Coastal Connections

Promoting Resilient Communities

University of Delaware

Prepared for the Coastal Connections
Online Speaker Panel
Fall 2020

DelRAP
Resilience Awareness Project

The Delaware Resilience Awareness Project (DelRAP) is an interdisciplinary team of student designers and researchers seeking to raise statewide awareness of sea-level rise and intensifying storms. Through digital storytelling and outreach, DelRAP promotes converstations on coastal resiliency, while cultivating data to inform future resiliency planning.

Our Panelists

Dr. Jules Bruck, PLA, ASLA

Anna Wik, PLA, ASLA, SITES AP

Andy Fox, PLA, FSLA

Dr. Galen Newman, PLA

Please visit our webpage to view our past and ongoing projects and for contact information online at: https://sites.udel.edu/resilience-awareness-project/

Contents

Little Creek Conceptual Plan

LITTLE CREEK, DELAWARE

SEA LEVEL RISE
PUBLIC PARKS
COMMERCIAL REVITALIZATION

August, 2020

The goal of the Little Creek conceptual plan is to mitigate the effects of flooding caused by stormwater overflow, revitalize local economic development, protect against sea level rise, and lay out a community branding strategy. In this conceptual design, CRDS has reclaimed underutilized land in the town park, the newly designed commercial district, and much of the undeveloped land along the town boundary. With the addition of a biking trail, micro retail space, and improved stormwater management systems, Little Creek is now poised to greatly improve its economic vitality, resilience to climate change, and town pride.

Bayshore Bikeway trailhead

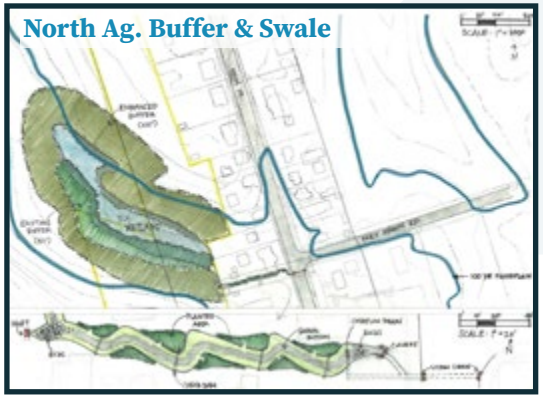
Redesigned retail space at Waterman's Village in the Little Creek commercial district

Street banners and Bayshore Bikeway signage

CRDS
COASTAL RESILIENCE
DESIGN STUDIO

Project Team

Dr. Jules Bruck, Landscape Architect
Emma Ruggiero, Senior Designer
Joshua Gainey, Senior Designer
Mark Switliski, Senior Designer
Leigh Muldrow, Junior Designer
Olivia Boon, Junior Designer
Christopher Fettke von Koeckritz, Junior Designer
DJ Bromley, Junior Designer



Green infrastructure implementation

The Little Creek Park redesign

A redesigned Main Street

Little Creek
DELAWARE
= est. 1899 =
Slow Down. Live A Little.

The Little Creek conceptual master plan

A constructed wetland at Little Creek Park

Waterman's Village in the Little Creek commercial district

Zwaanendael - DeVries Monument

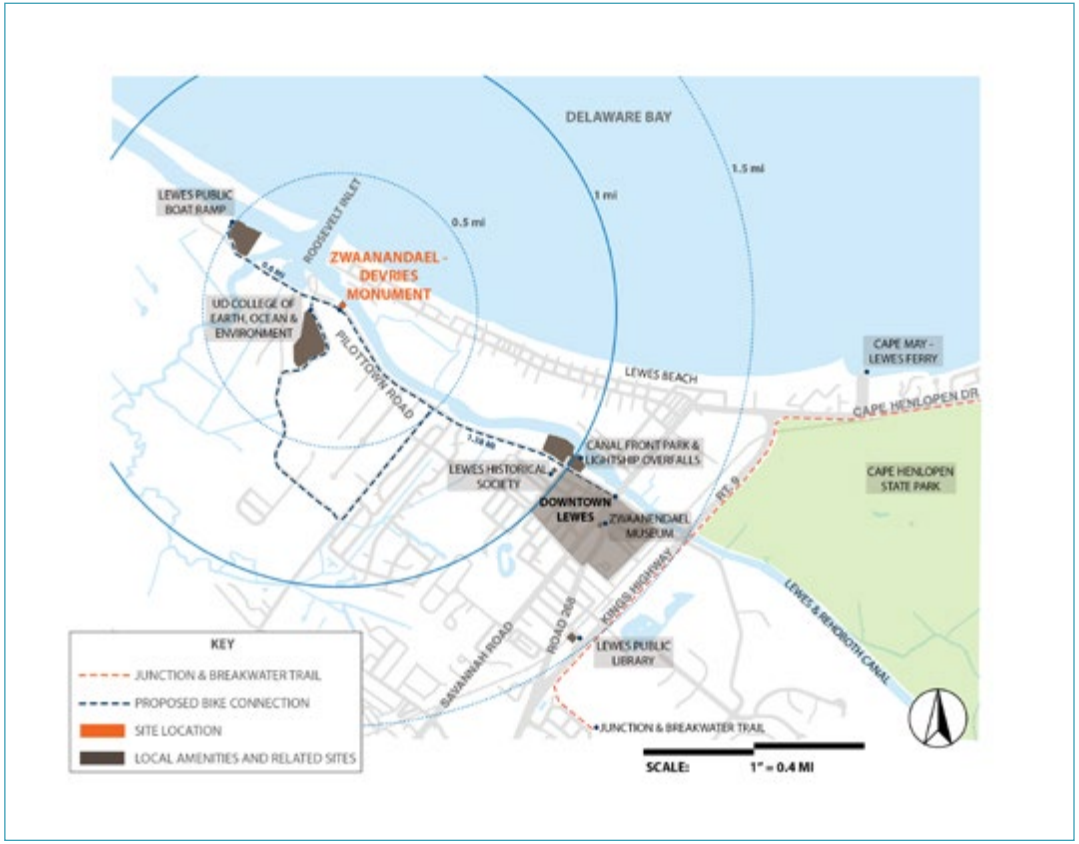
LEWES, DELAWARE

June, 2020

The objective of this pilot project is to create a recreational space surrounding an existing monument that adapts to changes in the environment, including sea level rise and increased erosion, while preserving the historical value of the property. Additionally, CRDS aims to promote accessibility from downtown Lewes to the space, thereby encouraging a greater connection between historic downtown, the monument, and the nearby University of Delaware College of Earth, Ocean, and Environment Hugh R. Sharp Campus. In order to ensure valid outcomes for this project, student designers from the CRDS conducted a thorough analysis before drafting design recommendations for the Zwaanendael-de Vries Monument site.

An early sketch showing an axial view approaching the monument from downtown Lewes

