WATERFRONT DISCOVERY

THE CONNECTION BETWEEN WATER & YOU

MIKE TOWLE

title page

WATERFRONT DISCOVERY: THE CONNECTION BETWEEN WATER & LIFE

A Design Thesis Submitted to the Department of Architecture and Landscape Architecture of North Dakota State University

By

Michael Towle

In Partial Fulfillment of the requirements for the Degree of Bachelor of Landscape Architecture

Primary Thesis Advisor

Thesis Committee Chair

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abstract

Water possesses a fundamental energy that allows for a unique biodiversity of organisms to inhabit this planet. It has long been an overlooked resource on this earth, and for that reason, I would like to use its inherent properties to create a functional as well as aesthetically pleasing solution to educating people on the true value of water. This thesis 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 any who visits the site regardless of age, sex, or religion.

Water is in essence a finite and precious resource, and for this reason, it becomes increasingly important that design along the waterfront accomodates a variety of uses from residential to commercial so that everyone is given an equal opportunity to benefit from the inward outward flow of water itself.

abstract

motion, water, waterfront,
wellness, tranquility

Problem Statement

How can waterfront design react to the water as well as become an epicenter for growth and overall well being of a community?

Statement of Intent

typology

Mixed use residential/commercial area located along the edge of a body of water.

claim

Waterfront design can increase overall well being of a community by using the numerous benefits of water.

premises

Its been long known the sound of water has an overall calming effect on people, and this thesis will continue to explore that notion as well as discover other ways people can benefit from water in the landscape.

All people are drawn to water; especially in warmer, dryer climates. For this reason the shoreline must interact with the water in order to maximize the number of people who can enjoy its amenities.

The economy of an area will also benefit from unique and intrigueing waterfront design as simple economics states: the more customers the more income.

theoretical premise

Unique and intricate design, whether built or natural, can captivate the human mind, and I feel as though the most interesting, yet unexplored, type of development is one directly along the shore of a body of water, allowing a give and take relationship with the shoreline for nature, humans, and design.

project justification

Creating a successful space involves creating a place people want to visit. Water has the inherent ability to attract people, and I am seeking to create the best possible immersion of elements between a solid land mass and flowing sheets of water along the shoreline for visitors.

PROPOSAL

7.

Narrative

A Post-Industrial Heritage

Since the beginning of early civilization, port cities have been the heart of a geographic area. They serve as a central artery to provide the immediate surrounding area with goods and amenities usually not available to the community. The bayfront area in Duluth, Minnesota, embodies the economic heart of a city now left derelict as the once bustling combination of water, workers, and machinery have long since been forgotten. With careful renovation of the shorefront it, can once again become the vibrant epicenter of a community, placing focus on building social capital, increasing economic activity, and providing a unique area for residents to live.

The goal of the project 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.

a user/client description

The users of this site include primarily the residents of Duluth, Minnesota, and its surrounding context. The other major demographic visiting the site would be tourists as the area will be used as an interactive shorefont catering to all people regardless of age, sex, or religion. Accomodations would be made for anyone with physical disabilities for anything that would otherwise hinder their ability to enjoy all the Bayfront area will have to offer. Interaction is key between not only the elements of design within the park, but also between the people who work, live, and simply visit the shorefront as this will begin to increase social capital in the area making it a more enjoyable place to be. This development seeks to bridge the void along the waterfront as it lies in between a tourist hotspot to the north and industrial wreckage to the south. Peak usage of the site would be 1,500 to 2,000, people with parking provided on site.

USER #1 - RESIDENTS

The Bayfront development seeks to create a variety of unique opportunities for its residents live, play, and work. Increasing the overall enjoyment for anyone in the area is paramount, but those most affected will be those who live in the area. Therefore, their needs are of the utmost importance and must be met and often exceeded.

USER #2 - TOURISTS

Water has always been a destination for tourists whether it be a lake, ocean, or river, and this is why the Bayfront renovation must create a reason for people to come and visit the site. This user will act as a constant source of income for the area, increasing the overall well being of the entire city of Duluth.

USER #3 - BUSINESS OWNERS

Outside of the residents the next users most invested in the overall health of the Bayfront shorefront are the business owners who choose to bring their goods and services to the area. A wide variety of stores must exist in the area to cater to all of the different demographics of people who will be visiting the site.

USER #4 - SHIP AND DOCK WORKERS

Duluth always has been and will continue to be a bustling hub for shipping because the city is located directly on Lake Superior. For this reason, many cargo ship workers will have layover times when they will be frequenting the Bayfront area. Amenities such as food or place, to stay must be provided for these workers in the shipping industry.

major project elements

SCOPE

The Waterfront Discovery project is seeking to renovate a post-industrial area through carefull planning and design by many different people with various disciplines. Spurring economic and social growth in this area will take careful design of the infastructure, green spaces, and water interaction to create a destination for people of all walks of life. The interaction and cooperation of different professions from architects to lawmakers will bring several different viewpoints to any one issue, finding collaborative design solutions that are beneficial to all.

Redevelopment of this area will build social capital and make the entire surrounding area a more enjoyable place to live. Each design element will have a symbiotic relationship with the land, ensuring sustainability for now and years to come. A design focused on the shorefront will establish connections from any major routes of traffic (vehicular or otherwise) to the water and create a strong draw to invite people to explore and move through the site.

major project elements

WATER

At the core of redevelopment of this space resides the water and the shipping involved in the space. Water in itself is a destination, and it will become crucial for the shoreline design to ineteract with the water in such a way that it becomes a tourist destination for the area.

PARKS/OPEN SPACE

Green space in the area would provide connection between destinations on the site as well as provide areas for both active and passive recreation. Two different types of parks would be implemented; walking and stormwater remediation gardens. Walking parks provide connections in the site while also providing a place for visitors or residents to spend their time. Remediation gardens will provide a way of acleaning water runoff in an aesthetically pleasing way.

MIXED USE DEVELOPMENT

Mixed use buildings would be implemented to seamlessly combine civic, commercial, and residential building uses. This will create an area that appeals to both those who work and live in the area as well as those who are just visiting. By utilizing a variety of building typologies it becomes possible to create areas for shopping, walking, dining, working, or playing.

BAYFRONT FESTIVAL PARK

A major pre-existing amenity to the site is the Festival Concert Park located in the Southeast corner of the site. Several times a year (especially in summer) the concert stage plays host to a number of music festivals, as well as public gatherings of different natures. In the winter months there is ice skating available to visitors as well as an annual holiday lighting display. This portion of the site also contains a large children's park that is very popular year round.

HERITAGE

The iconic La Farge plants acts as a primary conveyor of place for the site as it embodies Bayfront's industrial tradition. Although abandoned now it continues to be a destination along the waterfront and through careful renovation it can once again become a point for growth as it stands as a constant reminder of the past even though time contiues to pass.

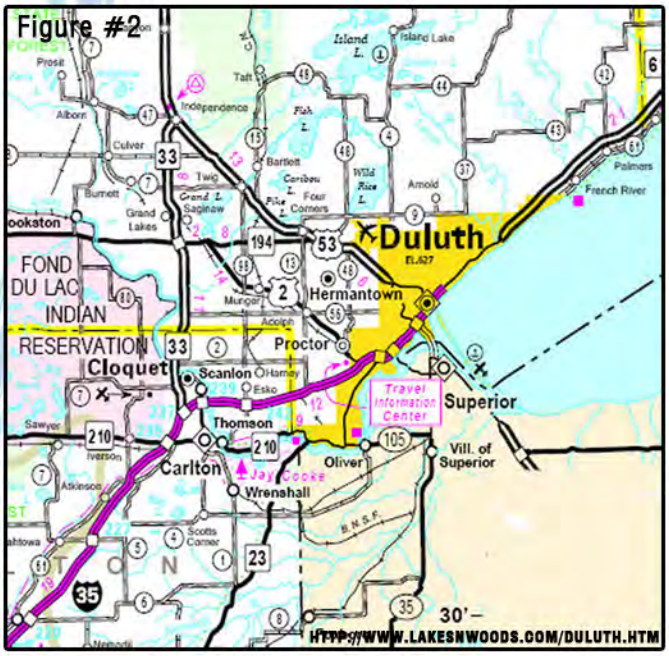
site context

REGION

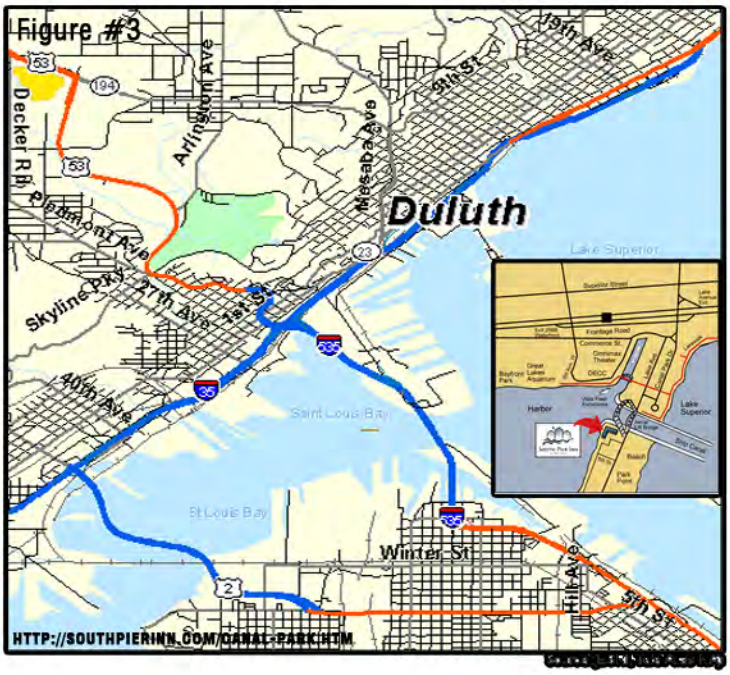
WHY BAYFRONT?

The Bayfront area of Duluth, Minnesota represents an area with such opportunities and promise but relies primarily vacant and desolate. Drawn to its unique heritage, the waterfront represents opportunities to create a memorable destinations for all people to explore regardless of age, sex, or religion. Waterfront discovery represents a return to heritage while looking towards a sustainable future and offering an epicenter for expansion of development in the area.

CITY



SITE LOCATION



site information

SITE

Figure #1

Figure #1, Site Overview, From Google Earth

project emphasis

Unique and intricate design, whether built or natural, can captivate the human mind. The most interesting and yet unexplored idea of this rests along a body of water. Duluth has always had a strong community development along the water and the Bayfront area needs to follow this trend by creating an area that excels along the water front like other tourists destinations along Lake Superior. The area will be a hub for future development, illustrating sustainable design in a mixed use development area.

Immersion of the flowing properties of water into the landscape will create a spirit of place for the Bayfront shoreline. This, in turn, will establish a constant stream of visitors who will promote economic growth and social capital and recapture the heritage of the post-industrial nature of the site.

WATER DEVELOPMENT

Ther Bayfront Festival area remains a body of missed opportunities because it remains desolate along the beautiful shore of Lake Superior. At its core water remains the primary source of design for the site by utilizing water's natural properties to illustrate an interactive give and take relationship between the people and the site.

AREAS OF EMPHASIS

SHOREFRONT DESIGN

PRESERVE HERITAGE

GREEN INFASTRUCTURE

ECONOMIC GROWTH

SOCIAL CAPITAL

plan for proceeding

PROJECT TYPOLOGY

Mixed use residential, commercial, and civic waterfront development located in Duluth, Minnesota, along Lake Superior.

HISTORICAL CONTEX

Located in the center of North America, the city of Duluth has long been a shipping based culture. The city itself began in the 1850's as a booming port city, boasting the only waterway links to both the Atlantic and Pacific Ocean. The Bayfront area has long since benefitted from the trade in the area whether it be fur, timber, wheat or other minerals. It has never been an area for the extravagant as it was not a place for entertainment, but rather where was the area derived its collective source of income.

SITE ANALYSIS

Site analysis of the Bayfront will study the cultural, physical, and environmental factors influencing the site. This will consist of elements such as climate, sun patterns, existing building, land uses, points of interest, and population demographics. Ultimately, the analysis will come before any designing is done as it is crucial for the project to benefit both the city itself and the residents of the area.

PROGRAMMATIC REQUIREMENTS

All programmatic requirements for the project Waterfront Discovery will be carried out in accordance with the North Dakota State Department of Architecture and Landscape Architecture.

Design Methodology

MIXED METHOD RESEARCH

A design approach of mixed method, quantitative and qualitative. Graphic analysis will occur at many different levels ranging from macroscopic to microscopic in several different areas of study including the land, water, existing infastructure, and surrounding context. These finding will then be rendered digitally to create maps that better help create a sucessful design for the Bayfront area. Another that will be implemented is interviews with current residents of the area to be determine what ideas and visions they have for the current site.

Quantitative and qualitative data will be used in conjunction with theoretical premise to form a guideline for the design. This data will be gathered concurrently throughout the analysis process. Priority will be assigned by the requirements of the theoretical premise'

Quantitative data will include (but not be limited to) statictical data as well as supporting documentation. Current masterplanning, surveys, archives and interaction will be a primary source for this type of documentation. Multiple site visits will allow for in depth scientific data accurate depicting current conditions of the site.

The final project will be compiled in both digital and hard copies, integration will occur at several different stage in the design process. Analyzing, interpreting, and reporting of results will occur throughout the research process. Conclusion of the project will result in a physical presentation to the thesis board of North Dakota State University.

Qualitative data will be derived from direct observation, local surveys, and archival search.

PRESERVATION

Design of the project will occur in multiple stage of the 2011-2012 school with regtular progress checks.

A digital copy will be made to available to the public via the NDSU Library.

studio experience

FALL 2007	**(PEPPLE)**
A PLACE FOR TEA	(FARGO, ND)
WENONGA PLAZA RENOVATION	(BATTLE LAKE, MN)
SPRING 2008	**(LINDQUIST)**
COLD SMOKE	(FARGO, ND)
RIVERFRONT RESTORATION	(WINNIPEG, MB)
STREET CONVERSION PROJECT	(FARGO, ND)
FALL 2008	**(FAMULARI)**
DEFIANT GARDENS	(FARGO, ND)
SHADOWS OF THE PAST	(REGENT, ND)
DOWNTOWN FARGO ANALYSIS	(FARGO, ND)
SNOW SYMPOSIUM	(FARGO, ND)
SPRING 2009	**(PEPPLE/KOST)**
UNITED TRIBES TECHNICAL COLLEGE	(BISMARCK, ND)
ROOSEVELT NIGHBORHOOD	(FARGO, ND)
FALL 2010	**(KOST/CARLSON)**
WATERFRONT ALIVE	(DULUTH, MN)
SPRING 2011	**(FAMULARI)**
TYING UP THE LOOSE ENDS	(BRAINERD, MN)
FALL 20011	**(CRUTCHFIELD)**
THESIS: WATERFRONT DISCOVERY	(DULUTH, MN)

timeline

October	Proposal Due
October	Theoretical Premise/ Historical Research
October	Case Studies
October	Last Day of LA 563
November	Programming Code Requirements
November	Site Analysis
November	Last week of LA 571
December	Program Due
December	Finals Week
January	Design Method: Research/Analysis
February	Design Method: Research/Analysis
February	Schematic Design
February	Schematic Design
March	Masterplan
March	Masterplan
March	Masterplan
March	Thesis Break
March	Site Planning
March	Site Planning
March	Building Development
April	Design Details
April	Perspectives
April	Final Boards/CD due
May	Boards/ Formal Review
May	Thesis Presentation
May	Graduation

PROGRAM

theoretical premise

The following research forms the theoretical premise and unifying ideas behind my programmatic elements proposed for the Bayfront site in Duluth, Minnesota. These elements include the value of green spaces in a landscape, the unique design opportunities offered by a waterfront development, the historical and cultural value of reclaiming post-industrial brownfields, and the importance of using mixed use building typologies to assist in spurring economic growth.

THEORETICAL PREMISE:

green space

DULUTH, MN

OVERVIEW:

A park is much more than a simple meadow with strategically planted trees; a park is a place for one to develop a sense of identity, play a friendly game of catch, or reconnect with the natural environment. While it has long been stated that green space and parks are necessary in the urban fabric of a development, the reason "why" has often been much more difficult to find. People feel a certain connection with their immediate surroundings, and it is this connection that will help improve the overall quality of day to day life as everyone develops their own distinct relationship with the unique spaces found in parks. These spaces serve a variety of purposes from recreation to retreat, and carefully designed parks offer something for anyone to enjoy regardless, of age, sex, race, or religion. This same premise must also hold true for residents compared to visitors of parks as a public space must retain certain qualities that prompt multiple return visits to the site.

The general public sees a park as a place of entertainment; however one's definition of "entertainment" is as unique as the person themselves. For some, it may be reading a book while sitting on a bench in a secluded grove of trees, whereas for others, it may be crossing the finish line after running Grandma's Marathon in Bayfront Park. This is why it is imperative for park design to respond to the needs of the residents, visitors, governing agencies, and the context surrounding the site to better serve the community as a whole. Creating a unique environment that seamlessly transitions from the built to the natural environment further increases a parks appeal as the aesthetic qualities of a space immediately affect one's perception of that sense of place in the respective geographic area. The bottom line is a successful park ultimately becomes a destination or a place where people want to be. The Bayfront area in Duluth faces the challenge of combining a variety of built structures because the city currently has the district zoned for mixture of commercial, institutional, and civic uses.

Figure #1

High Park in Toronto, Canada offers several wide trails to accomodate both people walking and biking

Figure #2

Water creates destinations for visitors as shown by this fountain in Jordan Valley Park

1. http://www.highparktoronto.com/imaginary_large.php?id=home&cur=8
2. http://springfieldmo.org/things-to-do/cat/Attrac/menu/121/client/65912

PARK BENEFITS:

1. Parks provide people contact with nature; known to confer certain and enhance overall well-being.
2. Physical activity opportunities in parks help to increase fitness and reduce obesity.
3. Parks resources can mitigate air, climate, and water pollution impacts on public health.
4. Parks provide an area for children to discover and learn about their world.
5. Numerous studies have shown that parks and open space increase the value of neighboring residential property
6. Green spaces provide lower income families with an equal opportunity to enjoy the benefits of nature.

Figure #3, Park Benefits, Statistics from the American Planning Association

elements of a successful park

GREEN SPACE & GARDENS:

People associate parks with trees, flowers, and open spaces, but often overlooked is the importance of variety in the number of different species of plants. Successful parks offer such a vast variety of plant material that one must visit multiple times to see all of them, and the park offers so much it becomes possible to pick a new favorite tree every time one visits (Toronto, 2008). A varied plant palette not only makes the space easier on the eye, but also has been shown to convey certain health benefits and improve the longevity of one's life (American Planning Association, 2010). The Bayfront area must also use this philosophy to help create destinations along the trails that keep people exploring and enjoying the park.

WATER ELEMENTS:

The use of water in a park can often times create some of the most memorable spaces of any given development. All the properties of water must be used, whether it is a reflection, noise, or an aesthetic quality. Like plants; water also offers health benefits. Using the soothing and tranquil sounds of water can help people unwind after a stressful day, or just escape the world for a while (Sustainable Sites Initiative, 2007). The Sustainable Sites Initiative (2007) when discussing water and green space, "Hospital patients who have a view of natural landscapes recover faster from surgery and require less pain medication. (Sustainable Sites Initiative, 2007)" The Bayfront property provides great opportunities to utilize water given its location on Lake Superior. This water should be used to not only make the area more peaceful, to act as a transitional buffer between the various types of zoning located in the area.

