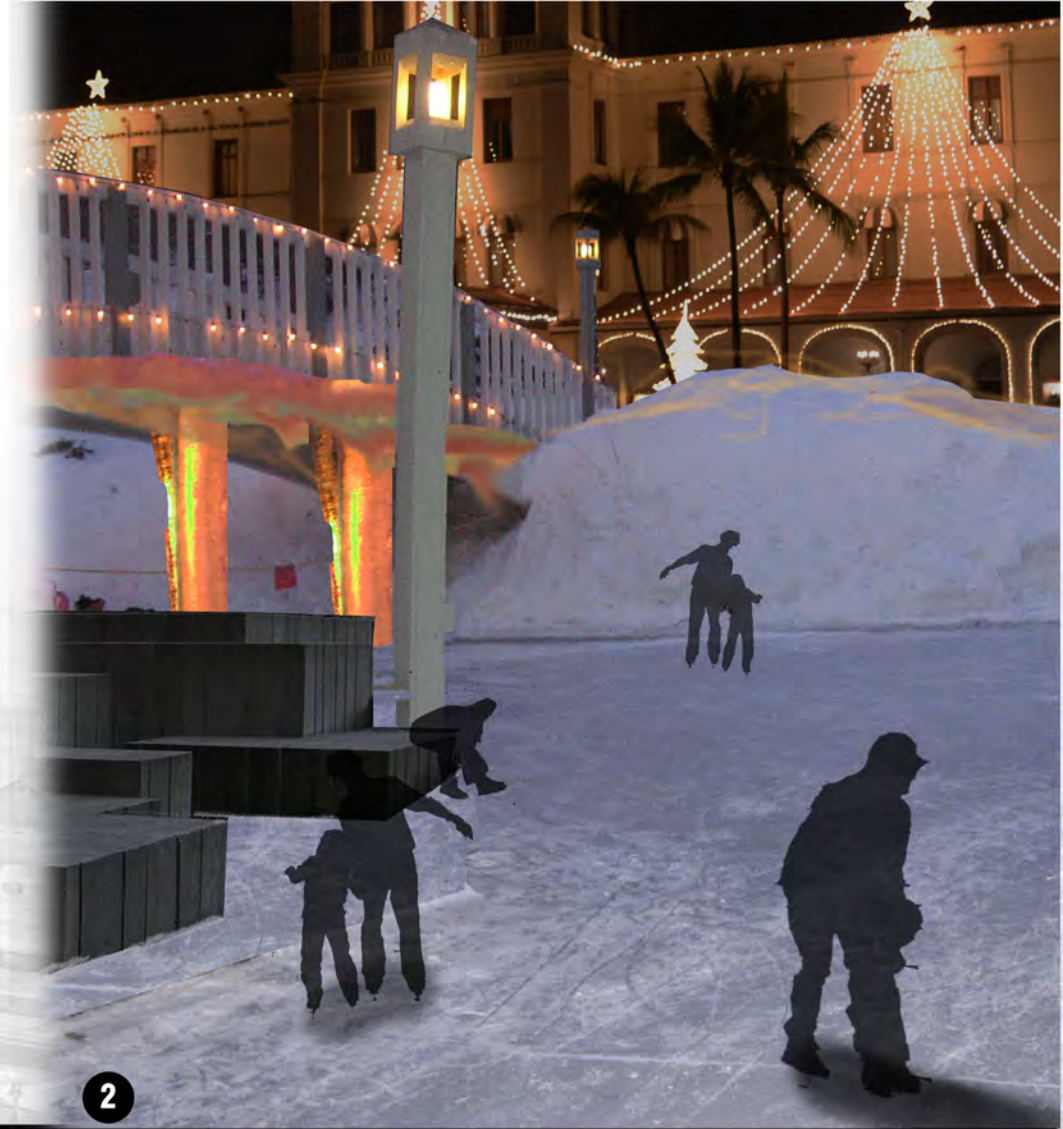
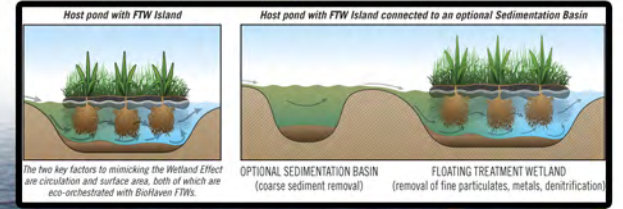
Images Courtesy of  
1. <http://www.floatingislandinternational.com/products/biohaven-technology/>

# Green Spaces

## Floating Islands

Along slip #3 there will be linear floating islands which will use the roots of the plants to remediate stormwater runoff and contaminants.

1







# Views of Bayfront

**V**iew over slip #3



Plan Details

## Waterfront Discovery

### Goals

- + Create unique and intriguing ways for visitor to interact with the water
- + Preserve the industrial heritage of the site while promoting sustainability
- + Develop strong mixed use buildings including retail, residential, and civic uses
- + Incorporate additional parking
- + Establish views of the Harbor
- + Create year round activities that are both passive and active
- + Incorporate greenway connections both on and off site



Thanks to all NDSU faculty, staff, and students who helped make this project possible, especially my primary advisor David Crutchfield who was instrumental in the design of Waterfront Discovery.

**V**iew overlooking Festival Park