Rendering of the seating pavillion structure with shade sails



Connectivity and site context map

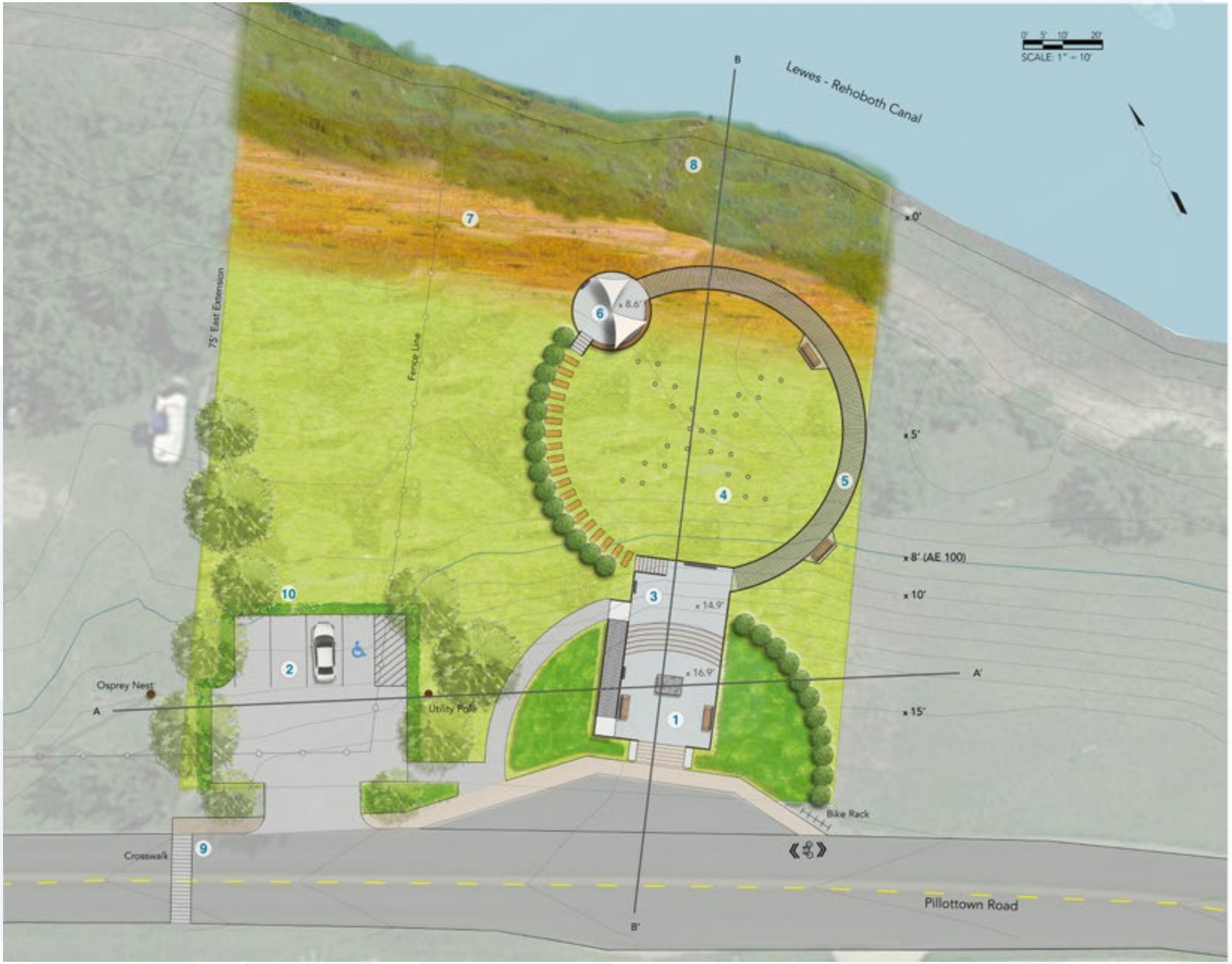
Current Monument

Site Location

Project Team

Dr. Jules Bruck, Principal & Founder
Ed Lewandowski, Principal
Emma Ruggiero, Designer
Joshua Gainey, Designer
Mark Switliski, Designer
Shannon Brown, Designer
Janelle Skaden, Designer

CRDS
COASTAL RESILIENCE
DESIGN STUDIO



ZWAANENDAEL - DEVRIES MONUMENT

UD COASTAL RESILIENCE DESIGN STUDIO

GAINEY, JOSH
RUGGIERO, EMMA
SWITLISKI, MARK

1 **Zwannendael - DeVries Monument**
Metal Grate ADA Ramp
Benches
Bike Rack
Sign: Monument Significance

2 **Parking Area**
4 spaces, 1 ADA
Pervious Concrete
Pathway to Monument

3 **Lower Monument Platform**
Sitting Steps
Ramp Up to Monument
Path Down to Lower Outlook
Steps Down to Ground Level
Sign: History Timeline
Sign: Osprey Nest

4 **Landscape Palisades**
Sculptural Style
Landscape Grasses
Dutch Architecture Inspired

5 **Elevated Pathway**
Metal Grate; Elevated
Bench Seating
Cable Railing

6 **Lower Outlook**
Bench Seating
Modular Shade Sails
Sign: Meadow Buffer, Living Shoreline, & Wildlife Habitat

7 **Upland Meadow**
Allows for Marsh Migration

8 **Living Shoreline Stabilization**
Spartina sp.
Oyster Bags (test site)

9 **Bike Lane, Sidewalk & Crosswalk**
Continue Sidewalk
Two-Way Bike Lane (Canal-side)

10 **Planting Beds**
Surround Parking Area
Buffer Boat Lot / Osprey Nest

Current plan rendering of the site as of June 2020

Peat/Land: Adaptation Strategies for Eastern NC

EASTERN NORTH CAROLINA

December, 2019

This project explored the unique ecological, historical, and cultural role of peatland in North Carolina, and examined restoration and design strategies for these sensitive landscapes. Peatland is a unique type of wetland that produces peat through the partial decomposition of plants and other organic matter. Globally, peatland covers less than 3% of the earth's surface, but stores close to 50% of the world's soil carbon. Peatland conservation and restoration aligns with global priorities for climate adaptation, hazard mitigation, biodiversity conservation, and rural economic development, and landscape architects working in peatland contexts are positioned to lead these regenerative design efforts. This project identified three peatland contexts in NC for the implementation of restoration and design strategies: i) public access to conserved peatlands; ii) restoration of peatland drained for agriculture; iii) resilience and adaptation of rural towns built in and around peatlands.

Peatland as Flood Mitigation Strategy

Recreation-based Tourism

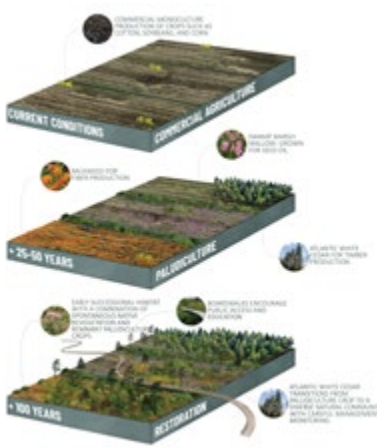
Peatland restoration strategies focus on three main priorities: habitat, hydrology, and carbon.