RECREATION & FACILITIES:

One of the easiest ways to build social capital in an area is to hold regular recreational games or activities in the park. This will bring people into the park as well as get residents of the same neighborhood to converse with one another. Recreational opportunities also help fight America's obesity crisis as they encourage people to get out for some physical exercise while enjoying nature (American Planning Association, 2010). Whether the activity be active (such as walking or running), or passive (such as reading or eating) a park must accommodate for all varieties of activities. The facilities within in a park also tend to appeal to certain demographics as different ethnicity use parks differently (American Planning Association, 2010), and for this reason visitors centers and other facilities must carefully outline what they have to offer people for whatever their interest may be. Both tourists and residents will be frequenting the Bayfront area, and this is why it is essential that the design of the area plays does not play favorites and offers a little something for everyone, whether that be walking a dog or watching the sunset over Lake Superior.

Each of the above images shows an element of a successful park.

Figure #1,Public Space, http://www.visitoakpark.com/memberdetails.cfm?ML=585&category=Attractions&flasher=l_attract
Figure #2, Water Elements, http://www.relaxingdecor.com/pond-installations.htm
Figure #3, Active Recreation, http://palscience.com/health-medicine/jogging-park-better-than-gym/

THEORETICAL PREMISE:

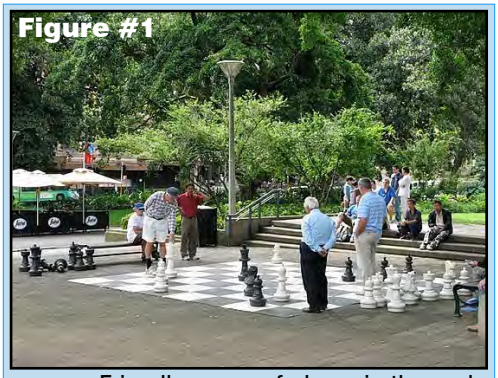
building social capital

DULUTH, MN

WHAT IS SOCIAL CAPITAL?

Social capital "Put succinctly refers to the collective value of all social networks (who people know) and the inclinations that arise from these networks to do things for each other 'norms of reciprocity' (Degraaf & Jordan, 2003). Highly trafficked parks provide an ideal space for the residents to interact with one another in a comfortable and safe setting. This interaction provides an opportunity for all walks of life to fully enjoy the natural environment while also helping develop a singlular sense of community for residents of the area. The most successful parks in history have not only provided visitors the opportunity to explore and enjoy their natural environment, but have also helped develop a neighborhood's identity.

Landscape architects Don DeGraaf and Deb Jordan (2003) refer to social capital as being equally important (if not more important) than economic capital in developing a sense of community associated with a given area. Research has proven that communities with higher levels of social capital also experience increased levels of civic engagement, thus causing the resident to take more pride in the place they call home.(DeGraaf & Jordan, 2003). A rise in social capital also leads to a decrease in crime rates as people typically do not harm a people or place that they know/care about.



Friendly game of chess in the park

People relaxing in Central Park

Figure #1, Chess, http://images.travelpod.com/users/danielandai/1.1297079420.people-playing-chess-in-the-park.jpg
Figure #2, Central Park, http://www.biking-in-manhattan.com/cp05-carousel.htm

SOCIAL CAPITAL COMMUNITY BENCHMARK SURVEY FINDINGS:

+ Communities with higher levels of social capital are likely to have higher educational achievement, better-performing governmental institutions, faster economic growth, and less crime and violence.

+ Joining one group cuts your odds of dying over the next year in half Joining two groups cuts it in quarters.

+ Every 10 minutes of additional commuting time cuts all forms of social capital by 10%--there is 10% less church going, 10% fewer club meetings, 10% fewer evenings with friends, etc.

+ Television is the only leisure activity in which doing more of it is associated with less social capital.

The Executive Summary was prepared by the Saguaro Seminar: Civic Engagement in America, a project of the John F. Kennedy School of Government at Harvard University

CLASSIFICATION OF AN URBAN WATERFRONT:

A common misconception with the term “urban waterfront” is that people typically associate these types of developments with large metropolitan shipping ports. However, the term has become much more inclusive as a waterfront is not solely associated with the ocean, but can also be development located along a lake, bay, or even a channel (U.S department of commerce, 2009). An enormous variety of waterfront developments exist in the landscape today, from residential homes on a secluded lake to multibillion dollar oceanfront developments. Each body of water has its own distinct sense of place, and for this reason it is essential the design tailors to the body of water itself as well as its surrounding context.

WHAT IS “ON” THE WATERFRONT?

Differences in size affect strategies of urban waterfront revitalization. Waterfront sections can be compact, neatly carved out from one section of a city or town (as in Alexandria, Va.), or they can sprawl for miles along a river (U.S department of Commerce, 2009). To some being on the waterfront means standing directly where the water laps up against the shoreline, but in reality, it is the designer who dictates this feeling. Connections and orientation of built structures can create the feeling of being on the waterfront even though one may be a great distance away. The depth of the Bayfront site from the water’s edge measures roughly a quarter mile. With proper building orientation, framed views, and pedestrian oriented paths, it will be possible to create the illusion of being on the water when really the person may be a hundred yards away.

USE:

Many waterfronts are heavily industrialized, reflecting either current activity or a history of port related functions. Other waterfronts, however, may be exclusively resort communities with harbors for personal boats and recreational swimming. More commonly, waterfronts reflect a mixture of uses; the pattern of existing land uses on a waterfront development is very crucial in determining plans for future redevelopment.

Figure # 1, LaFarge Plant

Image taken by Mike Towle

REGENERATIVE LANDSCAPE:

Simply put Brownfields are abandoned or underused industrial or commercial facilities that have the opportunity to be mitigated and eventually reused (Telsey & Jones, 10). While all plants help clean water, land, and air pollution, certain plants will target toxins trapped in the soil and water on any given site. This allows for the opportunity to begin removing toxins from the terrain to assist in regenerating a landscape devastated for years by the industrial nature of human civilization. Development solutions relying on phytoremediation techniques such as rain gardens, riparian buffers, and on site detention or retention ponds allow opportunities to create an aesthetically pleasing landscape feature while also reversing the scars left on the land from the previous development. These solutions also provide newly constructed habitats for the wildlife of the area as aquatic ecosystems are some of the most biologically diverse habitats on the planet.

INDUSTRIAL PORTS:

For hundreds of years large cargo vessels were the quickest and most efficient way to deliver goods all over the world, but now many of these sites have since been abandoned leaving their mark on the shorefront of the respective site. The Bayfront site in Duluth once served as a bustling shipping that exported such commodities as fur, wheat, and timber as far as Europe, but now lies vacant and abandoned. New technological advances have significantly reduced Duluth's dependence on the harbor, fitting the description of a typical postindustrial waterfront site. The overall visual appeal of the area is minimal as industrial debris, metal, and gravel are strewn sporadically across the site.

VALUE OF BROWNFIELDS:

Until properly remediated, most Brownfields are left abandoned until an agency decides they would like to clean up the hazardous materials on site. This movement toward a more sustainable future will help rally support from the general public for brownfield redevelopments. Often times, these site are very historically rich and by mitigating a brownfield site, you are not only helping preserve the earth, but also preserve history.

post industrial heritage

DULUTH, MN

URBAN WATERFRONTS:

Many waterfronts contain historic structures or uses. This can enhance the attractiveness for investors (given the possible tax breaks on designated historical buildings) and help develop tourism. The maritime heritage of old seaports and ships has sparked renewed public interest, as witnessed by the crowds visiting the "tall ships" during the town's bicentennial (U.S department of commerce, 2009). Historical sites have always been popular among residents and tourists alike. It gives the person visiting the site an opportunity to temporarily understand the historical context of the ground he or she is walking on.

PRESERVING THE PORT:

The Bayfront site has such a rich history that it will be important to educate visitors on the sites unique history and walk them through the timeline from when it was once a bustling metropolitan port to where it stands now: abandoned and derelict. Informational kiosks in parks have long been the standard for guiding tourists to the various attractions of the city, and they have also proved helpful in educating the general population about the history or current state of an area.

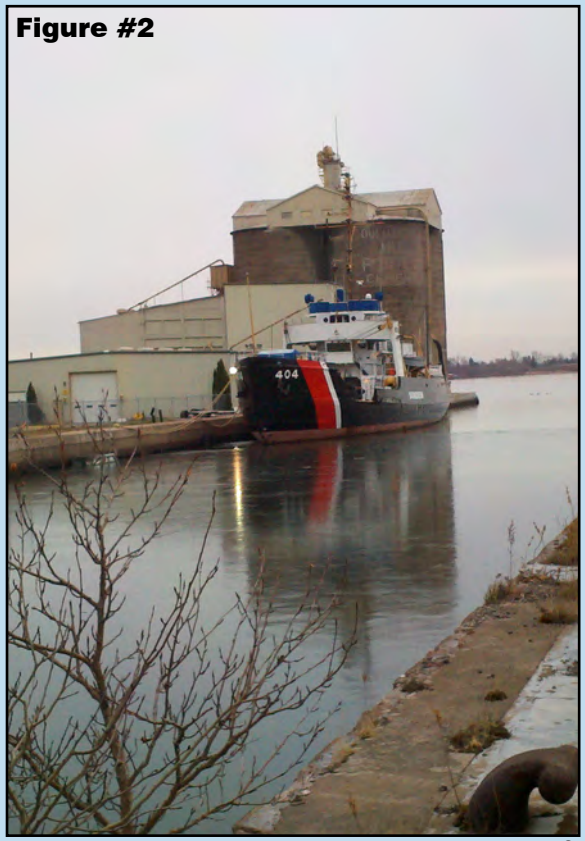
HISTORICAL SITE DEVELOPMENT:

Restoring a landscape to its original state is never something that happens over night; it takes years of careful planning and designing. However, when just the right design comes along, it becomes an immediate destination for a city. Bayfront Park must incorporate historical elements into the design to preserve the foundation the city was built on.

Figure #1

Postindustrial wasteland to the south of slip #3

Figure #2



Permanently moored ship rests in slip #3

Image taken by Mike Towle

OVERVIEW:

The most walkable and often times enjoyable places to live are ones with strong pedestrian connections between various areas and destinations of the city. Greenway corridors promote putting the pedestrian first by installing bike lanes, wide trails, and seperation from the automobile. Future development of Duluth seeks to expand on this premise by further promoting waterfront connections in addition to the previously established greenways.

GREENWAY CORRIDORS:

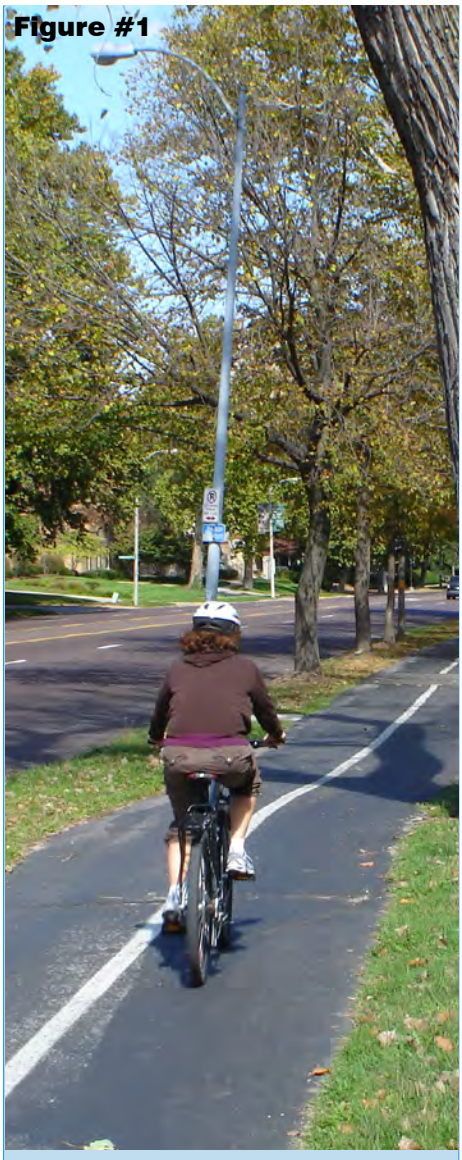
The term greenway originated from two words: green belt and parkway. Put succinctly the concept of a greenway is to create a corridor that is not intended for the automobile, but rather the pedestrian or biker. Cities are now beginning to interconnect popular spaces within themselves with networks of connected, pedestrian friendly corridors (Portland Bureau of transportation, 2011).

GREENWAY GOALS:

+ Reduce automobile speeds using speedbumps to ensure safe travel through the corridor
+ Guide people to where they are going using signage and marking on the pavement to let people know what is nearby.
+ Reduce auto-cut through by using traffic diverters to keep cars from traveling at high speeds on main roads when they cut through less tracked streets (Portland Bureau of trans portation, 2011).

BAYFRONT LINKAGES:

Given the Bayfront's location directly in the heart of the city, it will become increasingly important to establish greenway corridors to adjacent destinations. Currently the City of Duluth is seeking to connect Fetival Park to Canal Park via a greenway located just to the east of the Duluth Entertainment Community Center.



Bike Lane seperating pedestrian from automobile.

Figure #1, Bike Lane, http://www.altaplanning.com/App_Content/images/DSC08174.JPG

HISTORY OF MIXED USE DEVELOPMENT:

Contrary to popular belief, mixed-use types of developments were actually the norm before modern zoning and land use practices were put into effect. These types of building developments of building developments were thriving into twentieth century especially when located on intersections and transit stops (Miller & Miller, 2003). However, modern zoning practices adopted in the first half of the twentieth century contained a policy that preached segregated building use. Developments were divided based on their function; commerce, school, work and so on.

The 1960's and 70's then saw a reemergence of MXDs (Mixed-use developments) as many cities were placing a stronger emphasis on large scale urban revitalization and current zoning practices were not allowing a city to grow its downtown area. Shortly after these same development strategies were implemented on smaller scales than the previous MXD's. They were also more integrated with their urban contexts as public interest in historical preservation grew (Miller & Miller, 2003).

MIXED USE TODAY:

Today mixed use is widely recognized as the design standard for nearly all urban development as it has become a key component of Transit Oriented Development(TOD), Traditional Neighborhood Development (TND),Livable Communities, and Smart Growth principles (Miller & Miller, 2003). These principles outline the modern view on future sustainability as cities seek to reduce the dependence on the automobile by creating developments that offer all of the essentials for everyday living in a condensed area.

BENEFITS OF MIXED-USE:

+ Activates urban areas during more hours of the day.
+ Increases housing options for diverse household types.
+ Reduces auto dependence.
+ Increases travel options.
+ Creates a local sense of place.

Artists rendering of a well designed mixed-use area.

Figure #1, Mixed-Use, http://www.mrprealty.com/Images/The%20Exchange/Potomac%20Yard%20vw1.jpg

ROLE OF PARKS IN THE LANDSCAPE:

A park establishes just as much of an identity for a city as any of the buildings you see when looking around. A park offers a respite from the stress and strain of everyday life (especially in the city); it isa place to get away and relax. Rajiv Bhatia, director of Occupational & Environmental Health, says about the importance of parks, "Being healthy means access to the resources needed to live a healthy life, and many health resources are fundamentally dependent on the design of our neighborhood environments. Accessible and safe parks are one essential ingredient to a healthy neighborhood, providing a place to exercise, play, spend time with friend and neighbors, or just relax and recuperate."

BUILDING SOCIAL CAPITAL:

A crucial and often overlooked aspect of public health is the development of social capital in developments. Social capital refers to the way one feels about where, how, and who they live with. Parks provide numerous opportunities to promote increased social capital among residents by providing a place for the people to congregate in a safe and visually appealing area. The value of high quality parks goes beyond even the physical; realm research as the San Francisco Department of Public Health (2007) states that all residents benefit from the creation of well designed and well maintained public spaces. These spaces should be viewed as a public health intervention.

WATERFRONTS:

Waterfront developments retain certain inherent qualities that attract people to the design. The combination of water, land, buildings, and heritage has and always will bring people to the site. For this reason, waterfronts provide a unique opportunity for development as the site incorporates numerous project elements that play a role in a singular design. Most waterfronts were once constructed as shipping ports, but today most lie abandoned and derelict. The restoration and redevelopment of these sites must consider the historical impact of the design as other projects (such as South Street Pier) have shown that residents respond to their city or town's history, and that future development should reflect on the past while looking toward the future.

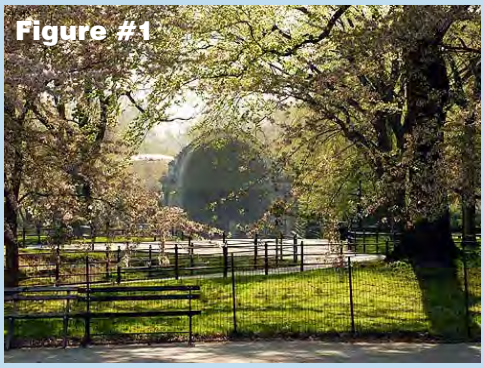


Figure #1, Park, http://www.centralparknyc.org/visit/things-to-see/south-end/naumburg-bandshell.html

Figure #2, Public Space, http://www.texasexplorer.com/RiverWalk.htm

Figure #3, Waterfront, http://www.uwmarx.com/waterfront/newsite/index.htm

BROWNFIELDS:

The Bayfront Park in Duluth today sits in a vacant Brownfield. A combination of gravel, water and steel are strewn across the site creating quite an ugly sight against the beautiful St. Louis Harbor backdrop. One benefit for the Bayfront brownfield site is the fact that there is no need for hazardous material to be cleaned before redevelopment. Most of the value of a brownfield site lies in its property value, and the Bayfront is no different as it lies at the heart of Duluth, directly situated on the St. Louis Bay. Redevelopment of the site will mark a transition from an industrial based past to one that now becomes more tourist oriented. The idea is to promote the site's history of industrial shipping while also creating a tourist destination.

PRESERVING HERITAGE:

Residents of Duluth have long associated the harbor with the city's economy, however, over the past few decades the site has degraded to a post-industrial wasteland. As of now, residents and visitors see only the abandoned buildings and piles of twisted steel. The redevelopment of Bayfront Park will embrace the history rather than hide it by preserving the large boat, the Lafarge Plant, and other pieces of the site's history.

CONNECTIONS:

"Open space, natural areas, and recreational areas are more valuable if interconnected. The city will strive to connect its green space and recreational areas through natural corridors on public or private land, trail systems, and creation of boulevard corridors on public right-of-ways" (Duluth Chamber of Commerce, 2010). This quote from the Comprehensive Plan of Duluth basically summarizes the value of the interconnectedness of a city. Bayfront Park lies at the heart of downtown and should become a hub to make a pedestrian connection to both downtown and Canal Park.

MIXED USE DEVELOPMENT:

Mixed-use has evolved from early twentieth century transit-oriented housing/commercial buildings, through large-scale, auto-oriented multi-use developments, in the 1960s and 70s (Miller & Miller, 2003). Mixed use can be developed at a variety of scales, from building, to parcel, and walkable or transit area. In order for the Bayfront Park to become a tourist destination it must first offer a wide enough variety of shops, businesses, and residential developments so that it appeals to both people of the city and tourists.