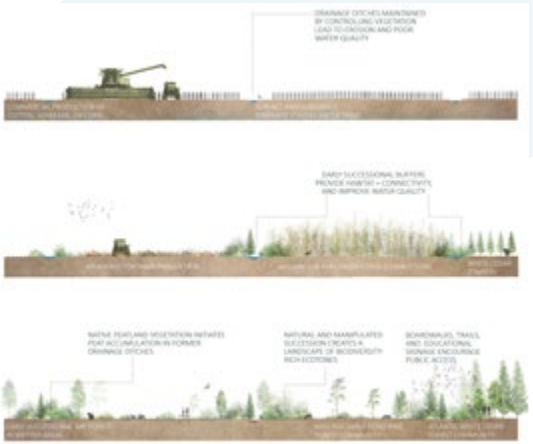
Migratory Bird Habitat

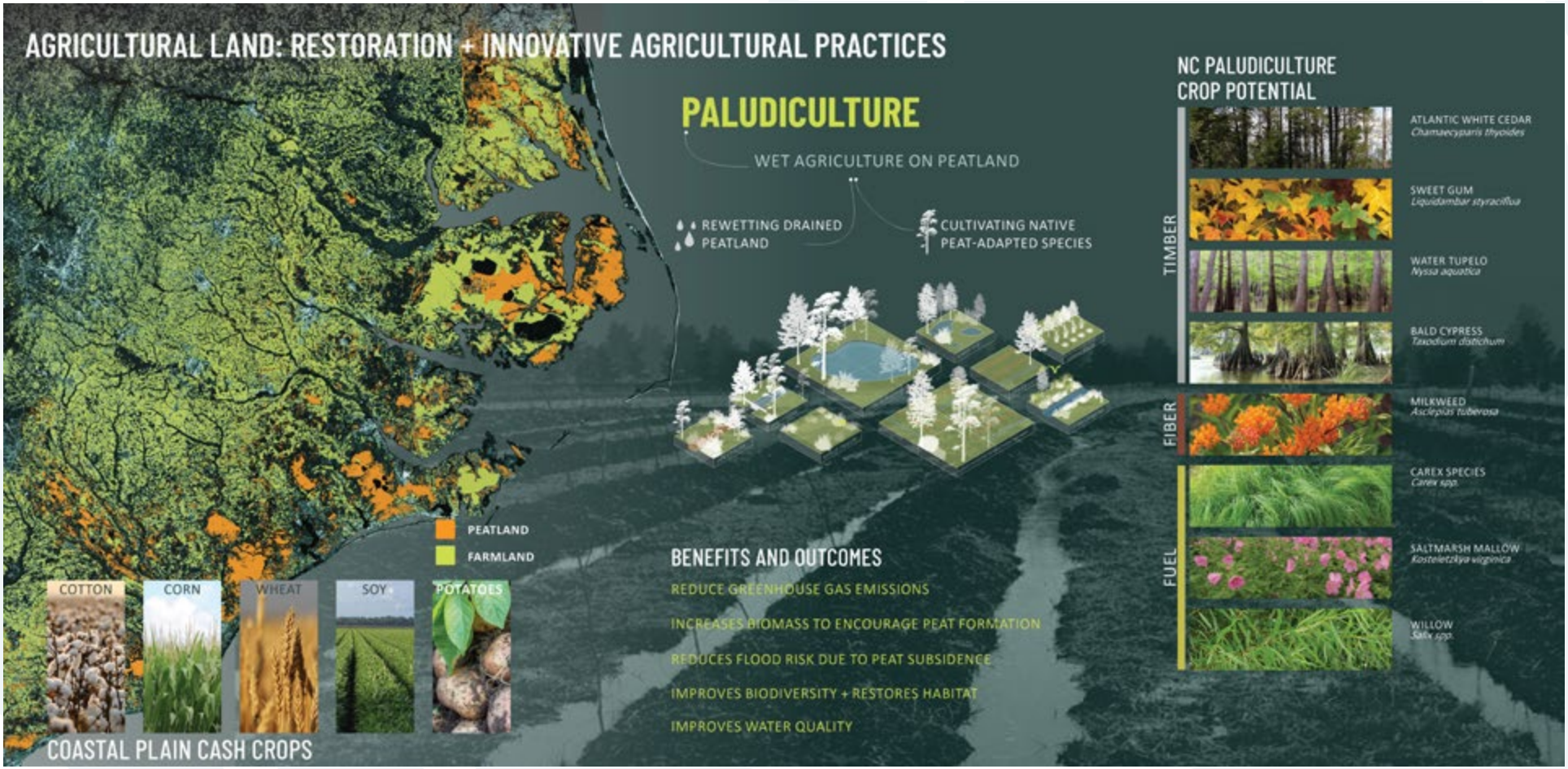
Community Gardens

Project Team
Madalyn Baldwin, Student ASLA
Andrew Fox, FASLA, PLA, Faculty Advisor

NC STATE Design







Paludiculture, an emerging and innovative form of wet agriculture on peatland, offers an ecologically responsible, income-generating alternative to current farming practices.

Sound Design: Reconnecting the Coastal Edge

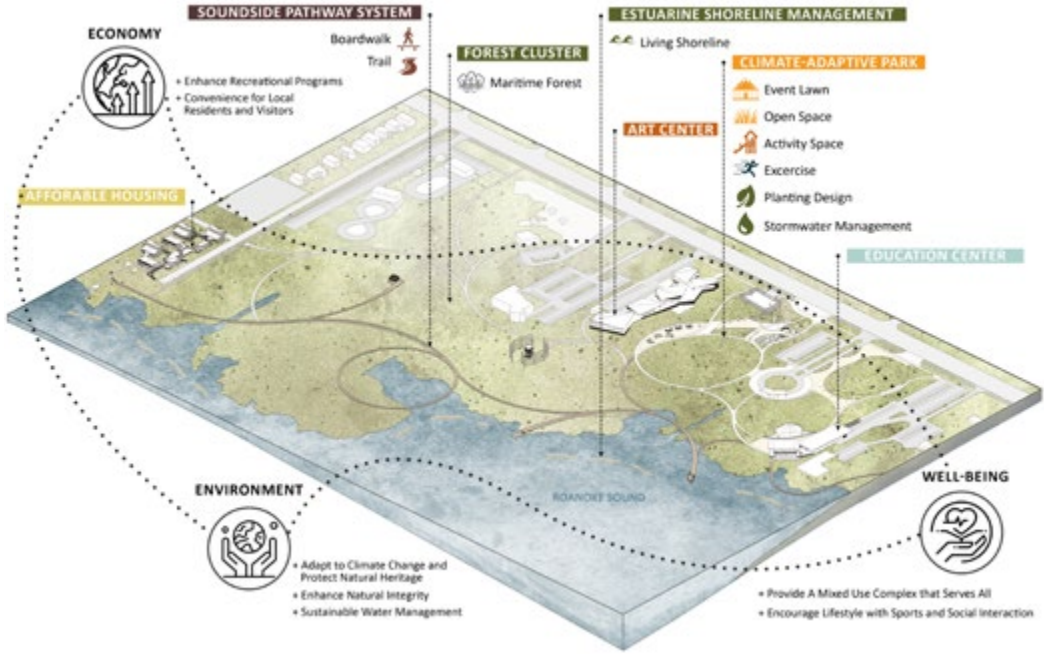
NAGS HEAD, NORTH CAROLINA

May, 2020

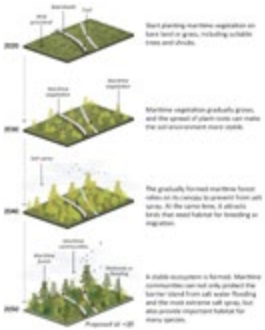
The Sound Design project proposes a new civic space for the Town of Nags Head, North Carolina. Nags Head is a coastal community located on the Outer Banks, which situates it as a premier location replete with beautiful and rich natural resources. These characteristics make it an attractive place to live, work and visit. The project is organized around three main issues: environment, economy, and well-being. Using these foci, the project aims to promote a coastal lifestyle that preserves coastal heritage while reducing the impacts of climate change through the use of adaptive, sustainable, and connective strategies. The primary design elements include: shoreline management, multi-functional open spaces, and a publicly accessible sound-side circulation system that fulfills the needs of the community while reconnecting the critical ecologies along the coastal edge. The goal of this proposal is to create a model landscape for future sound-side planning.

Site Plan

Multi-functional Spaces



Site Programming

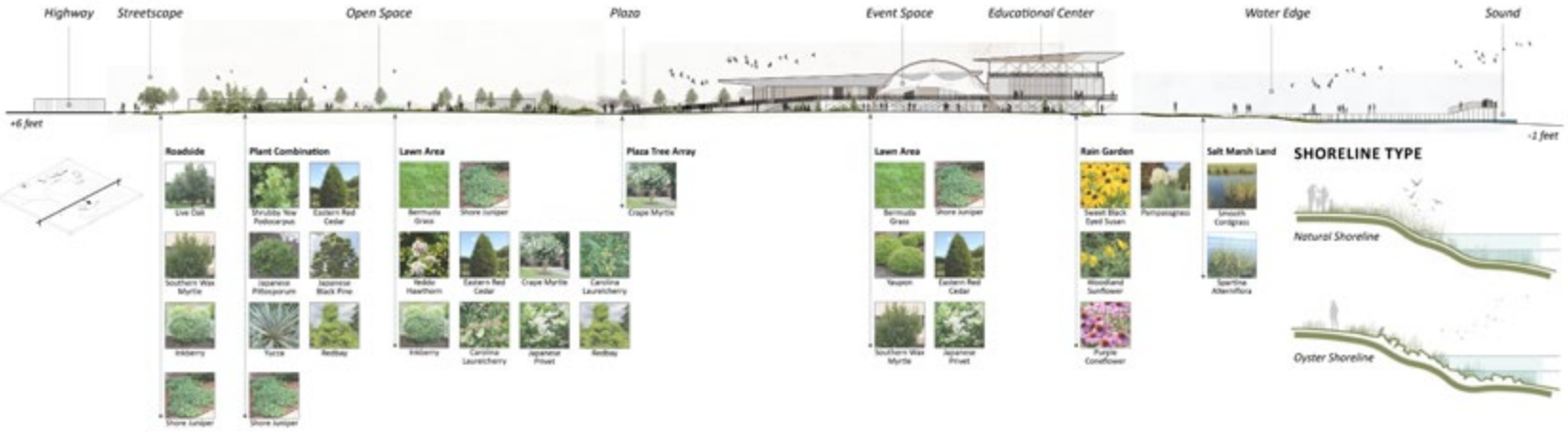


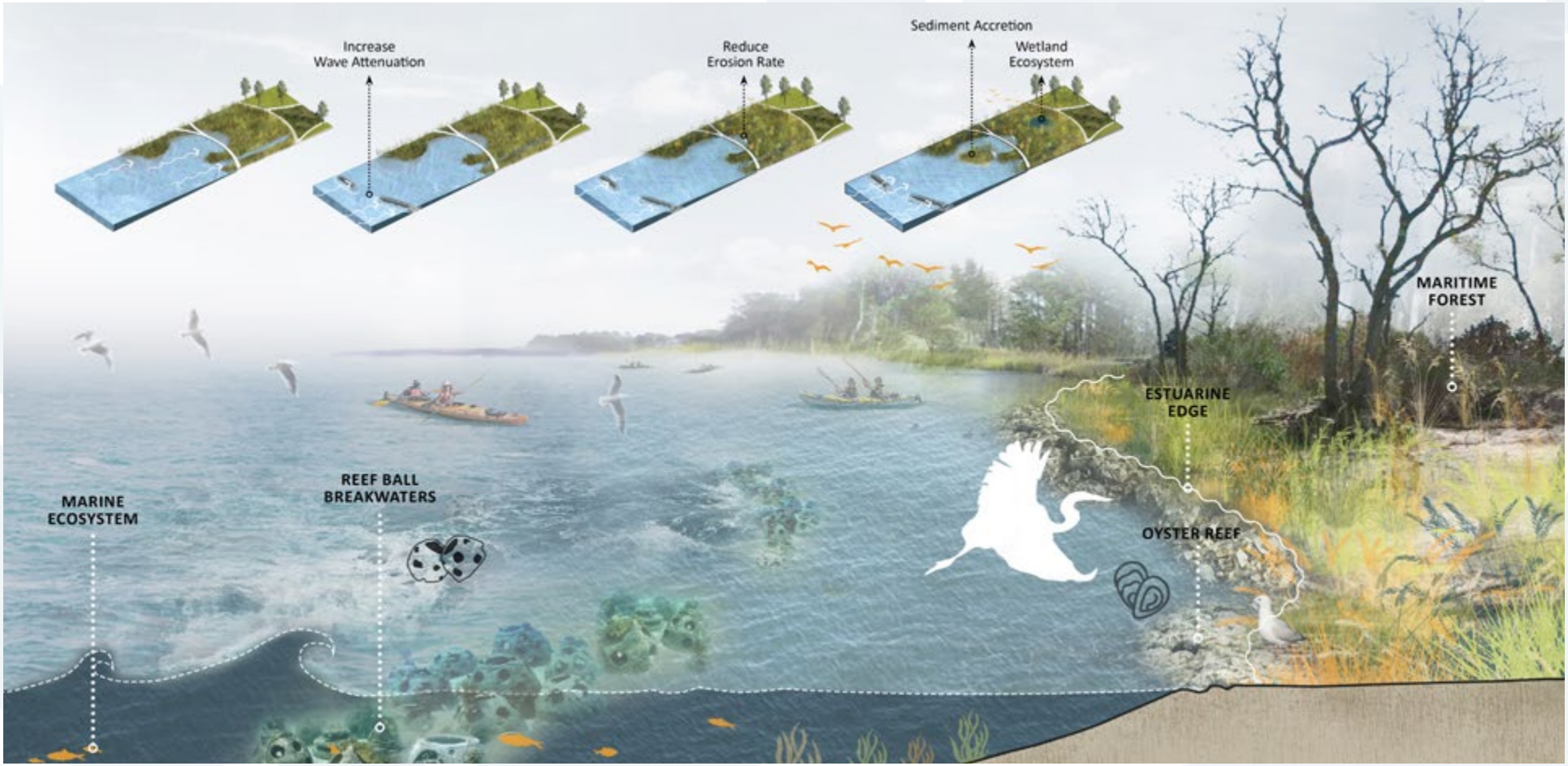
Adaptive Management

Design Framework

Project Team
Xinyi Liu, Student ASLA
Xinyu Li, Student ASLA
Andrew Fox, FASLA, PLA, Faculty Advisor

NC STATE Design





Adaptive Infrastructure: Low-Impact Development + Sustainable Stormwater Strategies + Living Shorelines

Soundside Education + Research Center

NAGS HEAD, NORTH CAROLINA

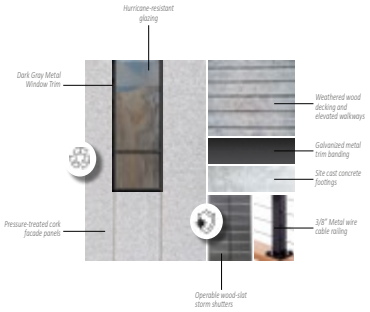
May, 2020

The Town of Nags Head Soundside Education + Research Center serves the community by providing a variety of activity options for visitors and year-round residents alike. The 20,000 SF center sits on a 6-acre site surrounded by a marsh overlooking the Pamlico Sound. The facility anchors the southwest end of Nags Head where thousands of people walk, bike, and drive by every year on their way into and off of the island. The center encourages understanding and protection of coastal wetlands while increasing community interaction and economic development. Enhanced pedestrian pathways, sidewalks, bike paths, stoplights, and miles of new scenic trails create a more healthy and active lifestyle on Nags Head. While the building form was inspired by marine structures and forms found in the local ecosystem, the natural material palette and low dynamic profile help to ground it to the everchanging marshscape for years to come.

Interior Educational Spaces

Site Context

The building form is biomimetic and sited to celebrate views while minimizing environmental impacts.