CASE STUDIES

introduction

The following case studies provide a template for redevelopment of the Bayfront Harbor. Each was carefully selected based on the relevance of its programmatic elements to my site. The following is the criteria by which each site was examined:

+ CONTEXT
+ SITE ANALYSIS
+ PROJECT HISTORY & BACKGROUND
+ GENESIS OF PROJECT
+ DESIGN DEVELOPMENT OF PROJECT
+ ROLE OF LANDSCAPE ARCHITECT
+ PROJECT ELEMENTS
+ MAINTENANCE AND MANAGEMENT
+ CRITICISM OF PROJECT
+ SIGNIFICANCE/UNIQUENESS
+ LIMITATIONS
+ PROJECT COMPARISONS
+ FUTURE ISSUES
+ CONTACT INFORMATION

CASE STUDY #1:

Darling Harbour

SYDNEY, AUSTRALIA

CONTEXT:

Darling Harbour for more than 100 years, has been the chief rail-to-sea interchange for the city of Sydney, Australia. Located along the south side of Cockle Bay, the harbor has become an extension of downtown Sydney providing connections via monorail and water ferry despite the barrier created by the highway (Breen & Rigby, 2006). The overall design goal of the park was to transform an industrial/transportation area into a hub for social interaction; shifting the sites primary purpose to better serve the residents of Sydney. The public response to the project has been overwhelmingly positive and even critics cannot deny the success of Darling Harbour because it now draws in the neighborhood of 15 million visitors annually (70% of who are residents of the area) (Breen & Rigby, 2006). Waterfront boardwalks coupled with a vast variety of shops, museums, gardens, and public green spaces have turned this once industrial port into a public playground.

SITE ANALYSIS:

The foundation and driving force behind the success of Darling Harbour remains the bay itself since the natural draw of water is utilized to its fullest extent bringing people to the water's edge in a unique and engaging manner. The developments careful design of both natural and built environments provides the area with a seamless transition from the skyscrapers of downtown to the water's edge of Cockle Bay. Historically influenced lighting illuminates the boardwalk at night creating an appealing destination for Sydney nightlife. Other major features of the site include the Festival market, the Chinese garden, and the Pump House Museum of Applied Arts and Sciences that was a complete renovation of an abandoned powerhouse (Breen & Rigby, 2006).

HISTORY/ BACKGROUND:

Darling Harbour was originally named Tumbalong (a place where seafood is found) by early European settlers. Appropriately named the Cockle Bay provided an economic sustenance for the population as its waters were widely populated with a variety of different aquatic species (Sydney Foreshore Authority, 1). The actual city of Sydney was founded in 1788, and along with this came another change in the Harbour's name; Long Cove. The elongated shape of the bay gave way to this name, and finally in 1826 the bay was once again renamed to Darling Harbour in reference to the current governor of the time, Ralph Darling.

Figure #1

The spiral water feature along the Northern edge of the water has become very popular amongst children visitors.

Figure #2

An aerial view of the Darling Harbour displays how connections are formed between the opposite sides of the bay.

PROJECT OVERVIEW

+ Date Designed: 1988
+ Size: 148 acres
+ Cost: $80 million
+ Lead Designer: Keys Young
+ Client: The city of Sydney Australia

Figure #1, Water Feature, http://prabhasmyhero.blogspot.com/2011/08/shooting-spot-rao-gaari-abbayi-song.html
Figure #2, Overview, http://www.sydneysymposium.unsw.edu.au/images/Darling%20Harbour.jpg

CASE STUDY #1:

Darling Harbour

SYDNEY, AUSTRALIA

PROJECT HISTORY & BACKGROUND:

As Sydney's economy diversified, the once bustling wharf was seemingly left derelict as the site had become a series of abandoned warehouses and seldom used railroad tracks. The vision for a park "returned to the people after 150 years of industrial use" and began taking shape in 1984, it was amazingly completed in 1988 at which point it was reopened to the public (Breen & Rigby, 2006). Today it stands as arguably the most prominent feature in Sydney because it continues to capture the imaginations of those who visit.

GENESIS OF PROJECT:

The vision of Darling Harbour was astonishingly simple; use the natural draw of water to create a destination where people want to visit. Much of what distinguishes the area from similar projects like the Tivoli Garden in Copenhagen (Breen & Rigby, 2006) remains the sheer variety of shops, boutiques, and restaurants which line the Cockle Bay. Each of these businesses provides majestic views across the bay to the Pymont Bridge, which passes over the heart of the bay.

DESIGN DEVELOPMENT PROCESS:

The overhaul of Darling Harbour marked a transition out of the industrial era as the site moved toward a more pedestrian oriented design philosophy. Located within walking distance of the central downtown business district. The site provides a unique blend of water, nature, and industry offering large promenades and lush vegetation providing a more than ample space for one to enjoy whatever activity one might be into, whether that be passive or active recreation (Rivera, 2003). By providing project elements that everyone can enjoy regardless of age, sex, or religion continues to be the projects strength since it offers everything from the world's largest IMAX theatre to the world renowned Sydney Aquarium (Rivera, 2003).

ROLE OF LANDSCAPE ARCHITECT IN THE DESIGN:

The design of Darling Harbour was placed in the hands of Keys Young, and with his vision of an industrial area returned to the people, he geared each element along the water to appeal to the visitor who travels by foot in sharp contrast to the heavy machinery that dominated the area for so long. Establishing pedestrian connections despite the barrier put up by the highways surrounding the site is his greatest accomplishment. The design also emphasizes constructed views through the various forms of vegetation along the water's edge and even offers aerial views of the site provided by the monorail system (Rivera, 2003).

Figure #1

Boardwalks constructed along the waters edge reflect a design that is primarily geared to the pedestrian.

Figure #1, Boardwalks, http://prabhasmyhero.blogspot.com/2011/08/shooting-spot-rao-gaari-abbayi-song.html

CASE STUDY #1:

Darling Harbour

SYDNEY, AUSTRALIA

PROJECT ELEMENTS:

Along with the variety of shops, boardwalks, museums, parks and greenway connections, the Darling Harbour also plays host to year-long calendar of events including the city's New Year's Eve celebrations, the Hoopla Acrobatics and Street Theatre Festival, and the Darling Harbour Jazz and Blues Festival. The marina has room for 52 vessels, each allowed to moor for three days at a time, providing a unique culture that honors its industrial past while it moves toward a more tourist based source of income. The Chinese Garden of Friendship offers a respite from the hectic life in the city. It can be compared Central park in New York representing a place of tranquility and peace in the heart of downtown Sydney (Sydney Foreshore Authority, 2011).

MAINTENANCE/ PEER REVIEWS:

The bay is currently maintained and monitored by the Darling Harbour Authority, and additionally, they also have been instrumental in the continued improvement of the area. Improvements are constantly being made to better serve the residents of Sydney as well as any visitors. Even though the project is widely accepted as an overwhelming success the British publication *Architectural Review* categorized the project as "suburban escapist or even anti-urban" (Breen & Rigby, 2006). The interpretation, though, is up to the visitor, and fifteen million annually must forge their own take on the unique styling of Darling Harbour.

SIGNIFICANCE AND UNIQUENESS OF PROJECT:

Darling Park marks one of the most important landscape transitions the city of Sydney has ever seen. A new approach was adopted to shift the focus away from the area's industrial past and instead to a philosophy that the bay can still function very efficiently as a port hub but also double as tourist attraction. Since then, the bay has become a cash cow for Sydney bringing in additional revenue it might have never seen without redevelopment of the area. Boasting an array of public activities, it has become a dual lifeline for the city by still meeting vessel shipping needs while also providing a destination for public entertainment.

Figure #1

Given its proximity to the downtown it is crucial the bay has numerous connections to the heart of the city.

Figure #2

The bright lights of downtown Sydney tower over the Darling Harbour.

Figure #3

The monorail that travels over the harbour provides crucial connections to other destinations located in the city.

Figure #1, Harbour, http://www.sydneymedia.com.au/html/3558-park-to-reconnect-city-centre-with-one-of-the-worlds-greatest-waterfronts.asp
Figure #2, Downtown, http://harboursydney.info/darling_harbour.html
Figure 3, Monorail, http://www.trevorstravels.com/sydney-mono-rail/

CASE STUDY #1:

Darling Harbour

SYDNEY, AUSTRALIA

COMPARISONS TO OTHER PROJECTS:

A strong correlation can be drawn between Darling Harbour and the marketplace designs of James Rouse “the marketplace guru” in Baltimore, Maryland (Breen & Rigby, 2006). Rouse was a consultant for the design of various installations, namely the Harbourside Festival Market. He has played a crucial role in the success of several waterfront developments since he specializes in mixed use developments (especially markets) along the waters edge.

FUTURE SITE ISSUES:

The only issue facing Darling Park today is its own success as it continues to thrive along the Cockle Bay, but future expansion will prove difficult as the overwhelming success of the project has spurred uncanny growth around the bay and limited the opportunities for further development of the waterfront.

KEYWORDS

waterfront, connections, boardwalk, transition, port hub, marketplace

Figure #1

Allowing people to step down to the water it allows for each visitor to interact with the water in whichever way he or she pleases.

Figure #1, Waterfront Steps, http://josephmaynard.co.uk/images/photos/DarlingHarbourPanorama.jpg

CASE STUDY #2:

River Walk

SAN ANTONIO, TEXAS

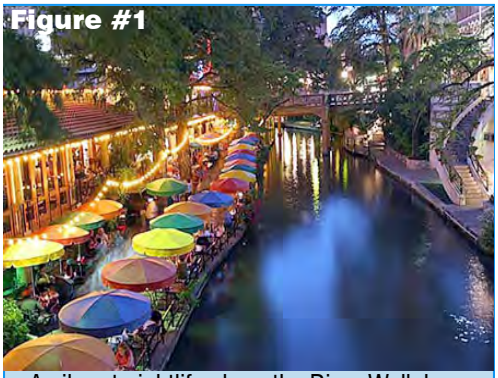
CONTEXT:

The San Antonio River Walk is a series of interconnected walkways and paths located approximately one mile beneath the downtown streets of San Antonio. The walk, currently five miles in length, meanders directly through downtown San Antonio and is bordered on the north by Houston Street and on the south by Nueva Street. The site remains the number one tourist attraction in all of Texas and over the years it has become a retreat for the residents of San Antonio from the hustle and bustle of the downtown area. With its unique blend of pathways, bridges, waterfalls, reflection pools, and public art the site is unmistakably reminiscent of European urban architecture. Life seems to spill over into the River Walk as it has become a destination for all people regardless of age, sex or religion. The architectural accomplishments of Robert Hugman serves a dual purpose as levies allow for adequate flood mitigation, but the site has also taken on an economic life of its own as it has now become synonymous with the city of San Antonio.

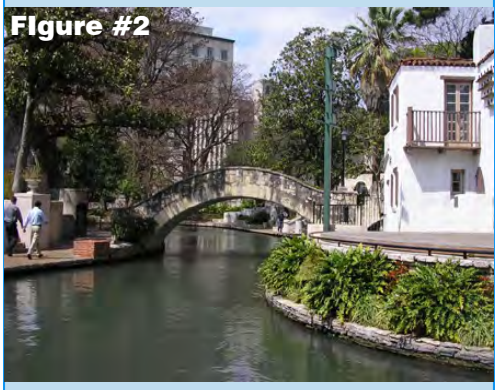
Historically the River Walk came into fruition after a devastating flood ravaged the San Antonio River in 1921 claiming fifty lives (Paseo Del Rio Association, 2012). Hugman essentially planned a diversion that would redirect water flow through an upstream floodgate and a small downstream dam contrary to the wishes of many planners at the time who suggested any development in the area would cause him to “drown like a rat”. However, the series of dams along the San Antonio River proved to be up to the task of retaining and dispersing water in such a manner that the River Walk has been continuously expanding and in 2013, the walk will expand to an incredible 15 miles.

SITE ANALYSIS:

The River Walk sits on an elevation equivalent to the river, allowing for a unique respite from the downtown area. Cypress trees (some standing 10 stories tall) frame views of the downtown San Antonio skyline and can often be seen from street level (Rivera, 2003). This overhead canopy gives the area a very distinct feel; as narrow paths with no railings provide visitors with nontraditional opportunities for interaction with the water while various restaurants, hotels, galleries, and shops create a very distinct sense of place.



A vibrant nightlife along the River Walk has made patios along the water very successful.



A series of bridges along the paths allows for easy access to the other side of the river.

PROJECT OVERVIEW

+ Date Designed: 1929
+ Size: 5 miles (15 in 2013)
+ Cost: $358.3 Million
+ Lead Designer: Robert Hugman
+ Client: San Antonio Park and Recreation Department

Figure #1, NightLife, http://www.sanantonioriverwalkrestaurants.org/
Figure #2, Bridge, http://www.rvforsaleguide.com/san-antonio-texas.html

CASE STUDY #2:

River Walk

SAN ANTONIO, TEXAS

SITE ANALYSIS:

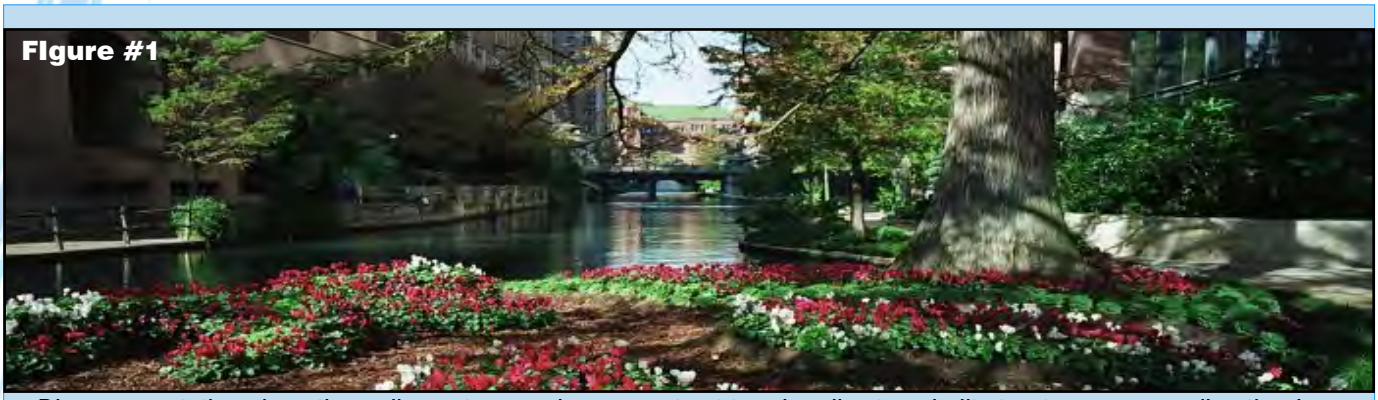
Currently, the walk is divided into three sectors: River Walk South, Horseshoe Bend, and River Walk North. The River Walk South is the traditional starting point for many who embark north along the mighty San Antonio. This iconic section is best known for its patios bordering the river and the Tower of Life building (a 33-story mixed use building constructed in 1938). Horseshoe Bend is arguably the most famous portion of the walk since it was the original one mile section that began Hugman's vision. From here many connections branch out to neighboring tourist attractions such as the Arneson River Theatre, Grand Hyatt, La Villitaand , Historic Arts Village. The River Walk North has become known as the most artsy segment of the walk because the Southwest School of Art, and the San Antonio Museum of Art mark two of the most visited destinations. Year round installations connect seamlessly with the numerous stone bridges, winding paths, and secluded stairways. By 2013 the San Antonio River Walk will expand into Breckenridge Park, which is the Central Park of downtown San Antonio (Paseo Del Rio Association, 2012).

BACKGROUND AND HISTORY:

Before the River Walk's inception, the waterways were primarily used to provide their missions with a steady supply of water,;oddly enough the first mission to benefit from this was the San Antonio de Valero, better known today as the Alamo. The San Antonio had a long history with flooding and in 1921 the worst flood in recorded history wreaked millions of dollars of havoc on the city and even took 50 lives. It was then that Robert H. Hugman conceived the idea of bringing strong European influenced design (namely Venice) into the heart of San Antonio creating a subterranean area complete with several European influences from old fashioned streetlamps to river boat rides.

The 1930's marked a struggle for the development of the River Walk as a lack of funding and support behind the beautification process slowed any further development. Hugman's dream caught a break in 1939 when the WPA assisted in funding 17,000 feet of pathways, some 20 bridges, and plantings that allowed people to see the potential of the project, which helped greatly with public support and funding. Another major break came in 1968 when general contractors Darragh & Lyda Incorporated and H. A. Lott Incorporated initiated an extension of the river to the Tower of the Americas further expanding the walkability and influence of the area. In 1981 the Hyatt Regency San Antonio successfully created an extension of the river to the Alamo Plaza marking a unique connection between two of San Antonio's tourist destinations.
transportation such as biking and walking (Paseo Del Rio Accosiation, 2012).

FIgure #1



Diverse vegetation along the walk creates a welcome contrast to primarily stone built structures surrounding the river.

Figure #1, Vegetation. http://www.walls360.com/cities-san-antonio-c-177_178_318/usa-texas-san-antonio-footbridge-over-a-canal-p-6339

CASE STUDY #2:

River Walk

SAN ANTONIO, TEXAS

HISTORY:

Today the project continues to expand both to the north and south as any business located along the walk continues to see economic success. The planning and focus of the walk has also now begun to take on a more ecological presence because future extensions emphasize ecological improvements along the banks of the river while also promoting greener means of transportation such as biking and walking (Fisher, 2006).

GENESIS OF PROJECT:

At its core, the purpose of the San Antonio River Walk was to take flooding issues, what were once a hindrance to the area became a desirable location for the people of the city to visit. Carefully balancing flood control with strong pedestrian corridors, the site provides a network of connections between various destinations in the city. Providing aesthetically pleasing views along the river it has become an epicenter for activity of the town since it offers shopping, recreation, and relaxation (Fisher, 2006).

DESIGN DEVELOPMENT PROCESS:

Initially the San Antonio River Walk was developed primarily for flood control; however, Robert Hugman sought out to not only manage rising river levels, but also to enhance the natural beauty of the river by designing a very Venice-esque river corridor focused on connecting important landmarks of the San Antonio urban fabric (Fisher, 2006). This created riverbanks lined with tranquil waterfalls, overhead bridges, public art, shops, boutiques, and patios.

ROLE OF LANDSCAPE ARCHITECT IN THE DESIGN:

Robert H. Hugman was the key figure in the design of the San Antonio River Walk and was instrumental in bringing the vision to life as he took an issue of flood mitigation and created something truly beautiful. Without his persistence in all likelihood the sight would have become a straightforward diversion hindering the development of the city as a whole. Hugman brought knowledge of plants, paths, and European architecture (Fisher, 2006).

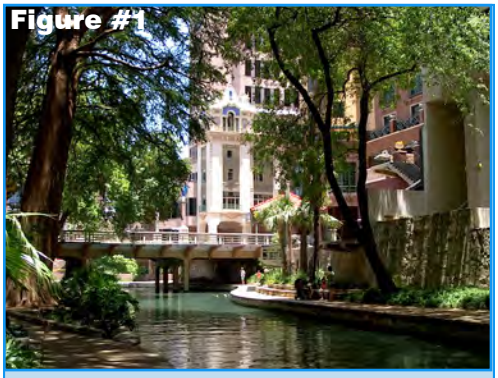


Figure #1

A series of bridges along the paths allows for easy access to the other side of the river.

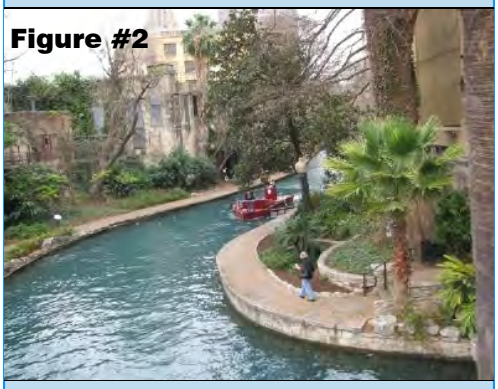


Figure #2

Bends in the river hide and reveal views making it enjoyable to walk along its banks.