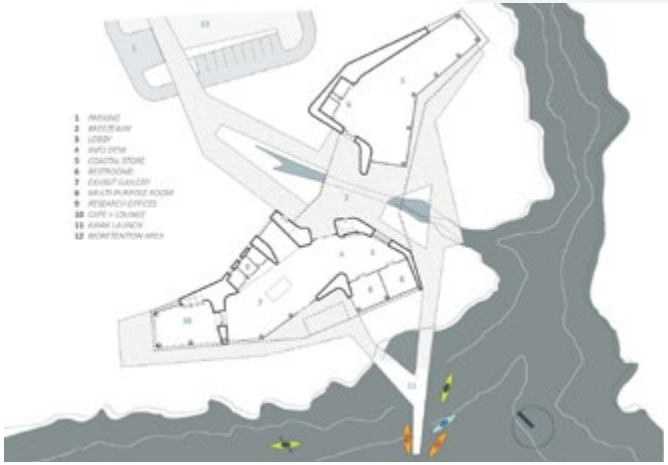
Resilient Materials

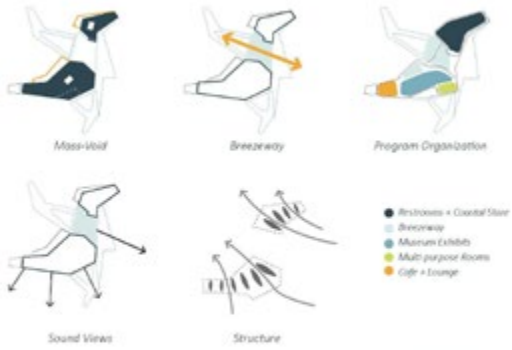
Connections to the Sound

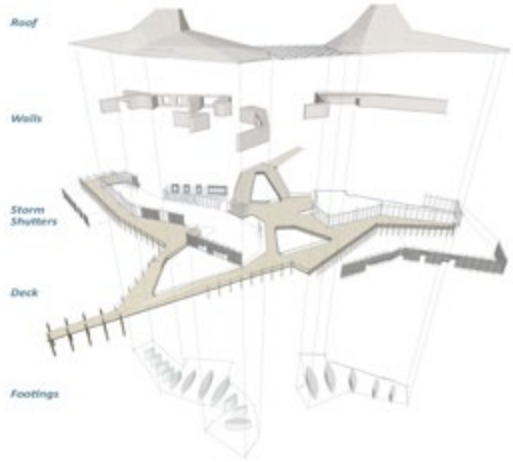
Project Team

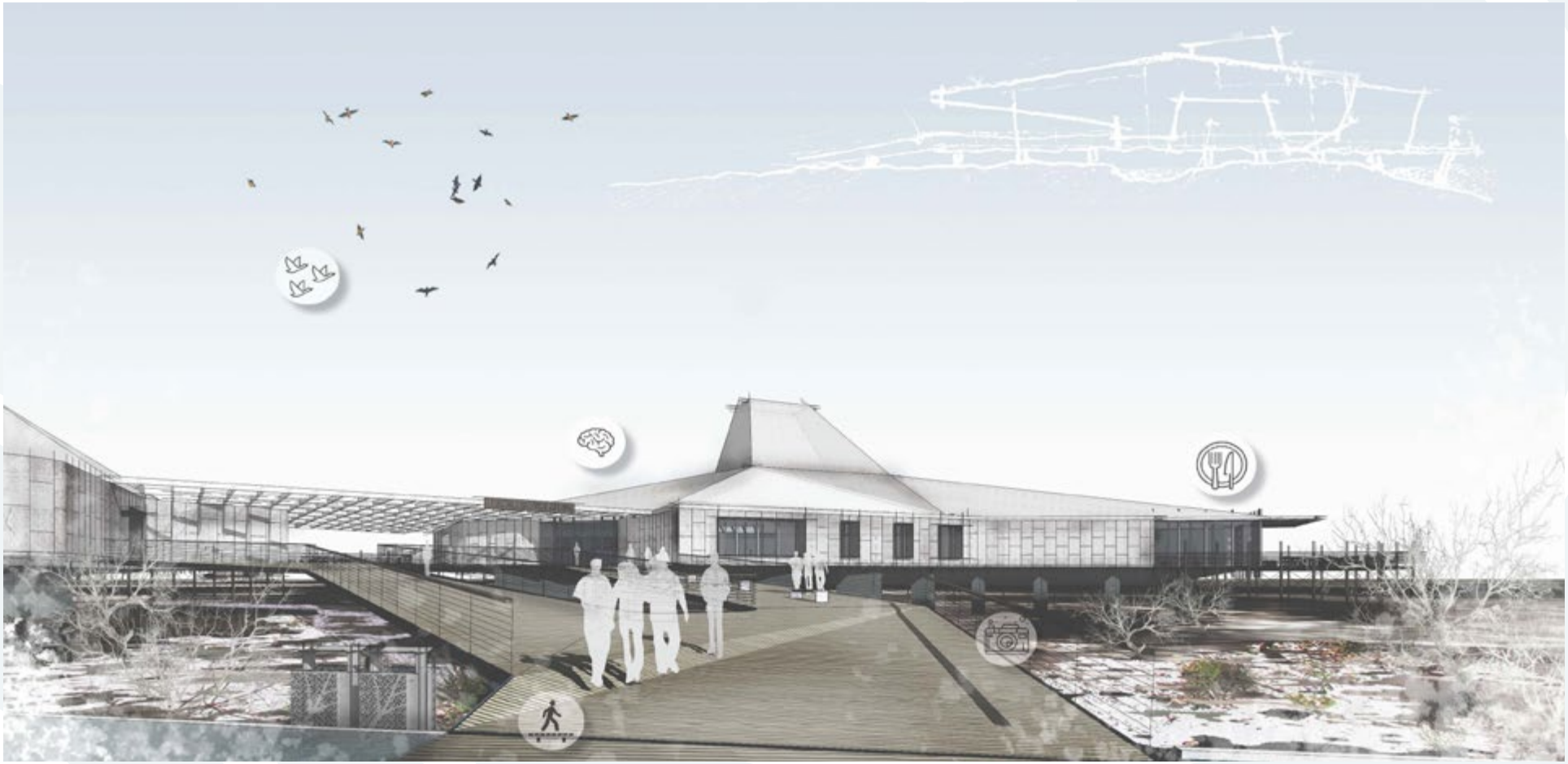
Ryan Cooper, Student AIA
Andrew Fox, FASLA, PLA, Faculty Advisor
David Hill, FAIA, Faculty Advisor

NC STATE Design









Building Organization, Components, and Entry Sequence

Water Renaissance

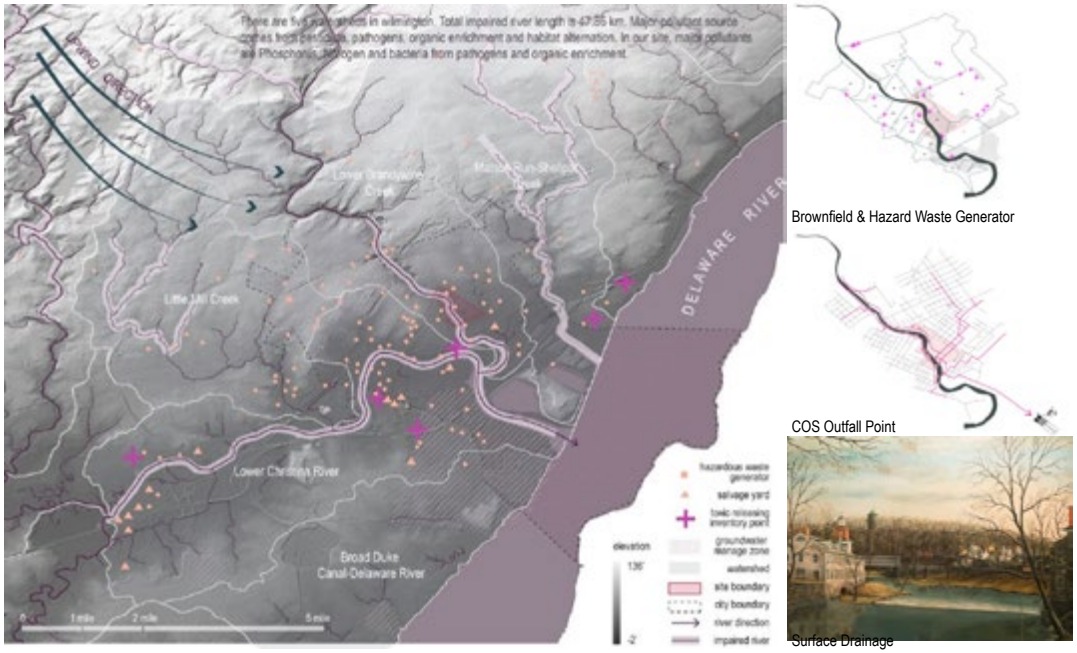
WILMINGTON, DELAWARE

BROWN-FIELD REVITALIZATION
FLOOD MITIGATION

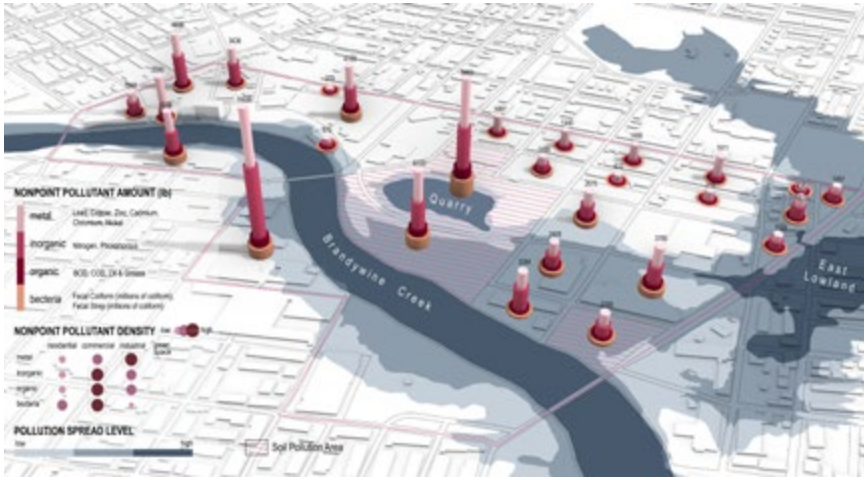
October, 2020

The project describes how we transform a riverfront brown-ield into a mixed-use developing community. The site is in Wilmington Delaware, separated with Downtown by the Brandywine Creek, about 130 acres with 25% vacancy and 60% flood-prone. It used to be an artist colony, the home of Brandywine School art illustration. Due to previous industrial development, it has been classified as one of EPA Program brown-fields left with vacant land threatened by flooding and impaired rivers. Thus, the goal is to revitalize the brown-field lot by bringing the art back to the land and also protect it from flooding and water pollution.