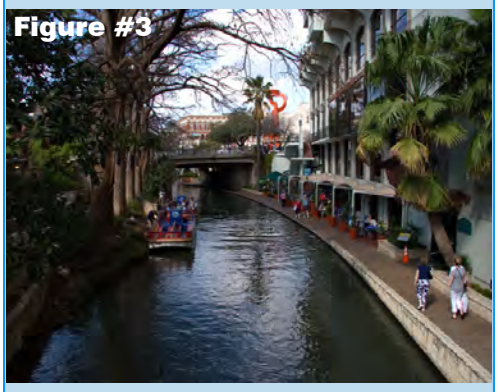


Figure #3

Ferries transport people across the site making it easy to see more of the city.

Figure #1, Water Access, http://edpflager.files.wordpress.com/2009/07/riverwalk.jpg
Figure #2, River Bends, http://www.waymarking.com/waymarks/WM38YE_San_Antonio_River_Walk_and_Flood_Control_San_Antonio_Texas
Figure #3, Ferry, http://lh5.ggpht.com/-iYWowCRxfiY/RfLphSTy5cE/AAAAAAAACPU/zut390Dl7qw/SanAntonioRiverWalk.jpg

CASE STUDY #2:

River Walk

SAN ANTONIO, TEXAS

PROJECT ELEMENTS:

The San Antonio truly offers something for everyone no matter what the visitor is hoping for. The five mile River Walk offers:shops, boutiques, patios, stone bridges, native plantings, meandering paths, riverboat tours, natural pools, picnic tables, river ledge landings, hiking & biking trails, riffle run sequences, expanding wildlife habitats, public art displays, and reduced erosion (Paseo Del Rio Association, 2012).

MAINTENANCE AND MANAGEMENT:

Today, the site is managed and maintained by the San Antonio Parks and Recreation Department. The team consists of a variety of disciplines from horticulturists to urban planners. The site prides itself on its high quality of maintenance since the cleanliness of the trail system has often been remarked on by visitors.

PEER REVIEW/ CRITICISM OF PROJECT:

Cary Mitchell, Chair of the ASHS (American Society of Horticulture Sciences) Board of Directors said of the San Antonio River design, “The River Walk is a unique blend of engineering, architecture, and horticulture that creates a park-like environment. In fact, the nearby Alamo and River Walk together are top tourist attractions in the State of Texas. The River Walk serves as a model for combined water, land, and plant use for beautifying the urban environment”. Today, the San Antonio River Walk is widely recognized as the driving force behind the San Antonio economy each year, bringing in millions of dollars in revenue. It remains one of the rare places in the United States that blends the beauty of nature with the intricacies of the carefully manipulated built forms. The San Antonio River Walk represents one man’s determination to turn a negative natural occurrence into an epicenter for growth of an entire city.

SIGNIFICANCE AND UNIQUENESS OF PROJECT:

There is nothing like the River Walk anywhere else in the country; it has become a model for other developments along any given body of water. The site continues to increase in popularity as greenway connections continue to become more widely accepted as models for sustainable growth. Truly the first project of its kind (in the United States), the San Antonio River Walk seamlessly integrated European design ideals into the heart of the United States. Annually, the site brings in an estimated 7 million visitors (Paseo Del Rio Association, 2012).


Figure #1


Figure #2


Figure #3

Diverse vegetation along the walk creates a welcome contrast to primarily stone built structures surrounding the river.

Figure #1, Bridge, http://www.public-domain-image.com/architecture/bridge/slides/san-antonio-bridges-riverwalk.html
Figure #2, Plaza Space, http://www.texasexplorer.com/RiverWalk.htm
Figure #3, Vegetation, http://www.planeteyetraveler.com/2009/05/31/san-antonio-river-walk/

CASE STUDY #2:

River Walk

SAN ANTONIO, TEXAS

COMPARISON TO OTHER PROJECTS:

To this day the influence behind the design of Robert Hugman's remains the flooded streets of Venice, Italy. A direct correlation between the designs is impossible to miss as both designs seamlessly transition the built environment with native vegetation of the area. Each design places emphasis on the pedestrian and other various means of non-vehicular transportation.

FUTURE ISSUES:

In recent years the only complaint about the San Antonio River Walk is the current condition of the water quality. Based on the amount of traffic on a daily basis (pedestrian and river boat) it has become very difficult to maintain a consistent clarity in the river despite the efforts of the annual dredging of the bottom of the river during the city's Mud Festival (Paseo Del Rio, 2012).

KEYWORDS

venice, water quality, flood mitigation, horseshoe bend, diversion, patio, landing

Figure #1

Careful planting of the River Walk allows for a seemless transition from the built to natural environment.

Figure #1, Transition, http://www.panoramicassociation.org/realwide/wp-content/themes/simplicity/functions/thumb.php?src=realwide/wp-content/uploads/2011/09/SARiverwalkBridgeGrungeHDR.jpg&w=960&h=338&zc=1&q=90

CASE STUDY #3:

South Street Seaport

NEW YORK, NY

CONTEXT:

The South Street Seaport is located directly south of the Brooklyn Bridge along Manhattan's East River waterfront. Originally constructed as a design implementation of the Brooklyn Bridge Southeast Renewal Plan, which was narrowly focused on the broader and lower Manhattan waterfront development, the broad scope of the project was to focus on the preservation, restoration, and redevelopment of the Brooklyn Bridge Southeast Urban Renewal Area into a South Street Seaport Museum. This site is considered a living museum and is more than just a renovated shipyard, but no has become a place for promoting cultural, recreational, and retail activities (Agovino, 2010). A wildly successful renovation project, the South Street Seaport now boasts a wide variety of entertainment and educational opportunities that appeal to residents and tourists alike.

SITE ANALYSIS:

The South Seaport is a fantastic example of renovating a post-industrial site focused on preserving the Harbour's unique heritage. Securely fastened to the refurbished piers 15 & 16, five permanently moored historic vessels bob up and down with the current of the water (Office of development, 2003). Visitors are given an interesting perspective on the development of the area as the rich heritage of the South Seaport site contrasts the very modern skyline of New York City.

HISTORY/ BACKGROUND:

The collapse of the South Seaport's shipping industry following its boom in the late 19th and early 20th century marked a period where new technologies diverted the flow of vessels toward other waterways such as the Hudson River. The rise of containerization also caused a shift in the shipping industry that left the once bustling piers of the area at a virtual standstill in lower Manhattan. Many thought that with the decline of the shipping industry in the Lower Manhattan site the area would crumble without a steady stream of economic stimulation (Agovino, 2010).

Revitalization began in the early 1960's led by a private group interested in preserving and restoring the Seaport shipping precinct. The group was able to successfully revitalize the South Street Seaport Museum, officially controlled by New York university, and build a community of over 10,000 people (Agovino, 2010).

Figure #1

Preservation of the Seaport's industrial heritage remains a primary focus today.

Figure # 2

Commercial retail along the Seaport provides a unique shopping experience.

PROJECT OVERVIEW

+ Date Designed: 1973
+ Size: 41 acres
+ Cost: $60 million
+ Lead Designer: City of New York Urban Development
+ Client: Lower Manhattan

Figure #1, Historic Seaport, http://en.wikipedia.org/wiki/South_Street_Seaport
Figure #2, Seaport Today, http://www.nytix.com/Blog/newyorkcity/2009_08_01_archive.html

CASE STUDY #3:

South Street Seaport

NEW YORK, NY

GENESIS OF PROJECT:

Even though economic stimulation was not the sole purpose behind the South Street Seaports renovation it remains a primary focus along with historical preservation and promoting recreational and cultural activities. The City of New York Office of Development outlines five primary goals:

+ Realization of the Seaport's full economic, cultural, and historical potential to strengthen tourism in New York City.
+ Diversification of Lower Manhattan's Economic base.
+ Revitalization of the local neighborhood and support of its growth into a viable community.
+ Protection and assurance of the future prosperity of the Fulton Fish Market.
+ Preservation of the historic character of the district by generating sufficient revenue to rehabilitate its unique buildings and support its educational programs (Office of Development, 2009).

DESIGN DEVELOPMENT PROCESS:

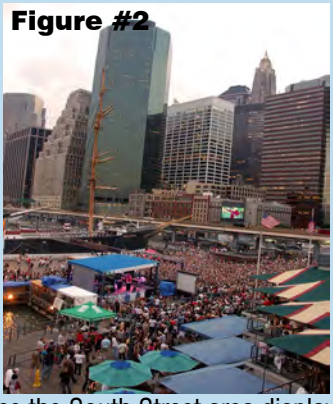
Strongly backed by federal, state, and local grants totaling millions of dollars revitalization of the area was an easily achieved success as focus was placed primarily in three areas:

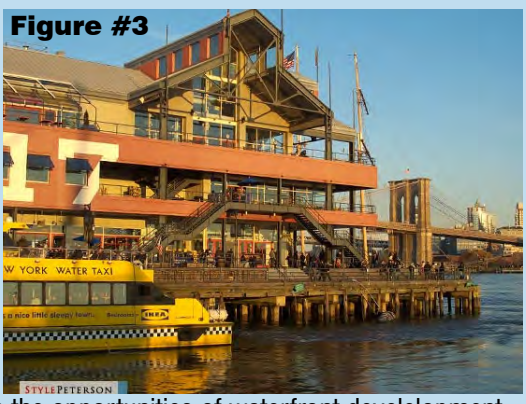
+ Renovation of Piers 15 and 16
+ Improvement of the Fulton Fish Market rather than relocation
+ Creating a strong mixed-used retail presence along the seaport.

The South Street Seaport design process was also greatly aided by the umbrella philosophy adopted by the designers in treating each development as a small piece of a much larger urban fabric (Agovino, 2010)

PROJECT ELEMENTS:

Amenities of the South Street Seaport vary greatly from the Beekman Beer Garden to the shark boat tour, not to mention the numerous opportunities for shopping, recreation, and dining. Pier 17's old platforms were replaced by a raised glass shopping pavilion providing excellent views of the harbor and, more importantly the five restored historical vessels. The area is serviced by a number of easily accessible public transportation routes namely the M15 New York City bus, Fulton Street Station, and SeaStreak ferries servicing Wall St. daily (New York Times, 2004).





Nestled at the bottom of the New York skyline the South Street area displays the opportunities of waterfront develelopment.

Figure #1, Skyline, http://www.nypi.net/wp-content/uploads/2010/09/South-Street-Seaport1.
Figure #2, Festival, http://www.brooklynvegan.com/img/music/animalcollective/seaport/1.jpg
Figure #3, Ferry, http://stylepeterson.com/new-york-photos/south-street-seaport-nyc

CASE STUDY #3:

South Street Seaport

NEW YORK, NY

SIGNIFICANCE AND UNIQUENESS OF PROJECT:

South Street Seaport remains an intricate part of the urban fabric making up the Lower Manhattan cityscape, and its uniquely aggressive take on preservation of an industrial heritage should be admired for striving to transform a derelict site into a tourist destination people come from across the globe to see. South Street walks the line between a historical preservation project and a modern mixed-use development project. This interesting combination of design typologies integrated into a single space creates an unforgettable sense of place inside the urban jungle of New York City.

FUTURE ISSUES:

Two main criticisms of the site's commercial design continue to come up when discussing the overall success or failure of the project. The first complaint is that the seaport "was never meant to be a mall"' says Robert LaValva, founder of the New Amsterdam market, some residents will agree since some feel the direction of the project is drifting away from its initial goals of preservation and protection. The second complaint is that the city's solution to failing development in the area is to build more development. Residents and tourists alike often feel crowded by the large buildings which are continuing to spring up at an increasing rate (Commerce, 2009).

KEYWORDS

cityscape, preservation, piers, diversification, museum, mixed use

Figure #1

Ths photo shows one of the historic piers which had become very popular with tourists.

Figure #2

Views of the New York Skyline can be seen from any number of areas located along the South Street Seaport.

Figure #1, Pier 17, http://www.worldofstock.com/slides/TNY1631.jpg
Figure, #2, Skyline, http://andrewprokos.com/photos/new-york/landmarks/south-street-seaport/east-river-view/

typological summary

PRESERVING HERITAGE:

Like many metropolitan port cities today, Duluth has experienced the transition from a shipping to a more tourist-oriented economy. The question then arises what to do with the abandoned waterfront property. As shown throughout the case study research of the Darling Harbour in Sydney, Australia, and the South Street Seaport waterfront development in New York, NY, it has become evident that the unique mix of water, abandoned factories, and shipping vessels creates a distinct sense of place along the water's edge that people will come from all over the country to see. Both studies outline the variety of ways history was preserved, whether it was giant ships, or the conversion of abandoned buildings into successful mixed use developments. While Duluth may not be near the size of Sydney or New York, the site still boasts a unique heritage that with careful design efforts and preservation, can become a tourist attraction and source of income for the city of Duluth.

WATER INTERACTION:

At the core of any water based design is the shoreline and how the visitor and/or site interacts with it. Any waterfront design should seek to use water to help establish a unique sense of place in its environment while also providing different interactive experiences at various junctures along the waterfront. The design Darling Harbour purposefully steps visitors down to the water's edge, allowing them to decide what to do once they get there, whether that be sit on a bench and read a book or sit with toes dangling in the bay. The San Antonio River Walk adopted a very similar philosophy as the site not only provides a very distinct subterranean constructed river design, but the meandering paths along the river site merely a foot above the water level allow for the soothing and tranquil qualities of water to be best explored. The city of New York adopted a slightly different interaction strategy with the water as they chose to use elevated boardwalks to provide easily accessible and safe access to the variety of boutique, restaurants, and shops high above the water level. Each is successful in its own right, and Bayfront Park will be strongly influenced by the unique and memorable experiences visitors have at the meeting point between the aquatic and terrestrial environment.

MIXED USE BUILDING DEVELOPMENT:

The late 19th century originated what we call mixed use buildings, however from 1910 through the 1950's, the rise of the automobile led to segregated zoning practices. Diversifying building types since the 1970's has once again seen a reemergence of this development typology, and has since been widely accepted as a critical component in any urban project design (Miller & Miller, 2003). Waterfront Discovery seeks to implement this building strategy to create an epicenter for entertainment, shopping, dining, and living. Drawing inspiration from the San Antonio River Walk, Darling Harbour, and the South Street Seaport, the design will provide a diverse enough range of activities that appeal to anyone regardless of age, sex, race, or religion. The success of the previous case studies further proves the importance of diversifying building uses to create a space that is focused on once again placing the pedestrian first in the urban fabric of a city or town.

UNIFYING IDEAS EXECUTIVE SUMMARY:

For hundreds of years, large cargo vessels were the quickest and most efficient way to deliver goods all over the world, but now many of these sites have since been abandoned and have left their marks on the shorefront, of their respective sites. The Bayfront site in Duluth once served as a bustling shipping port exporting such commodities as fur, wheat, and timber as far as Europe, but it now lies vacant and abandoned since new technological advances have significantly reduced Duluth's dependence on the harbor. Fitting the description of a typical postindustrial waterfront site, the overall visual appeal of the area is minimal as industrial debris, metal, and gravel are strewn sporadically across the site.

DARLING HARBOUR- SYDNEY AUSTRALIA:

The Bayfront development of Darling Harbour proves how an industrial development can adapt with modern design philosophies while still serving its original purpose of moving cargo. This redevelopment effort is very unique in the fact that it serves a double purpose. Another element that can be applied to the Bayfront site is the way Darling Harbour acts as a node for pedestrian transportation to other landmarks and destinations in the city. Bayfront Park has a similar relationship to the downtown area and surrounding attractions and will implement similar transportation methods to quickly move a person from one destination to the next.

RIVERWALK- SAN ANTONIO:

Although Duluth does not have flooding issues like those of San Antonio, this is no reason the Bayfront design can't promote similar strategies to encrouage interaction with the site's water, by using elements such as meandering paths along the water's edge or building orientations that place the focus on the St. Louis Bay. However, there is a drastic difference between the climate of San Antonio and that of Duluth. For this reason it will be imperative to establish year round activities that bring people to the site even in the bitter cold winter months.

SOUTH STREET PIER- NEW YORK:

The historic district of South Street Pier in New York provides an excellent model for historical preservation of an area's history. People now come from all over the world to witness the stark contrast between the historical shipping vessels and the modern development of an area like Times Square. Bayfront Park presents a similar situation in which elements of a post-industrial past can

Figure #1 Darling Harbour

Figure #2 River Walk

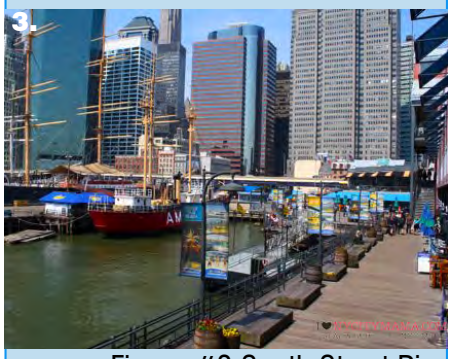


Figure #3 South Street Pier

Figure #1, Darling Harbour, http://workingholidayaustraliatips.com/2011/01/daily-travel-photo-darling-harbour-sydney/
Figure #2, River Walk, http://andrewprokos.com/photos/new-york/landmarks/south-street-seaport/east-river-view/
Figure #3, South Street Pier, http://nycitymama.com/2010/04/tigers-exhibition-tracking-a-legend-at-pier-17-south-street-seaport/

Historical Context

Duluth, Minnesota is a metropolitan port city located on the westernmost point of the Great Lakes on the north shore of Lake Superior. Sharing the Duluth Superior Harbor with Superior Wisconsin, the two cities in adjacency are called the Twin Ports. The following historical context further expands on the industrial history of Duluth as well as current conditions affecting the port city.

REGIONAL OVERVIEW:

The 4th largest city in Minnesota, Duluth currently maintains a population of roughly 87,000. Located in the northeast corner of Minnesota, Duluth forms a metropolitan area with Superior, Wisconsin, called the Twin Ports; these two cities share the Duluth-Superior Harbor and together are the world's largest inland port and one of the most important ports on the Great Lakes, shipping coal, iron ore, and grain. Covering 87.3 square miles, in terms of land it is the second largest city in Minnesota (Greater Downtown Council, 2001). Also called the San Francisco of the Midwest, Duluth's geography is dominated by a rather steep hill which represents a transition from the elevation of Lake Superior's beach to that of the inland. As the city continues to grow most development tends to hug the shoreline of Lake Superior and, for this reason, has been the primary focus area for much of Duluth's Bayront revitalization.

Figure #1 Bayfront Festival Park

Image taken by Mike Towle

ECONOMY:

The economy of Duluth is known primarily as a regional hub not only for its own immediate area, but also for a large area encompassing northeastern Minnesota, northwestern Wisconsin, and the western Upper Peninsula of Michigan. It remains a major transportation center for the trans shipment of coal, taconite, agricultural products, steel, limestone, and cement. In recent years, it has seen strong growth in the transshipment of wind turbine components coming and going from manufacturers in both Europe and North Dakota. Duluth is also an epicenter of aquatic biology and aquatic science. The city is home to the US EPA's Mid-Continent Ecology Division Laboratory and the University of MN Duluth. From these institutions, many economically and scientifically important businesses have spawned support Duluth's economy. A small list of these businesses include ERA laboratories, LimnoLogic , the ASci Corporation, and Environmental Consulting and Testing and Ecolab. The historic downtown area also continues to grow in such a fashion that its historic roots are preserved as well as focused on connection between the downtown and the Bay Front area. The goal for the development of Duluth today is historic presentation meets modern growth (Hefti, 2009). This is a theme the city has already adopted for the downtown historical district, and I feel the city of Duluth should also carry this theme through the waterfront development in both the Bayfront and Canal Park.

Figure #1

View looking over Bayfront Festival Park from the top of the LaFarge Plant.

Figure #2

The Bayfront Festival stage on the northeast end of the site hosts year round concerts and festivals.

Figure #1, Slip #2, Mike Towle
Figure #2, Stage, Mike Towle

LAND USE HISTORY:

The period of early development and shipping in Duluth (1870s to 1920s) was initiated by the cutting of the Minnesota channel in 1872. As a result of the opening of the channel, the waterfront area developed quickly establishing its reputation as a port city early in the town's inception. Early dockage was built over wooden piers with little or no fill added. Businesses in the property area included a coal dock and a variety of warehouses.

During the height of the shipping and waterfront use period (1920s to 1970s), Duluth had a very busy waterfront. The protected Bayfront housed freight depots, warehouses, cement storage, passenger docks, railroad depots and manufacturing, and made an ideal port re source for shipping, transport, loading and unloading. Wooden pilings were used to support building above the wetland areas and were then filled in as use increased. (Chamber of Commerce, 2009).

Figure #2

Bayfront Park is a popular attraction, especially in the summer months.

Figure #2

The LaFarge plant is a unique element that give character to the Bayfront site.

Figure #1, Festival Park, Image from Mike Towle
Figure #2, LaFarge Plant, Image from Mike Towle

1950'S AND ON:

By the 1950s, rail and boat shipping was supplemented by trucking. Buildings located in the Bayfront District included freight warehouses, a freight depot and a wholesale food distributor warehouse and operation facility. The adjacent property to the west was formerly used by the Northern Pacific Railroad for siding tracks with an access road (now referred to as Railroad Street), which served the property and former ship loading facilities on the piers between Slips 2, 3, and 4 (now filled). All three slips were located in what is now the DEDA property (Chamber of Commerce (2009).

Post 1970s, a diversification of the adjacent waterfront took place; the types of businesses and uses around the property continued to change to include commercial, entertainment, and recreational uses. More public uses developed such as the construction of the Duluth Entertainment and Convention Center (DECC), the Great Lakes Aquarium, Playfront Park, and Bayfront Festival Park. During this period, the buildings in the Bayfront District became vacant and eventually the structures were demolished and removed. However, the Lafarge property remained active as a cement facility in the middle of the Bayfront District until 2008, when it relocated operations to Superior, Wisconsin.

Figure #1, black rock along the water's edge, image from Mike Towle

HISTORIC DOWNTOWN

Efforts downtown continue to embrace Duluth's rich early 20th century architecture by giving historical buildings new lives. Duluth's new millennium workers spend their breaks at a plethora of fine eateries or unique shops, giving this tourist destination year round desirability for Minnesota businesses (Greater Downtown Council, 2006).

In Canal Park, life in the shadow of the historic Aerial Lift Bridge is the perfect playground for tourists (Greater Downtown Council). The area has become a tourist hotspot as the entertainment center of the city. The $200 million renovation project allows the perfect place for tourists to stroll the waterfront while watching a plethora of ships pass under the aerial lift bridge (Commerce, 2009).

Figure #1

Photo of the aerial lift bridge at night from Canal Park

1. http://www.city-data.com/picfilesv/picv16067.php

HISTORICAL TIMELINE

1821- The Cherokee Indian Territory was settled by Evan Howell, the first successful farmer and merchant of Duluth. He built his home and began working to bring his people into this part of the county.

1871- The railroad came to Duluth which boosted the economy with it came new prosperity and growth.

1873- The town name was changed to Duluth following completion of the railroad. Duluth was named as a joke when Congressman J. Proctor Knott of Kentucky made fun of the name.

1876- The official Charter of Duluth was approved by the Georgia General Assembly.

1886- The Baptist church formed in Duluth.

1870- Around this time, the first public school was built in Duluth. The first brick school was built.

1880- First Mayor elected in Duluth, John Knox, Served until 1885.

1904- First bank built in Duluth, The Bank of Duluth.

1906- The title was officially incorporated as the City of Duluth.

1922- Georgia's First Female Mayor Elected, Alice Harrell Strickland, Mayor of Duluth.

1943- First Hospital built in Duluth, Joan Glancy Hospital (Greater Downtown Council).

INVESTMENT IN ART:

Since Duluth's inception, the city has prided itself on its vast number and sheer variety of various art museums scattered throughout the city. A restored railroad terminal is the main venue for a variety of art functions and groups including the Duluth Ballet, the A.M Chisholm Museum, the Duluth Superior Symphony Orchestra, the Lake Superior Museum of Transportation, and the St. Luis County Historical society (Thompson, 1998). The University of Minnesota Duluth campus is the other hub for art as the popular Tweed Museum of Art is located on the grounds of its campus.

WINTER RECREATION:

Duluth is truly a winter wonderland as it has become the mecca for many winter activites in the Upper Midwest. From Snowboarding to ice sculpture competitions, Duluth offers something for everyone to enjoy when the temperature drops below freezing. In contrast to many cities in the Midwest, Duluth actually gets just as much tourism in the winter as it does in the summer. People come from all over the Midwest come to Duluth to try and tackle Spirit Mountain on skis or a snowboard or they rent a snowmobile and fly through fresh powder after a recent snowfall.

OPEN AIR:

With 105 municipal parks and playgrounds the city of Duluth has established its reputation as a very green city (Thompson, 1998) The city also boasts twenty seven miles of cross country skiing trails that have been very popular over the years. Whether it is 100 degrees or negative twenty the residents of Duluth love the outdoors, and much of their economy reflects this passion for outdoor recreation. Currently the slips to the south of Festival Park do not have any designated areas for recreation despite the vast opportunities for trails and paths along the shoreline of the St. Louis Bay.

ATTITUDES ON BAYFRONT PARK

The 47 acre Bayfront site currently remains forlorn and abandoned although the Festival Park on the north side of the site has been steadily becoming an increasingly successful development as it hosts a number of concerts and festivals throughout the year (primarily in the summer months) when the site is heavily trafficked. In spite of the Festival Park's successes, the rest of the area remains littered with remnants of an industrial past. Twisted steel, gravel, and crumbling structures have long been an eye sore to the site ,especially when put in contrast with the breathtaking views of the lift bridge towering over the St. Louis Bay.

Throughout the Bayfront's rich history, residents of Duluth have experienced multiple shifts in their feelings towards the site. With the boom of the shipping industry the people of Duluth looked at Lake Superior as the lifeblood to their existence as it provided a good majority of all income being pumped into its infant economy. However, feelings of resent began to surface when the site could not provide for it's community like it once had (Thompson, 1998). At this point people turned their backs to harbor. Instead they focused on developing the inland infrastructure of the town, merely using Lake Superior as a scenic backdrop.

Not until the last couple of decades has the focus of future development shifted back toward the harbor as the city began construction on a variety of waterfront projects. The most recognizable of these projects is Canal Park, which has become an epicenter for mixed-use development, entertainment, and recreational opportunities. Continued development efforts on a number of shorefront projects has allowed for Lake Superior to once again become synonymous with the identity of Duluth (Greater Downtown Council, 2006).

While disagreement of exactly "what" type of development the Bayfront site should become, the general population agrees the site should remain a public space for all people to enjoy regardless of age, sex, race, or religion. Such a unique site should be never be left derelict, especially when considering the success of other waterfront redevelopments like the South Street Pier in Manhattan or the Freemason Harbour in Norfolk, Virginia (U.S Dpartment of Commerce, 2010).

Development Goals

STRATEGY

Narrowing the focus area of the site from Duluth down to the Bayfront area, there are four basic consensus goals which state that the redevelopment of the area must:

+ Contribute to the quality of life for Duluth and the Region;
+ Improve public access to the downtown waterfront;
+ Provide opportunities for economic development, both employment and tax base; and
+ Result in an improvement in the environmental quality of the site and the St. Louis Bay.

THE TWELVE GOVERNING PRINCIPLES:

The Duluth Economic Development Authority (DEDA), the owner of the majority of the property, has long wanted to pursue economic development opportunities in the area that do not include industrial activities below is a segment of the2006 Duluth Comprehensive Plan:

1. Reuse previously developed lands.
2. Declare the necessity and secure the future of undeveloped places.
3. Support traditional economic base.
4. Support emerging economic growth sectors.
5. Strengthen neighborhoods.
6. Reinforce the place-specific.
7. Create and maintain connectivity.
8. Encourage mix of activities, uses and densities.
9. Support private actions that contribute to the public realm.
10. Take sustainable actions.
11. Include consideration for education systems in land use actions.
12. Create efficiencies in delivery of public services.

project goals

While the Duluth Economic Development Authority has previously outlined a generalization of project goals for any future projects and developments, the following is a list of development focuses specific to the Waterfront Discovery project.

DEVELOPMENT FOCUSES:

1. Establish unique and intriguing methods for visitor interaction with the water.
2. Create riparian buffers to help mitigate water as it enters the St. Louis Bay.
3. Use the flowing properties of water to soften the transition of the ship slips to the natural environment.
4. Provide various types of infrastructure to accommodate a strong mixed-use development including commercial, civic, and residential.
5. Incorporate greenways corridors and pedestrian oriented connections to other waterfront developments, namely Canal Park and the Lake Walk.
6. Preserve the industrial heritage of the site while incorporating sustainable designs that use minimal water planting strategies, recyclable materials, and stormwater retention areas to provide a model for post industrial development along a derelict bayfront property.
7. Create views that both enhance the natural beauty of the area as well as provide additional spaces to enjoy the numerous concerts currently held at the Festival Park.
8. Incorporate additional parking structures to provide adequate parking for new infrastructure of the park.
9. Use vegetative barriers to help seclude the site from the moderate noise pollution produced by Interstate 35.
10. Educate people not only on the phytoremediation processes occuring at the site, but also of the sites rich industrial heritage.
11. Diversify and offer a variety of entertainment opportunities for the Bayfront design to create a site worthy of repeat visits, whether by a resident or a tourist.
12. Create year round spaces that accomodate both passive and active recreation on site.
13. Enhance Bayfront Festival Park to better serve the city by providing more amenities than just a location for concerts and festivals.

thesis project goals

PERSONAL:

A primary goal for Waterfront Discovery is to fully explore what design elements make a development along a body of water an appealing destination for both residents and visitors of a site. Too often, my personal design projects have been too rushed by deadlines and other school work for me to be given the opportunity to examine in depth the intricacies of what exactly it is that makes a shorefront design successful. Throughout the research and design process of Bayfront Park in Duluth, I hope to gain a fundamental understanding of what must be done in order to create sustainable developments that not only preserve a site's unique history, but also establish an outline for continued growth of the project, allowing it to become an interactive combination of future development and history.

ACADEMIC:

Academically, my senior year marks a crossroad in my development as a landscape architect. I would like for this project to inform my career path after school, whether that be higher education or going directly into the internship process. To me, this project is an opportunity to showcase my talents and my development throughout my tenure at NDSU. I am hoping, upon completion of this project, I will consider myself a master of the waterfront design typology. I am truly looking forward to developing the ideas outlined in this thesis to produce a work I feel is worthy of the time and effort I have spent here.

PROFESSIONAL:

My professional goals for this project are simple; to create a centerpiece for my portfolio. This being one of the first times I have ever been allowed to choose my own site for a project, I am looking forward to designing a site that I feel really touches my beliefs as a landscape architect. I would like for this project to be the one that propels me to the next level in my development as a designer. I would like for the ideas and graphical representation of my thesis to be on par with upper tier professional works.

FEELINGS OF A POST-INDUSTRIAL BROWNFIELD:

A site left forlorn, derelict, and forgotten, the Bayfront Park in Duluth, Minnesota, remains a body of missed opportunities as remnants of an industrial past scars the landscape. Nestled at the bottom of the stunning views of Lake Superior are blockaded by no trespassing signs and barbed wire fencing, which sharply contrasts the rest of the very successful waterfront developments along the beautiful shimmer of the largest Great Lake. Bayfront Park is best accessed by Interstate 35 traveling along the western edge of the development. Upon pulling into the parking lot conveniently located on the northwest corner of the site, it becomes very evident that a line has been drawn separating the lively festival park from the post-industrial wreckage to the south of the first carefully engineered ship slip.

Preceding into Festival Park, the asphalt paths were lined with Christmas lights and decorations, forming a tunnel for the annual Christmas Festival the park plays host to. Elves, candy canes, and a massive Christmas tree begged for nightfall, just waiting to provide a sparkle along the surface of Lake Superior. The trees and landscape were very well kempt ,and it became quite obvious this was the only area of the park that the city of Duluth had invested time and money. A crescent-shaped grove of various species of trees provide an aesthetic backdrop to the northwest for visitors and concert goers alike. This, however, is where the beauty of the sight comes to a screeching halt. Across the first ship slip marks the transition from a carefully designed and maintained design to a space attempting to recover from an industrial area long forgotten. Towering above the rest of the Park the LaFarge Plant overlooks the still active shipping harbor; however, this iconic element of the landscape also remains inaccessible as the plant has not been in operation for well over 30 years.

Access to the second slip was not supposed to be granted to anyone who was not part of the grounds crew of the site. Fortunately, as the old saying goes, where there is a will, there is a way. Icy water lapped up against the concrete wall outlining the first slip creating an interesting relationship between the amorphous properties of water in comparison to the inflexibility of cold, gray concrete. At the end of second slip, a stellar view of the infamous harbor lift bridge emerged, standing strong against a cool gray background. It was then I realized the potential and importance of this strong view, and it was determined it could be best achieved atop the six story LaFarge Plant.

Figure #1

Figure #1, Duluth Lift Bridge, http://www.panoramio.com/photo/3760363

Site Narrative

ATOP THE LAFARGE:

With the help of an old two-by-four it became possible to pry open the abandoned bay door just enough to prop a five gallon bucket between the bottom of the door and the concrete beneath it. After barely sliding through, it became very evident I was not the first person to set foot on these grounds as windows had been punched out on each floor to better get a glimpse overlooking the bay. A series of old concrete staircases guided me to the top of the old concrete storage facility; all the while, outdated equipment continued to collect dust because of its years of inactivity. A 20 foot ladder provided access to the viewing platform perched precariously atop the abandoned building. Emerging from the small hatch, a variety of feelings overwhelmed my being. First, a feeling of inspiration as this had been the moment I had been hoping to feel when visiting the site, but so too was I overwhelmed with a feeling of disappointment as only a select few others had an opportunity to feel what I felt atop the LaFarge Plant. This is uch a beautiful piece of history left to stand vacant and unexplored. After carefully winding back down the rickety series of stairs, I once again proceeded west, passing by rusty old railroad ties complete with an outdated train car. The history of this space became palpable as vegetation tried to reclaim the ground cover from gravel laid down long ago; it was such a painful sight to see a place with such a rich history utterly forgotten.

Running parallel along the slip's edge were tall prairie grasses and shrubs overgrowing the verticality of the slips cement edge, providing a very nice foreground to the views overlooking the bay. Walking roughly 100 yards to the third and final slip, the condition of the land continued to deteriorate as the final slip was even further paved with impervious gravel surfaces, representing a blatant lack of respect for the land. The third slip was eerily vacant, lined to the south by a series of storage facilities and to the west by Railroad Street. Looking in any direction the potential appeal of this site was very evident from the views of buildings and homes carefully nestled into the side of Spirit Mountain to the freight ships slowly making their way across Lake Superior.

History can never be erased, changed, or modified. The same holds true for the Bayfront Site in Duluth, Minnesota. Embracing a post-industrial vision for the site will allow the design to place an emphasis on its unique history while looking toward a sustainable future as a model for waterfront development.


Figure #1


Figure #2

Figure #1, LaFarge overview, http://buzz.areavoices.com/buzz/images/lafarge.jpg
Figure #2, Inside the LaFarge, Image courtesy of Mike Towle

Figure #1: Site Border

land use

This land use map shows the bayfront site in context of the entire city of Duluth. Given its location in relation to downtown the new development should be primarily commercial mixed use.

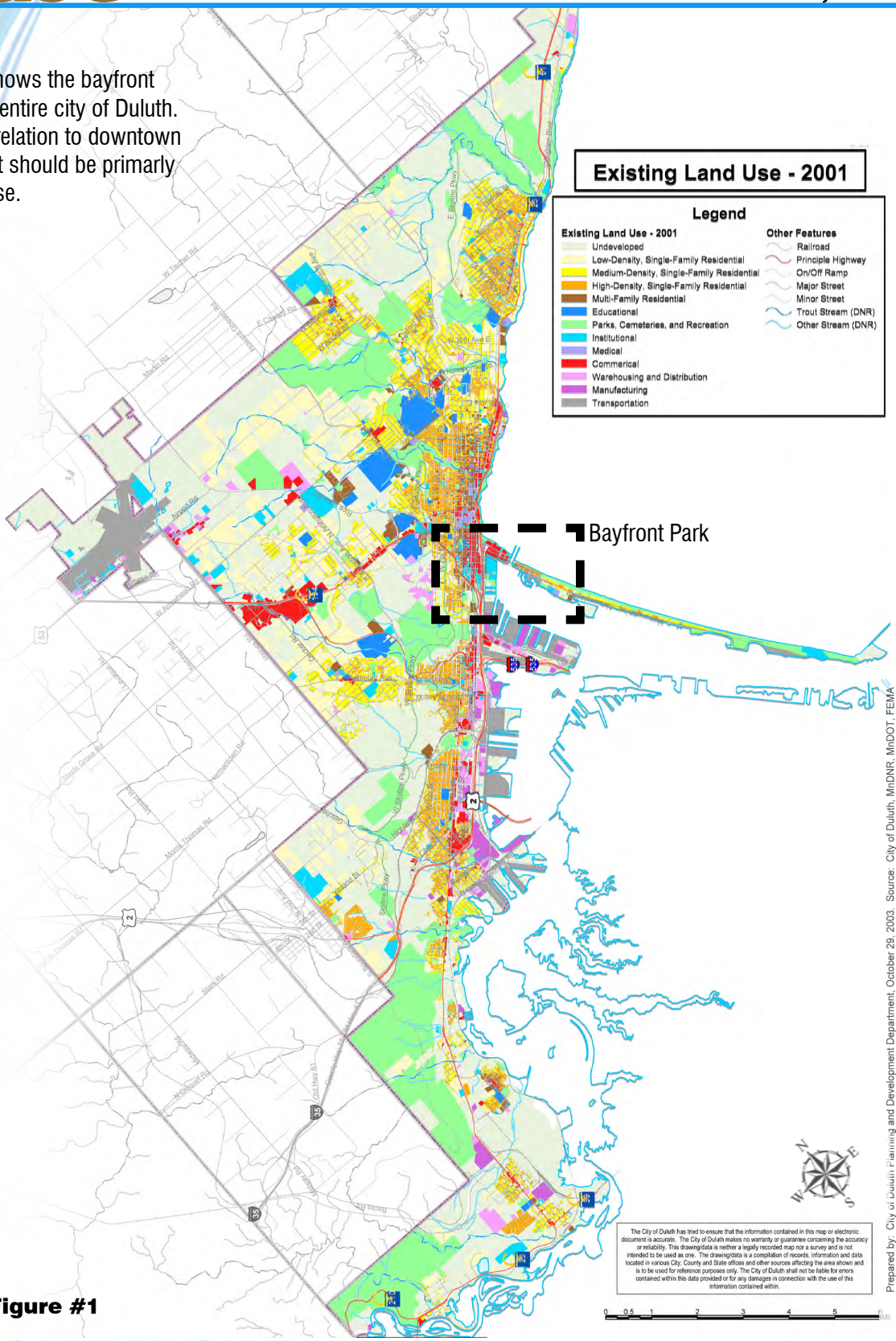


Figure #1

Bayfront land use

BAYFRONT PARK

Bay front Park is located on the boundary of an institutional and parks zone. This figure expresses the city of Duluth's desire to convert the now desolate Bay Front Area, into a mainly mixed used district.