"The Brandywine" by Frank Jefferis
Source: t.ly/8quR



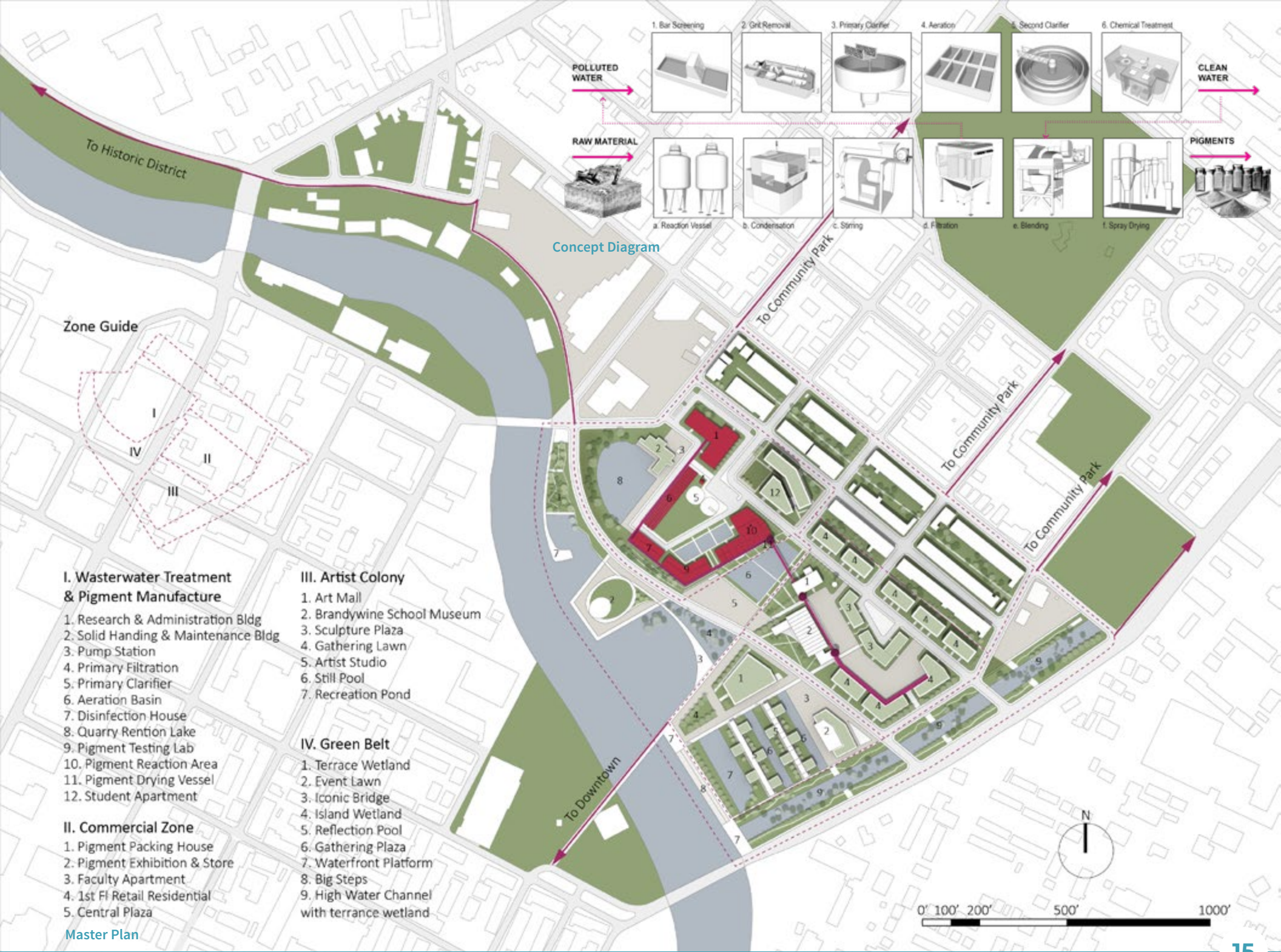
Problem Statement



Contamination Analysis

Site Introduction

Project Team
Wuqi Lyu & Zhenhang Cai, Author
Dr. Galen Newman & Dr. Jane Winslow, Instructor



Concept Diagram

Zone Guide

I

IV

II

III

I. Wasterwater Treatment & Pigment Manufacture

1. Research & Administration Bldg
2. Solid Handing & Maintenance Bldg
3. Pump Station
4. Primary Filtration
5. Primary Clarifier
6. Aeration Basin
7. Disinfection House
8. Quarry Rention Lake
9. Pigment Testing Lab
10. Pigment Reaction Area
11. Pigment Drying Vessel
12. Student Apartment

II. Commercial Zone

1. Pigment Packing House
2. Pigment Exhibition & Store
3. Faculty Apartment
4. 1st Fl Retail Residential
5. Central Plaza

III. Artist Colony

1. Art Mall
2. Brandywine School Museum
3. Sculpture Plaza
4. Gathering Lawn
5. Artist Studio
6. Still Pool
7. Recreation Pond

IV. Green Belt

1. Terrace Wetland
2. Event Lawn
3. Iconic Bridge
4. Island Wetland
5. Reflection Pool
6. Gathering Plaza
7. Waterfront Platform
8. Big Steps
9. High Water Channel with terrance wetland

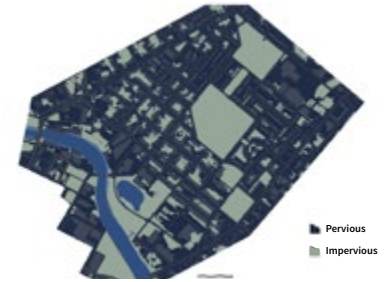
Master Plan

Northeast Neighborhood Master Plan

WILMINGTON, DE

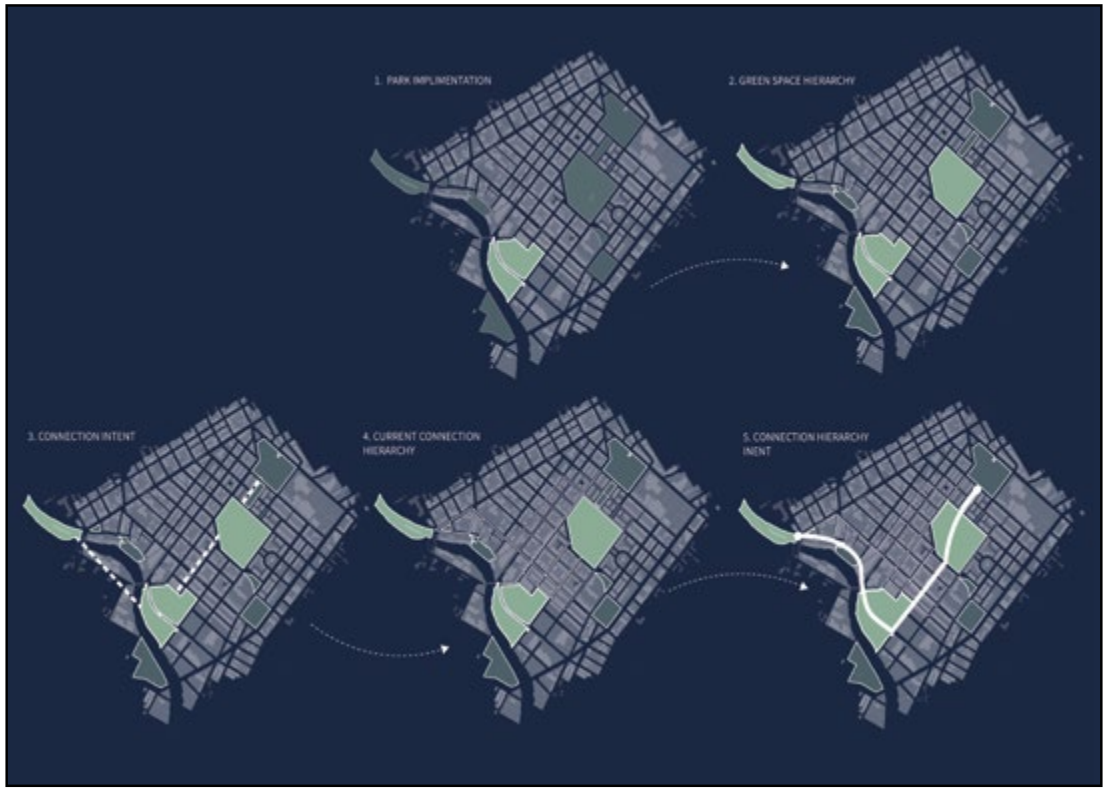
November 2020

Our goal is to create a fluid corridor between green spaces with the connection of anchor points. The anchor points being: a city planned recreational area between Pine St and Church St, the existing (the big park), and the intersection where N Market St and Brandywine Park starts. Now the city can take advantage of stormwater management tactics being implemented along the corridor. The use of these strategies control stormwater compared to the current state and beautify the Northeast.