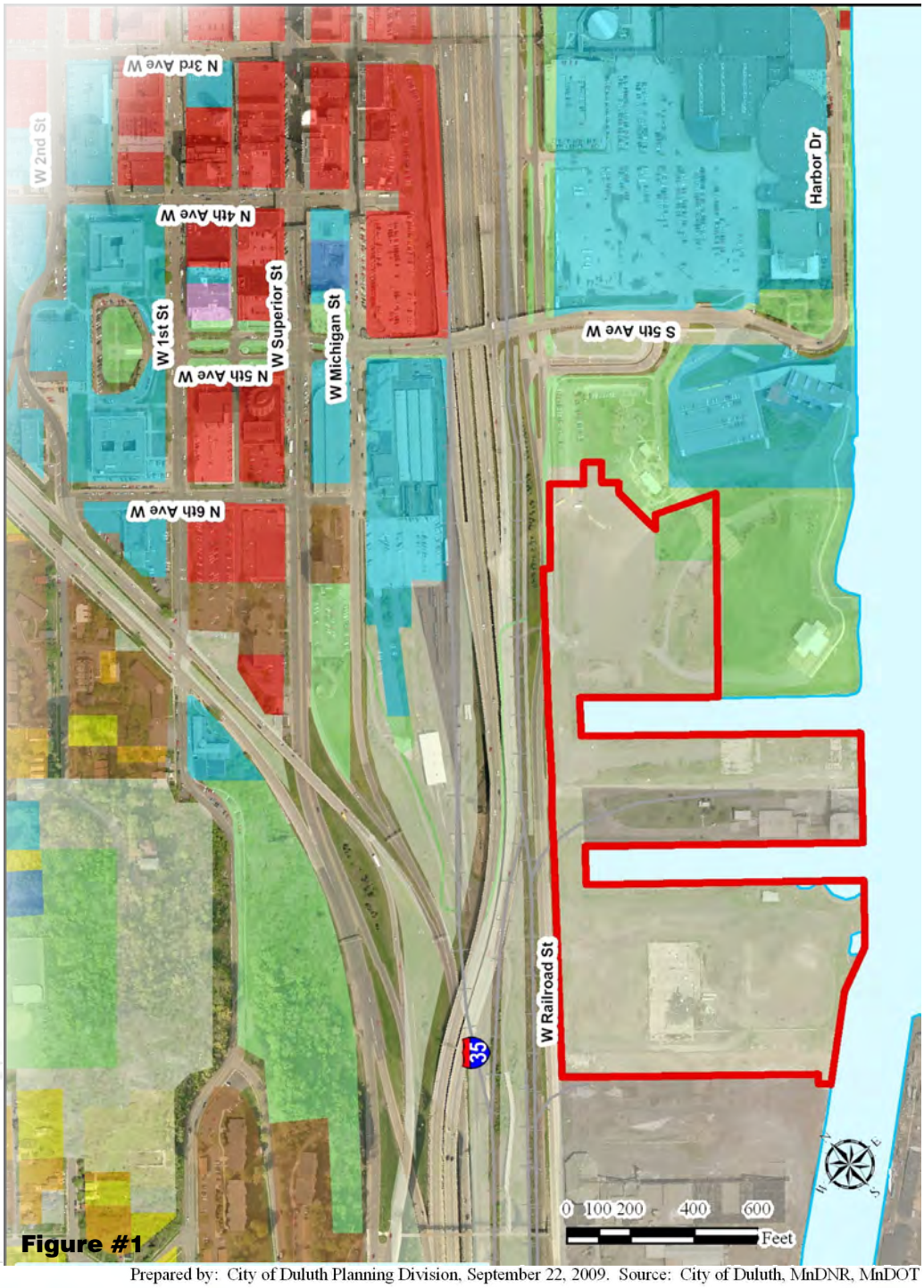


Figure #1

Prepared by: City of Duluth Planning Division, September 22, 2009. Source: City of Duluth, MnDNR, MnDOT

WATERFRONT DISCOVERY:

land ownership

BAYFRONT PARK

KEY

- LaFarge company
- DECA

Currently a majority of the Bayfront site is owned by the City of Duluth and efforts are being made to redevelop it. The only parcel of land the city has not yet bought is the area between slips two and three where the LaFarge plant is.

Figure #1

existing structures

The Bayfront Development has very few existing structure on the site, The only noteable buildings that will be kept is the Lafarge Plant located bewteen skips 2 & 3.

Figure #1

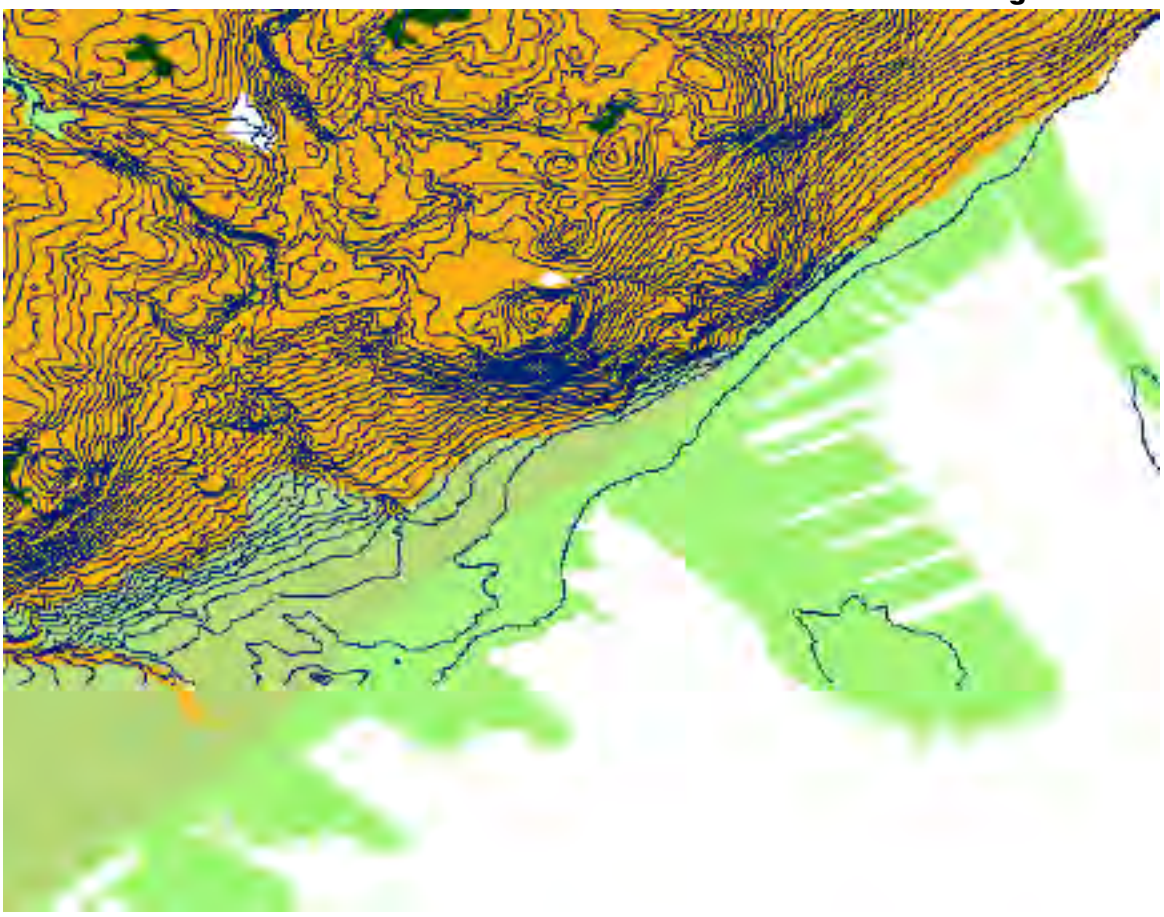
traffic flow

KEY

- High traffic
- Moderate traffic
- Low traffic

Figure #1

Figure #1



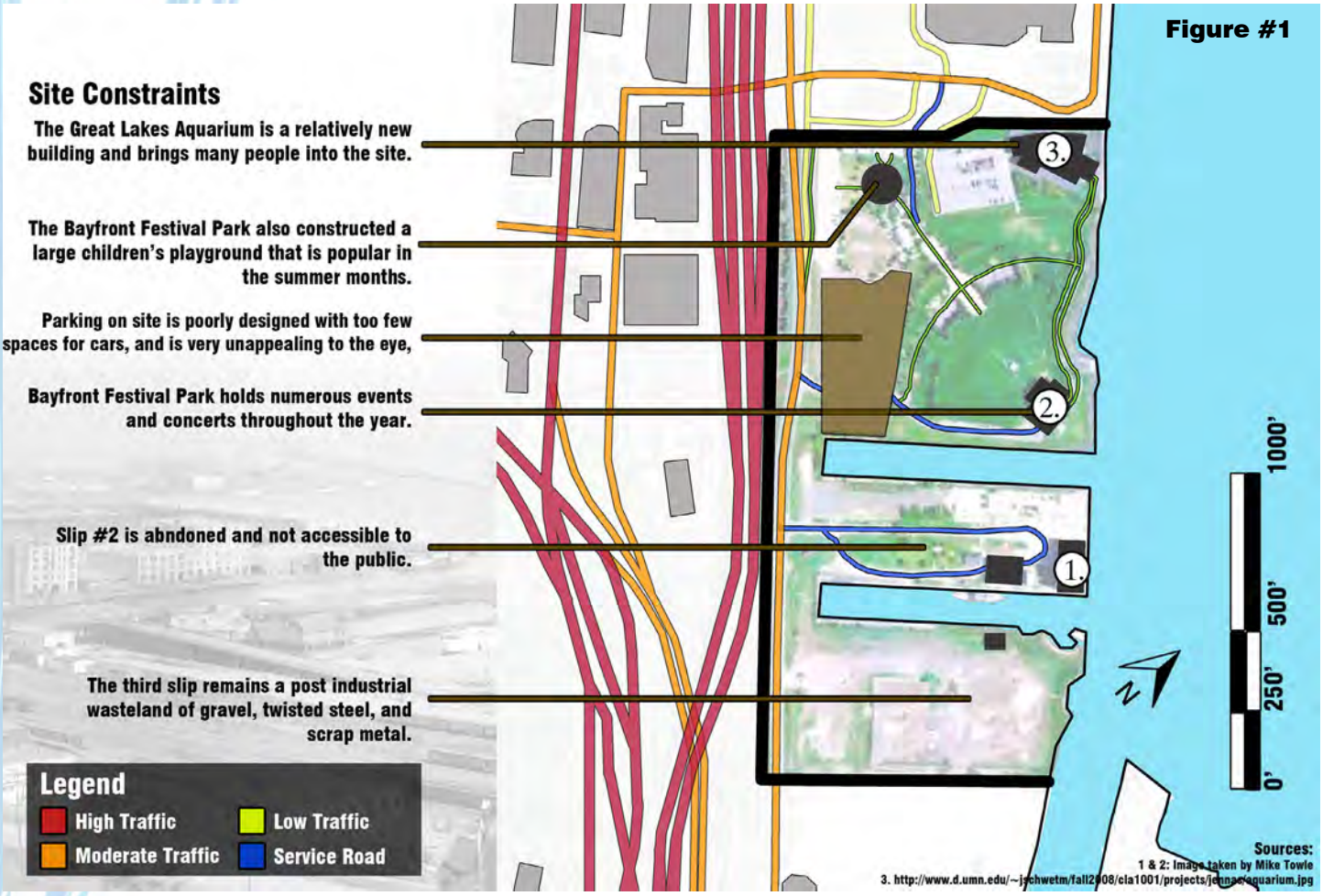
Topography on Site is very flat, but to the west is a very steep incline as Duluth was built in the valley of a very large hill.

bayfront overview

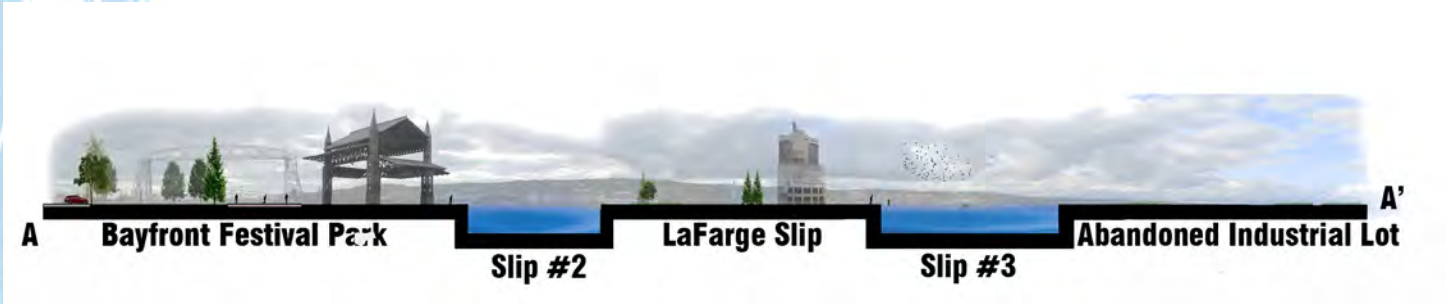
The goal of Waterfront Discovery is to embrace a post-industrial heritage while implementing landscape design practices that refelect a sustainable future where the Bayfront district becomes a much cleaner, vibrant, and overall better place to live work or play.

Figure #1

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.

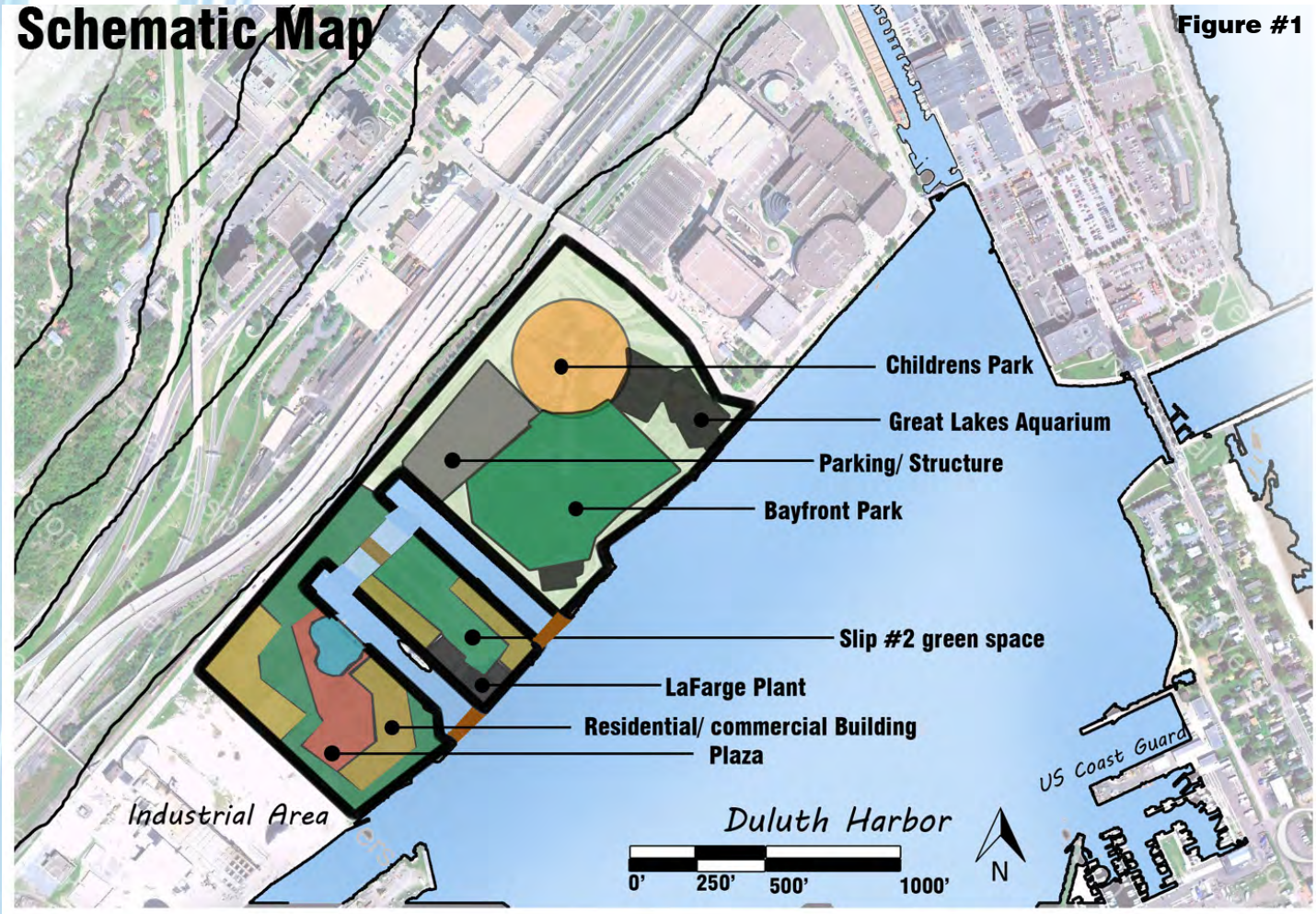


Currently the Bayfront area is bordered on the South by industrial, West by residential, North by Downtown/Civic use, and on the West by shopping and retail.



Schematic Map

Figure #1



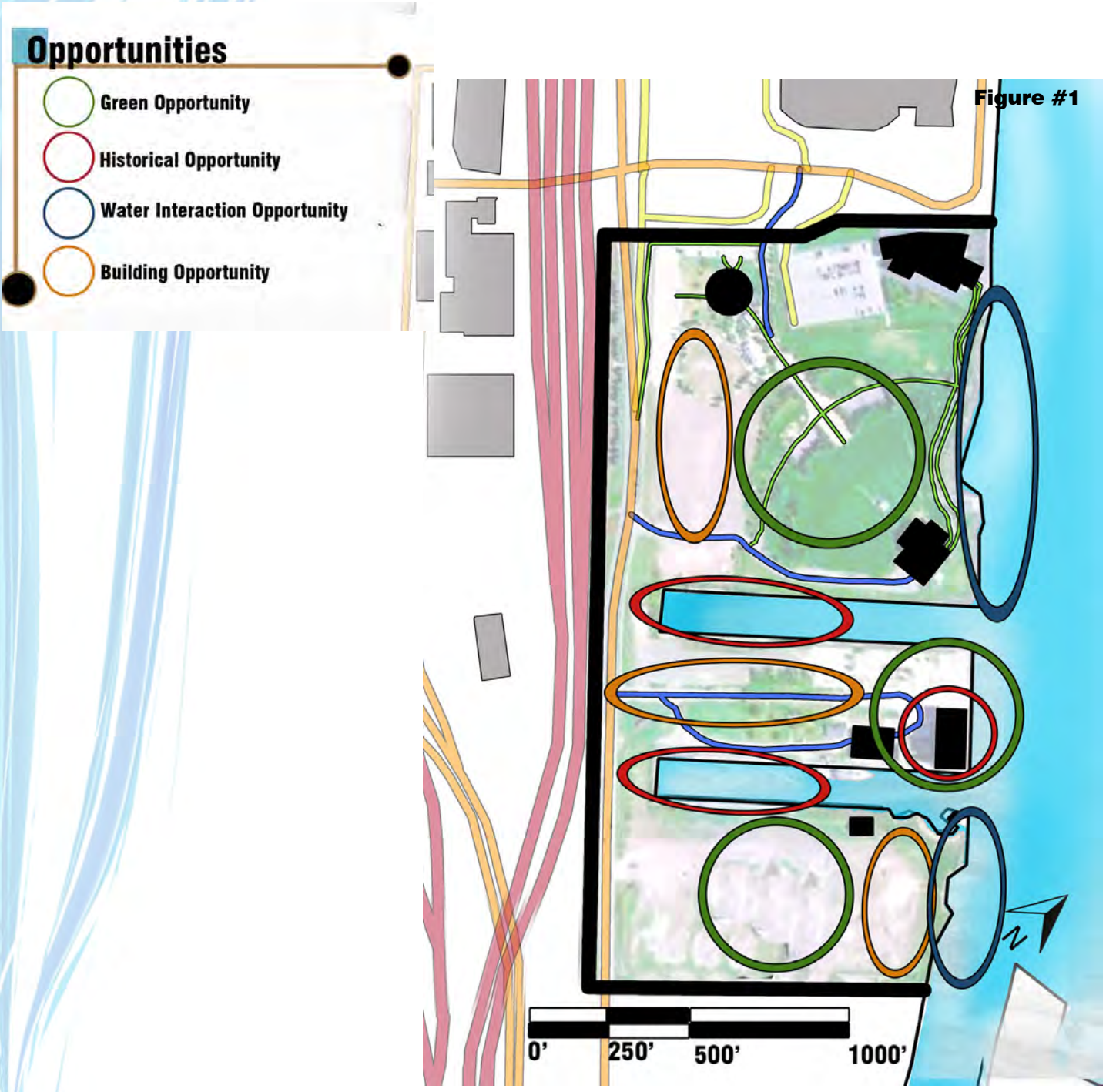

Opportunities
Green Opportunity
Historical Opportunity
Water Interaction Opportunity
Building Opportunity
0'
250'
500'
1000'
N

Figure #1

Building Development

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

Current

Proposed

1. Image courtesy of Mike Towle 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

Proposed

3. Image courtesy of Mike Towle 4. http://www.boston-discovery-guide.com/rose-kennedy-greenway.html#axzz1lugzsqem

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

Proposed

5. Image courtesy of Mike Towle 6. http://www.arlingtonva.us/departments/parksrecreation/scripts/parks/PowhatanSpringsPark.as

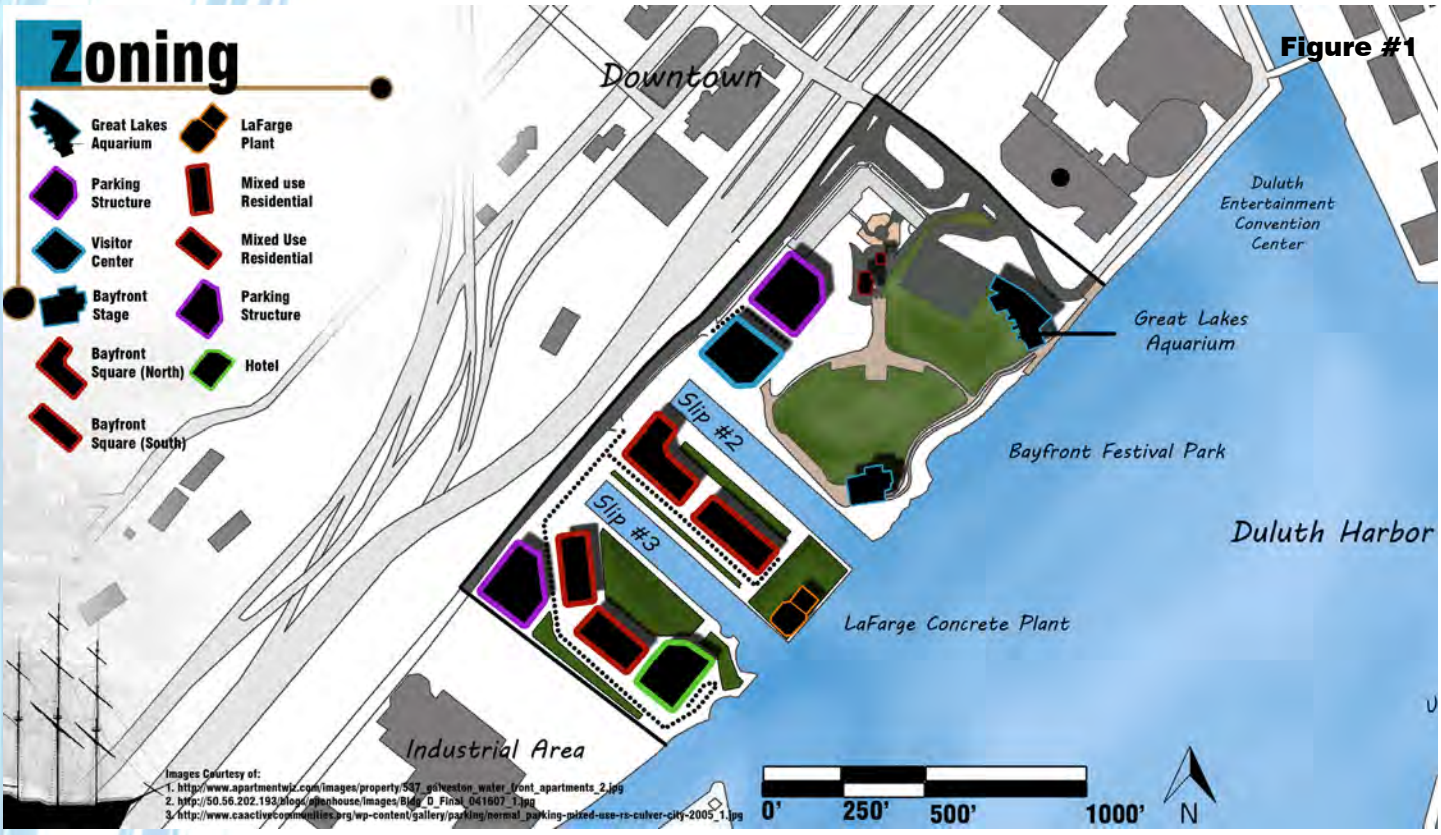

Zoning
Great Lakes Aquarium
LaFarge Plant
Parking Structure
Mixed use Residential
Visitor Center
Mixed Use Residential
Bayfront Stage
Parking Structure
Bayfront Square (North)
Hotel
Bayfront Square (South)
Downtown
Duluth Entertainment Convention Center
Great Lakes Aquarium
Slip #2
Slip #3
Bayfront Festival Park
Duluth Harbor
LaFarge Concrete Plant
Industrial Area
Images Courtesy of:
1. http://www.apartmentwiz.com/images/property/537_galveston_water_front_apartments_2.jpg
2. http://50.56.202.193/blogs/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
0'
250'
500'
1000'
N

Figure #1

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)

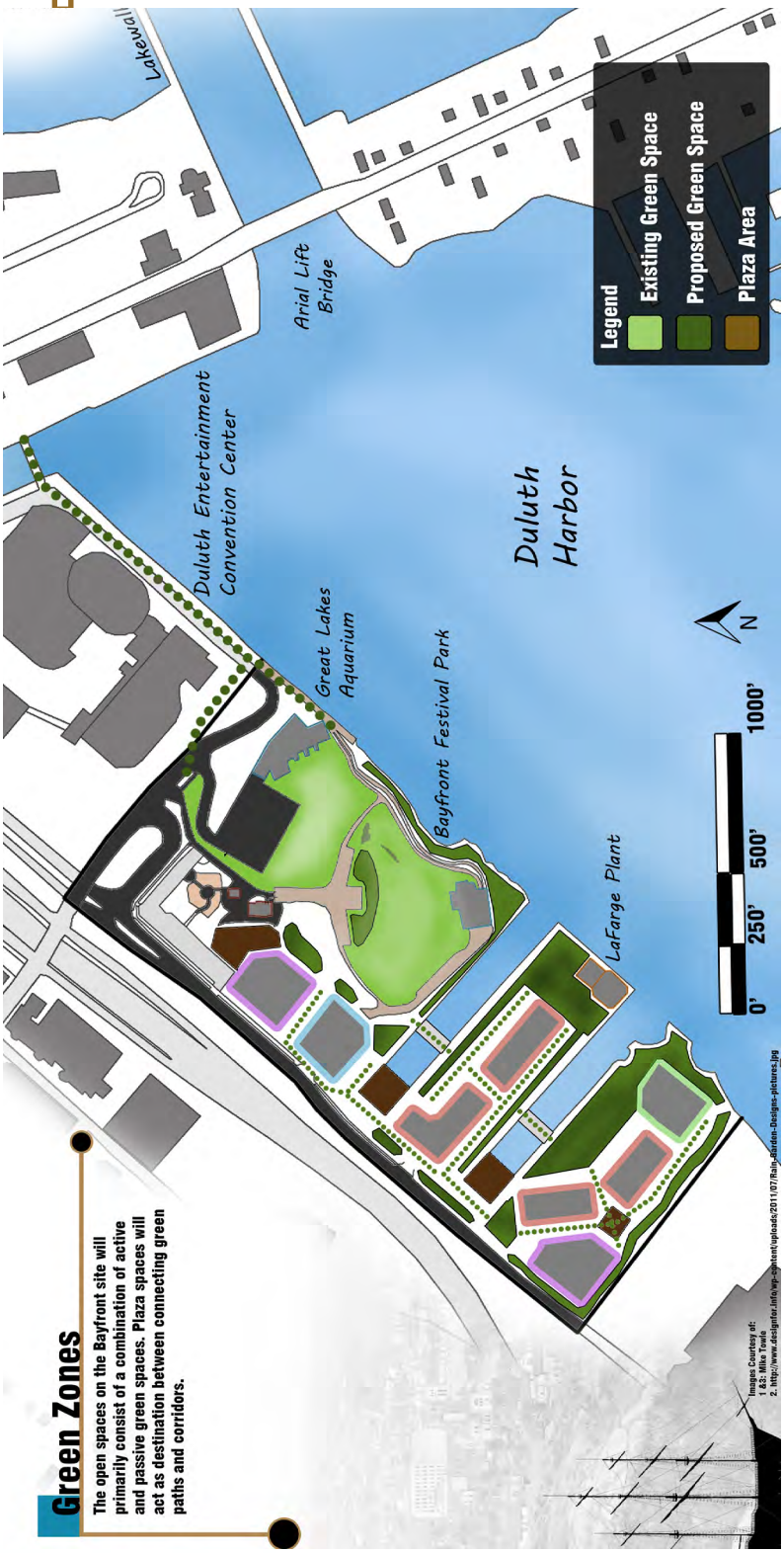
The retail mixed use buildings will feature shops, boutiques, restaraunts etc. A boardwalk feel will be implemented around many of these buildings.

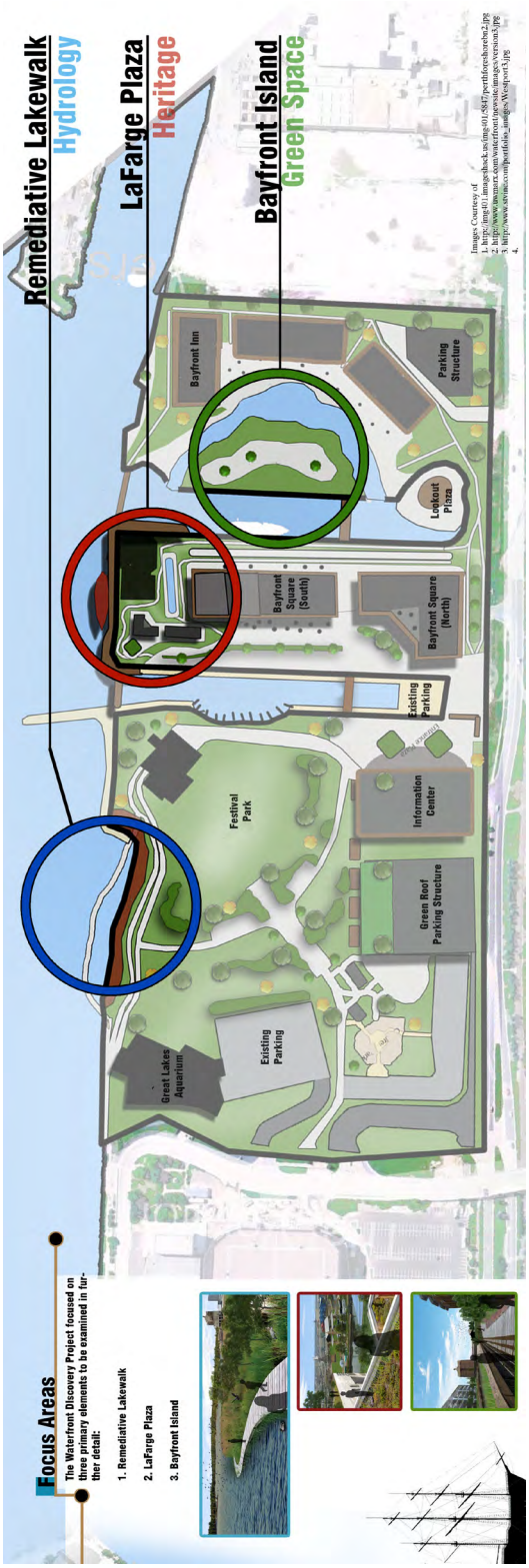
Parking Mixed Use

Parking
Parking
Parking
Retail/ Business

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

BAYFRONT PARK

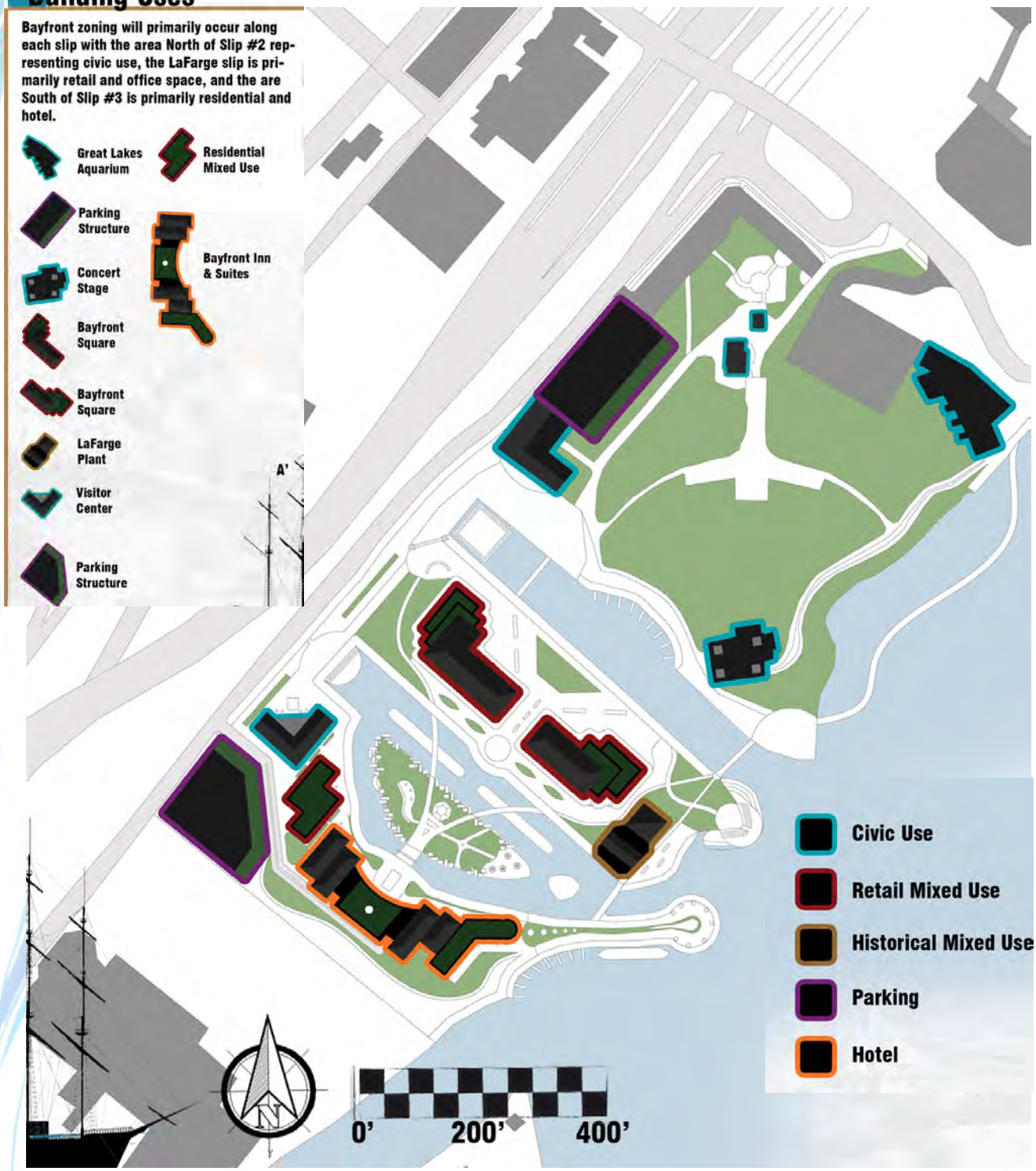



Remediative Lakewalk
Hydrology
LaFarge Plaza
Heritage
Bayfront Island
Green Space
Bayfront Inn
Parking Structure
Lookout Plaza
Bayfront Square (South)
Bayfront Square (North)
Existing Parking
Festival Park
Information Center
Green Roof Parking Structure
Great Lakes Aquarium
Existing Parking
Focus Areas
The Waterfront Discovery Project focused on three primary elements to be examined in further detail:
1. Remediative Lakewalk
2. LaFarge Plaza
3. Bayfront Island

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 are South of Slip #3 is primarily residential and hotel.



Boardwalk Section

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

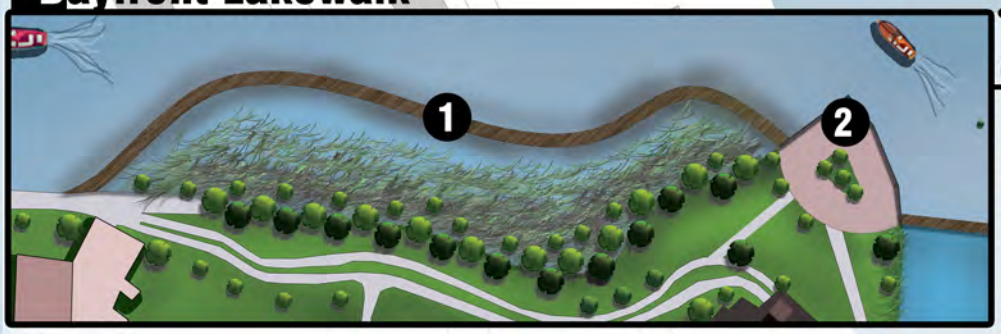
Path & Plaza Analysis

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

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.