Pervious Vs Impervious

Northeast Anchor

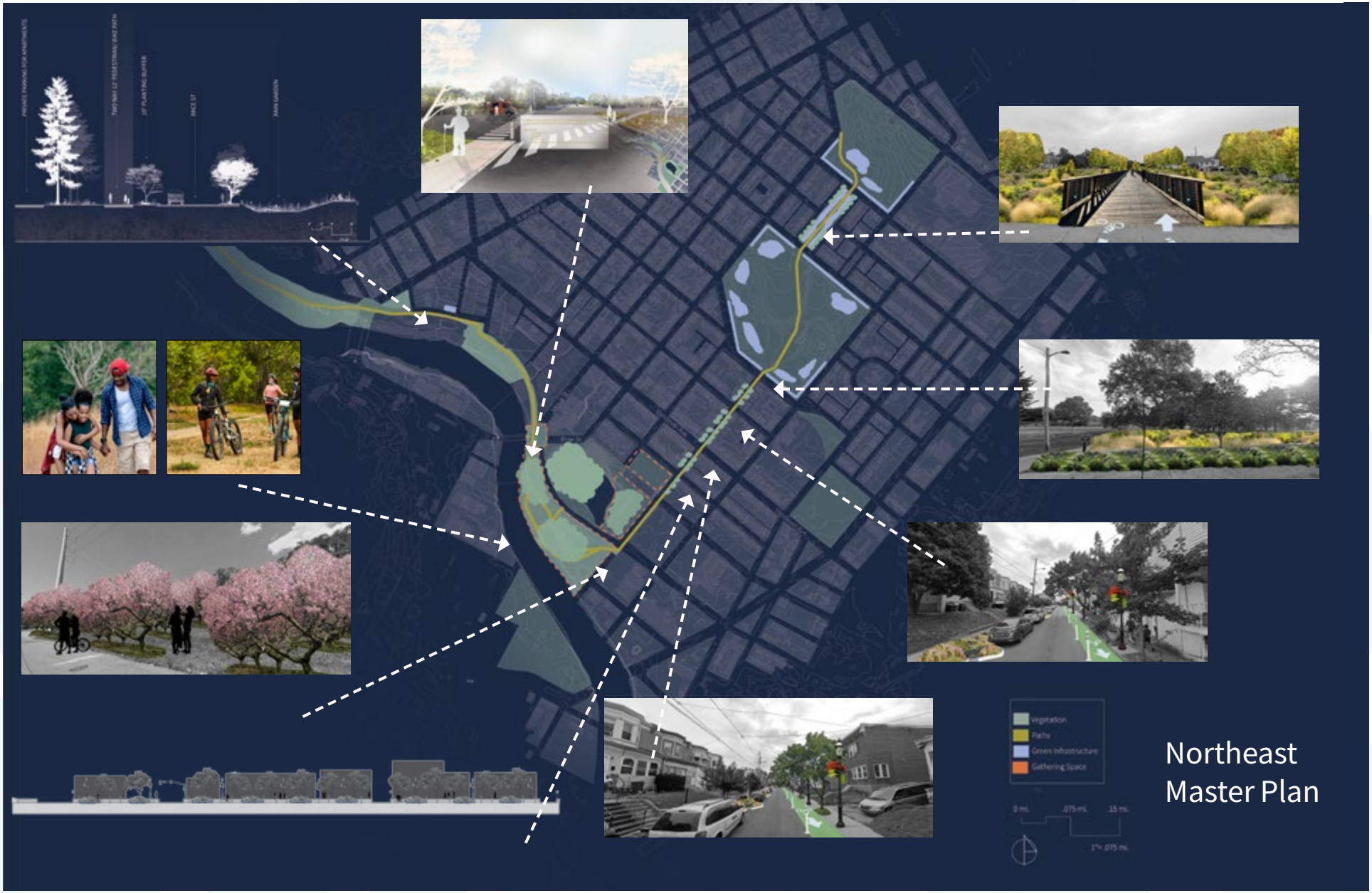


Northeast Connections

Over-arching Design Idea:
To provide a safe, green connection between Brandywine Park and the NorthEast through bike and walking paths that join existing anchor points to the proposed activity-oriented anchor at the waterfront.

Brandywine Waterfront Anchor

Project Team
Nick Bruce
Shirely Duffy
Chris Fettke von Koeckritz



Northeast Master Plan

Northeast Neighborhood Master Plan

WILMINGTON, DELAWARE.

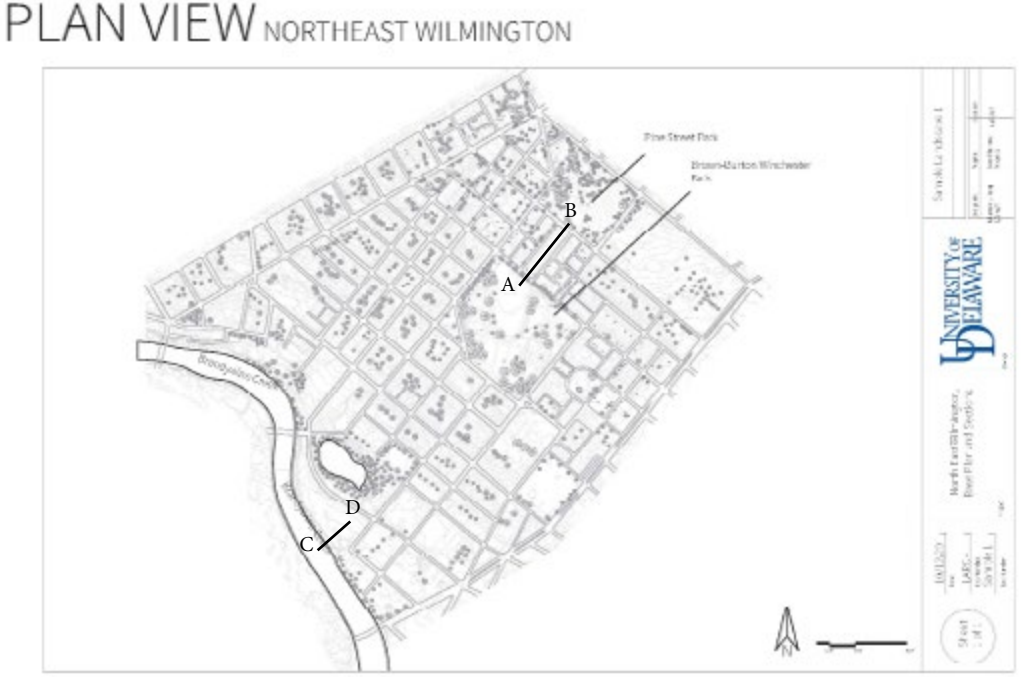
PUBLIC PARKS
GREEN INFRASTRUCTURE

November 2020

For this design proposal, we are focused on the Brandywine Creek contamination issues. Our objective is to establish a sustainable solution to solve this problem and mitigate[1] the contaminants entering the creek. When we were exploring the Northeast of Wilmington, DE, we came up with the idea to use green infrastructure to reduce pollution entering the Creek during storm events from the combined sewage system. Bringing the community together into our new spaces is also one of our priorities in this project based on the opportunity we have. To solve the problem of excessive overflow entering the sewage system we implemented measures including bioswales, meadows, rain gardens and subterranean stormwater retention systems. These systems thoughout the Northeast will capture thousands of gallons of yearly stormwater and allow it to infiltrate into the ground and reducing stormwater runoff. These natural systems will also provide wildlife habitat and a place for communities to gather.

SECTION CUT, A-B

SECTION CUT, C-D



PLAN VIEW NORTHEAST WILMINGTON

BROWN FIELD

PARK CONNECTION

Project Team
Qing Yuan
Anqi Zhang
Eduardo Limon


RESIDENTIAL
BUSINESS
BROWN FIELD
GREEN SPACE
SOCIAL SERVICES

Land Use

Northeast Neigborhood Master Plan

WILMINGTON, DE

October 2020

Our design aims to create an urban environment that decreases urban distractions, while increasing involvement in existing green spaces throughout the Northeast Neighborhood of Wilmington.

Concept diagrams that show immersion in nature

Urban distractions are defined as conditions that negatively affect the urban landscape in various ways, such as disruptive sounds, lack of space, and obstacles that hinder accessibility. By designing spaces that immerse residents in nature, these urban distractions will be camouflaged.

Concept section that shows connection through green infrastructure

Parti Diagram (N.T.S.)