Bayfront Lakewalk

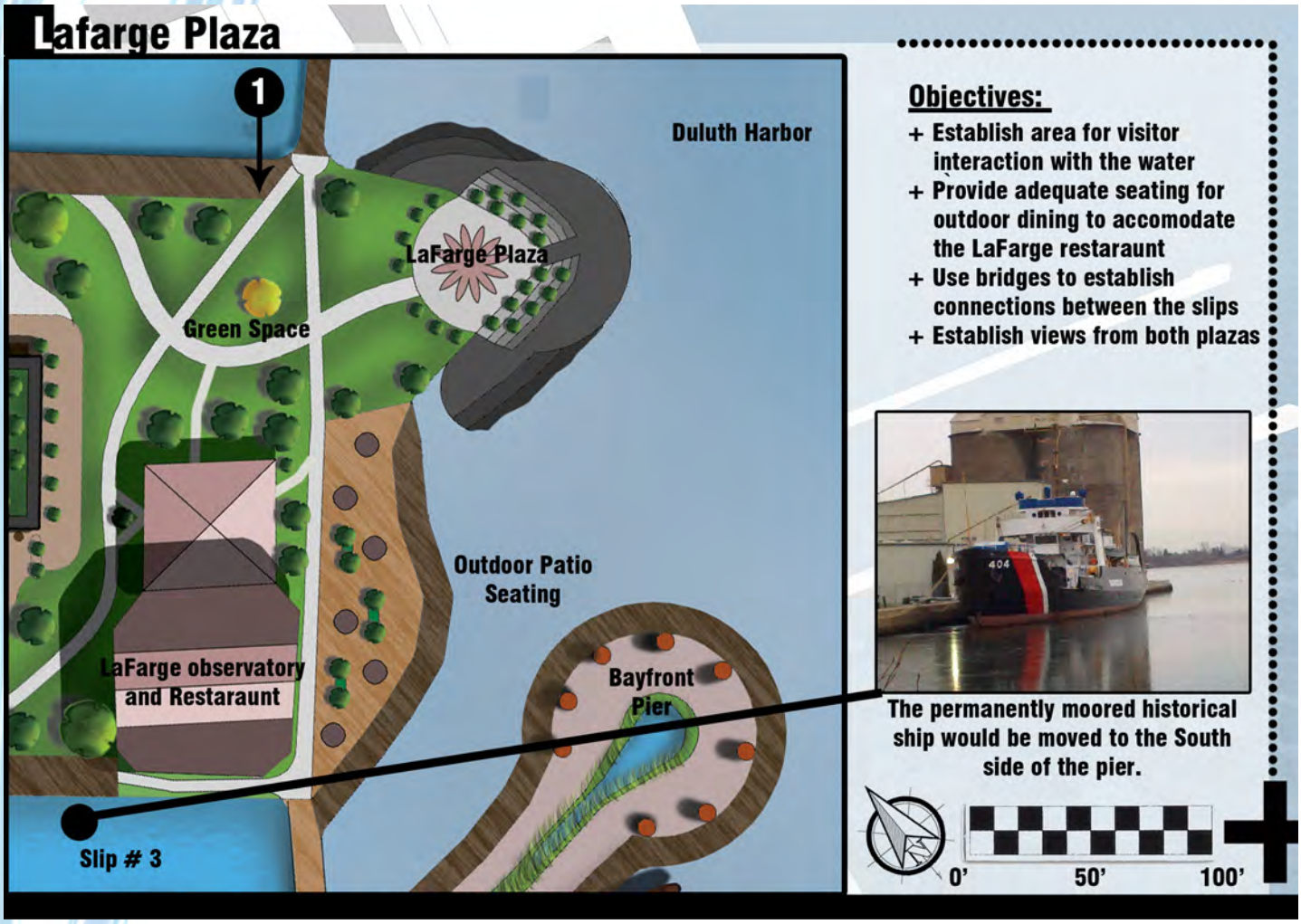


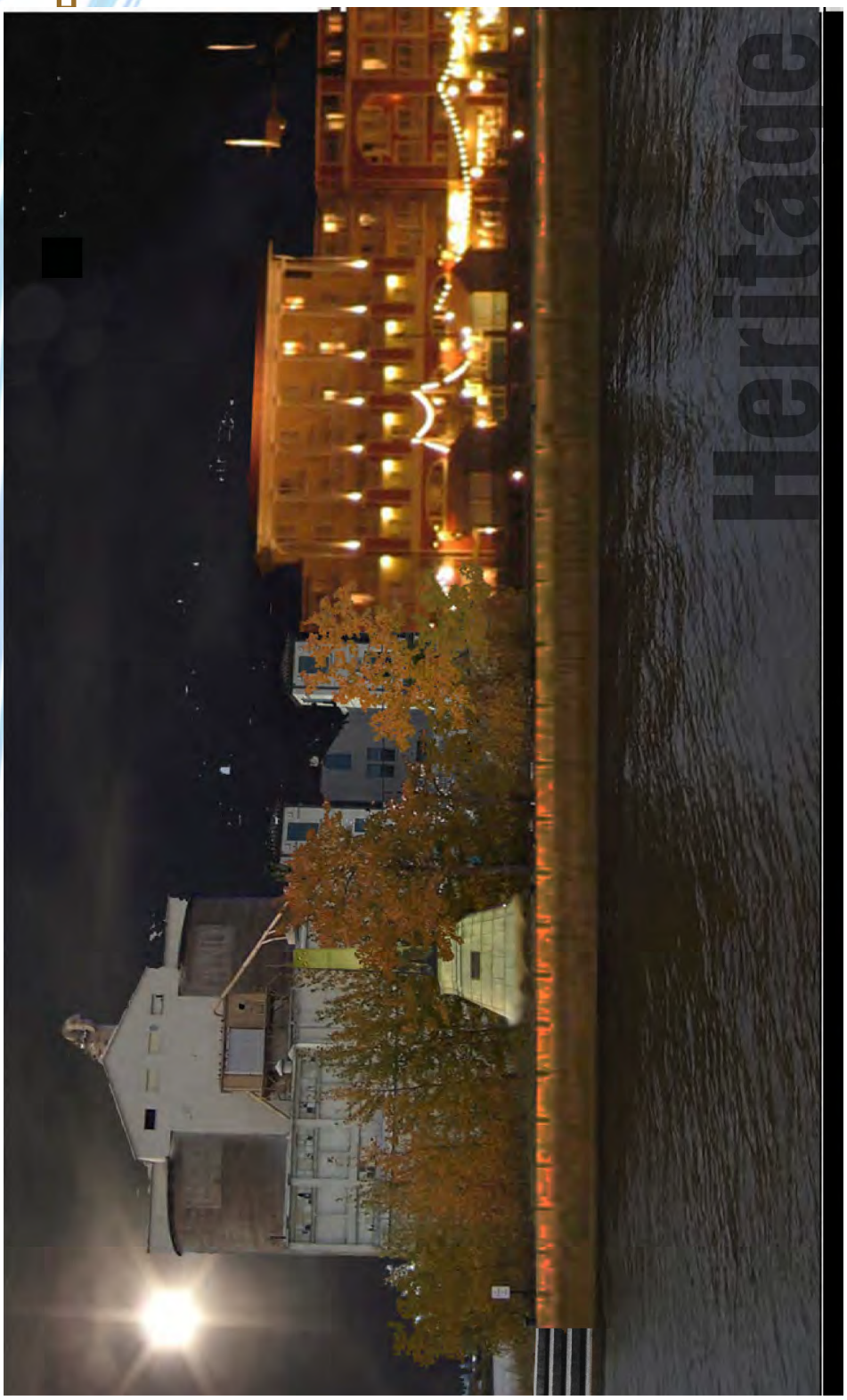
Objectives:

- 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

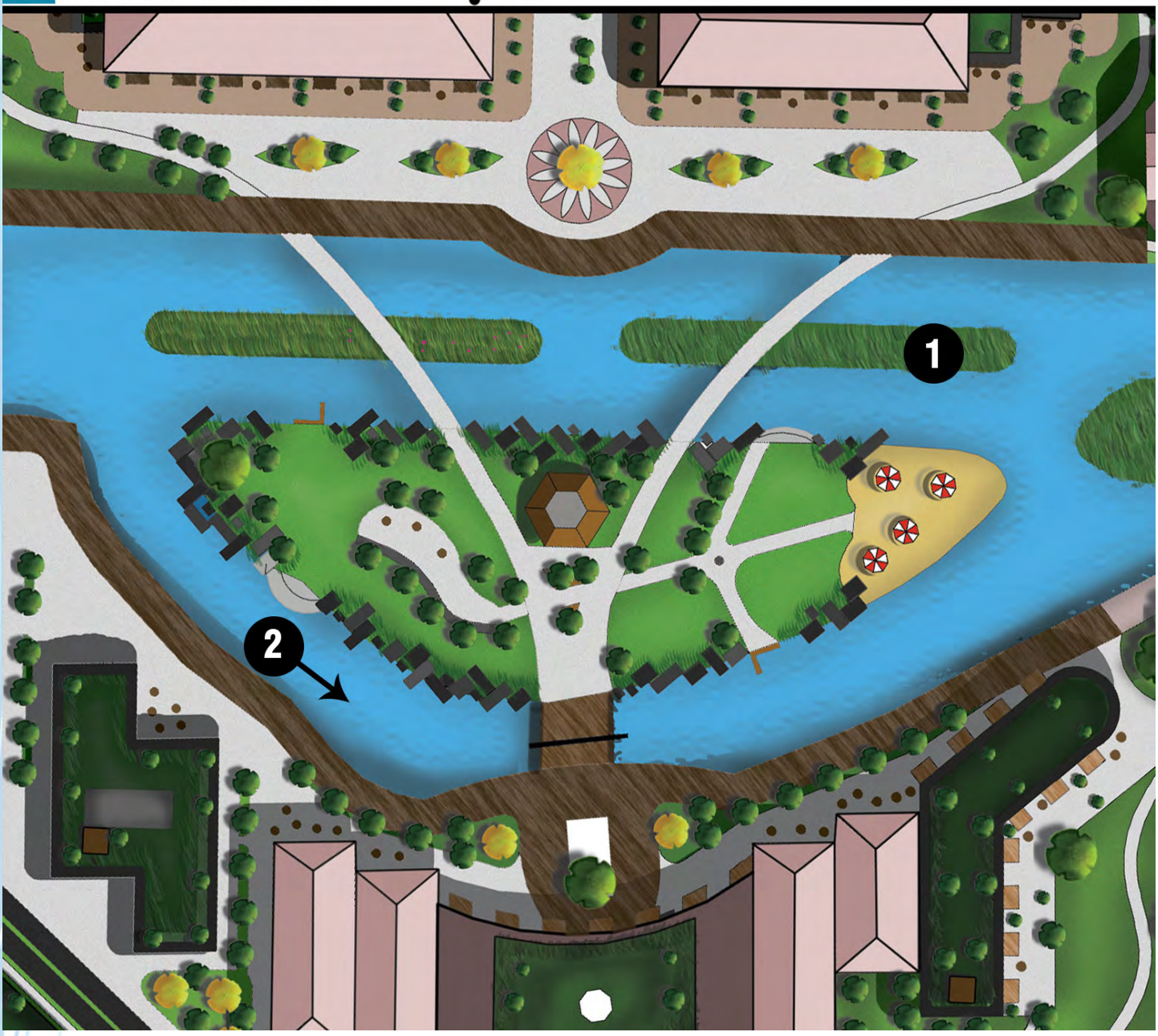
Riparian Buffer


Festival Plaza
Remediation


Lafarge Plaza
1
Duluth Harbor
LaFarge Plaza
Green Space
Outdoor Patio Seating
LaFarge observatory and Restaraunt
Bayfront Pier
Slip # 3
Objectives:
+ Establish area for visitor interaction with the water
+ Provide adequate seating for outdoor dining to accomodate the LaFarge restaraunt
+ 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

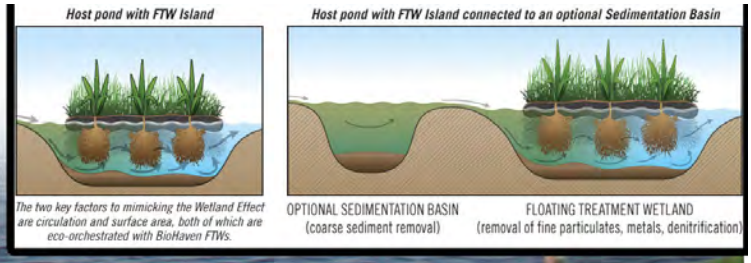
Island Detail

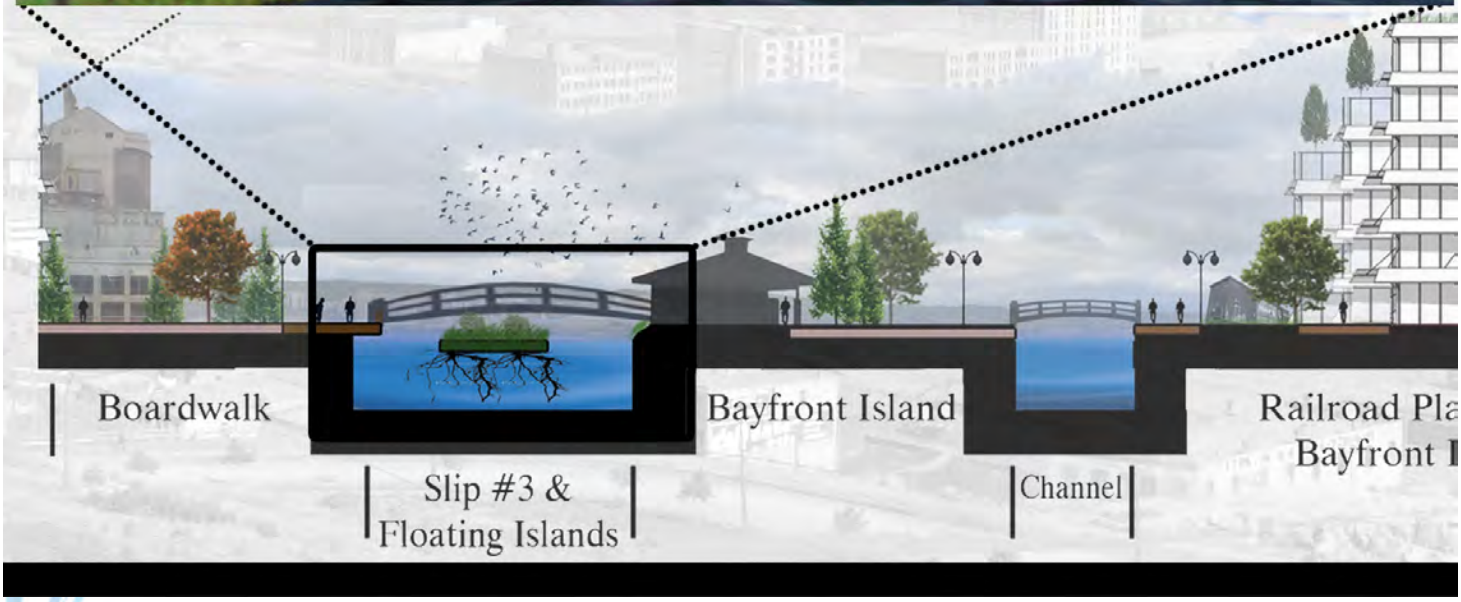


Floating Islands

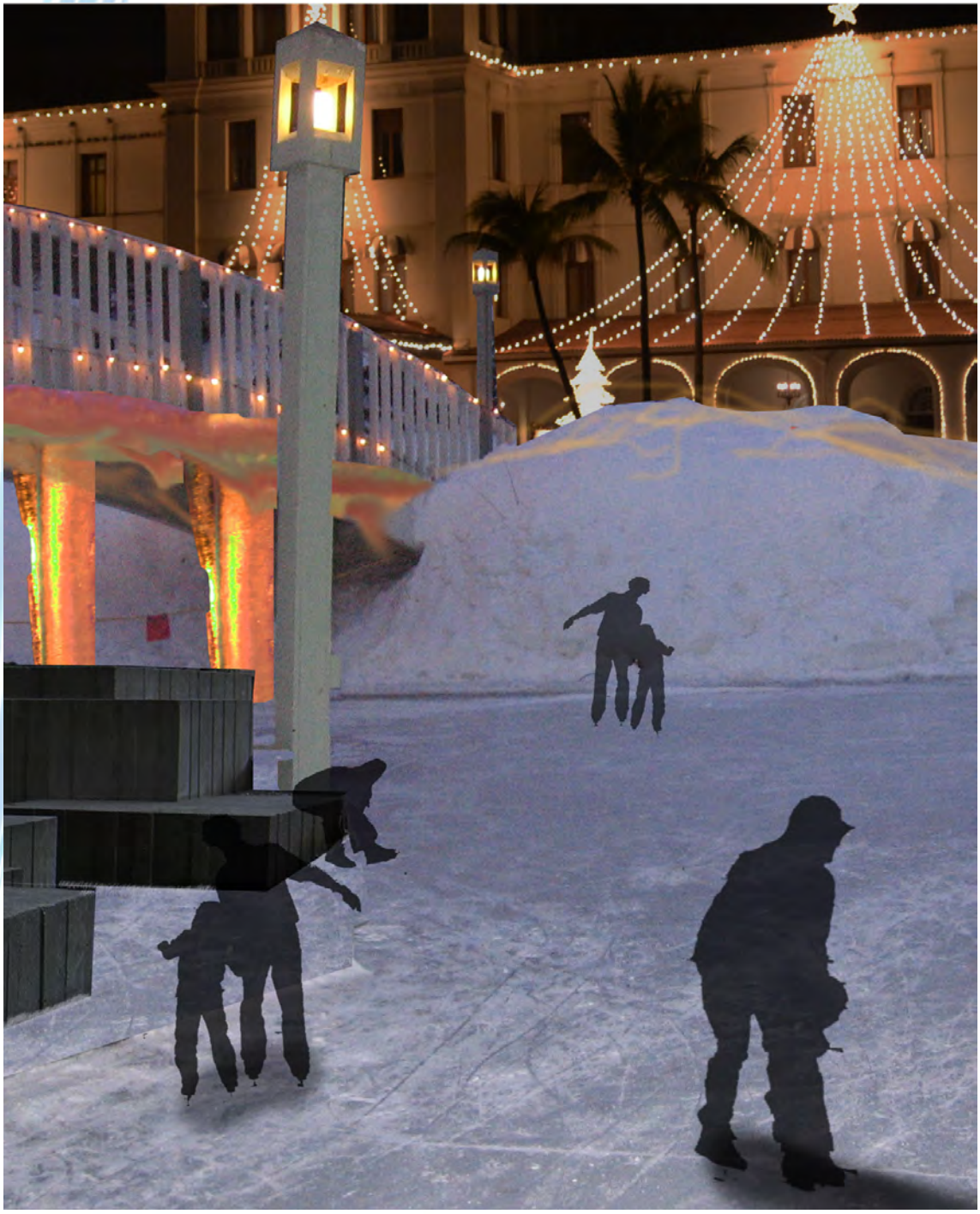
Along slip #3 there will be linear floating islands which will use the roots of the plants to remediate stormwater runoff and contaminants.

1





THis perspective shows how the island would serve the Bayfront development in the winter months when it would double as an ice skating rink.




Views of Bayfront
View over slip #3
Plan Details
Waterfront Discovery

BAYFRONT PARK

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Personal info

Mike Towle
5th Year Landscape Architecture Student NDSU
LA 571
2011 Thesis Project

address

1019 9th Avenue North
Fargo. North Dakota 58102
phone: 605.868.1907
email: michael.towle@my.ndsu.edu

quote

"Remember there are multiple solutions to all design problems, and that no one solution is perfect. The world is constantly changing and as a Landscape Architect you must always strive to create an environment that is sustainable, functional, and enjoyable for now and years to come."