These spaces will be connected by green infrastructure elements including bike lanes with permeable pavement and rain gardens.

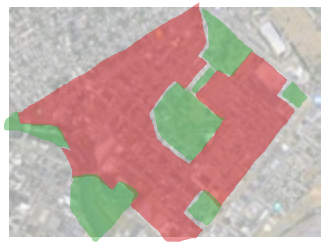


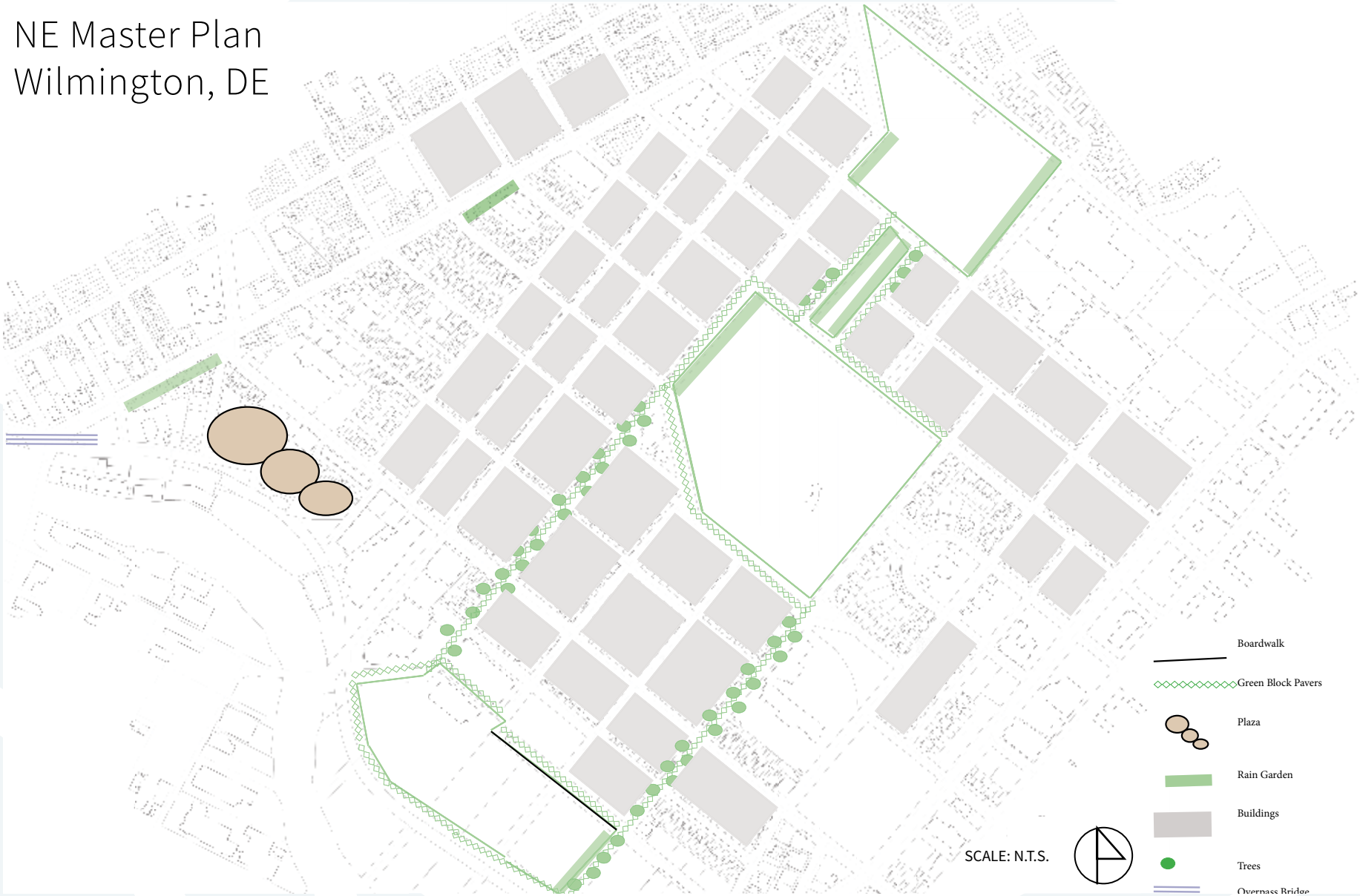
Diagram analyzing Space

Diagram analyzing Accessibility

Diagram analyzing Sound

Project Team
Amy Matusheski
Conner Graybeal
Kenly Velasquez

NE Master Plan
Wilmington, DE

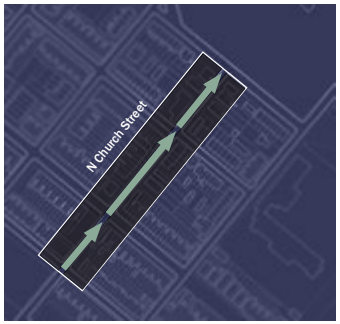


Northeast Master Plan

WILMINGTON, DE

October, 2020

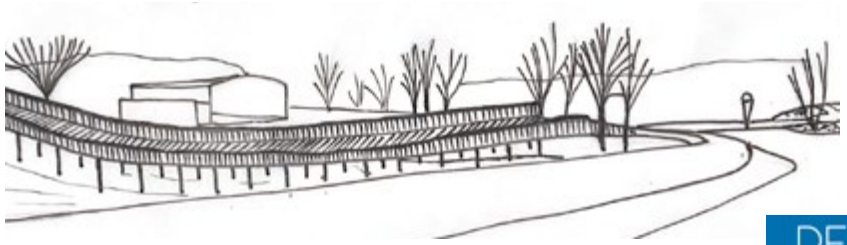
The inital interest was active vs. inactive spaces and what it means for a space to be “activated.” We investigated form, function, and social based activation throughout the Northeast which led us to create a system of activation within the NE boundaries. We approached this by activating the links between spaces that were identified as “inactivated”. The first of our three sites that we chose to focus on is the Brown-Burton Winchester Park and its relationship to Pine Street Park. Second, Church Street through the incorporation of green infrastructure and finally, the Brandywine Mills Park and its potential connection to the Boys and Girls Club site, through an elevated river walk. The intent of these designs is for the power and connection of active spaces to improve quality of life for the residents of the Northeast, and invites private sector investment to continue improving the quality of the urban landscape in Wilmington.



Traffic Patterns

Surface Conditions

Initial Parti Diagram: Showing Areas of Interest With Connections Before Broken Down



Elevated River Walk

Project Team
Cole Garrett
Austin Dill
Alex Hubler


Legend
Areas of Interest
Current Activated Spaces
Negative Spaces
Pine Street Park
E 28th St
E 26th St
Brown-Burton Winchester Park
Brandywine Mills Park
E 16th St
N Church St
H. Fletcher Brown Boys Club
1
2
3
Brandywine Mills Park
0
500'
1000'
1/1000" = 1'-0"
N

Master Plan

Northeast Wilmington

WILMINGTON, DELAWARE

CONNECTIVITY
PUBLIC SPACE
GREEN INFRASTRUCTURE

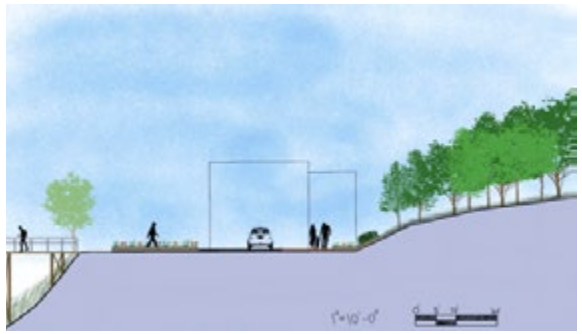
October 2020

This concept plan addresses the existing barriers, both physical and perceived, that are pervasive in the Northeast neighborhood of Wilmington, Delaware. Our team's design interventions reflect a goal to pierce through some of those barriers to create incremental and lasting change for the residents and stakeholders currently living and working in this neighborhood. Our recommendations seek to offer a different type of approach to economic redevelopment, designed to create an organic and positive outflow of community pride and reinvestment.

Spruce Street Concept Rendering

Spruce Street Section

16 th Street Gateway Plan



Gateway Section

Riverwalk Pedestrian Bridge

Project Team

Alec Betters
DJ Bromley
Leigh Muldrow

Church Street Green Infrastructure Plan