

From Waste to Wonder

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The Great Lakes are the world's largest surface freshwater system, containing approximately 21% of the world's surface fresh water supply. These expansive inland freshwater seas contain 84% of North America's surface freshwater and support a population of more than 30 million people.

Known as America's "Third Coast", The Great Lakes are an environmental treasure with a shoreline that measures over 10,000 miles. This vast freshwater network provides the Midwest with drinking water, food, economic opportunities and recreational activities, making it one of North America's greatest natural resources.

The Great Lakes Region was once the industrial core of the country, but as we know, the territory has suffered from deindustrialization, leaving these vast lakes lined with "Rust Belt" Cities that are scarred from shifting populations and industries that have migrated elsewhere.

From Waste to Wonder is an on-going design research studio that asks students to consider the architectural, cultural, economic and environmental issues tied to the wasted waterfronts of America's "Third Coast". Seen through an optimistic lens, these post-industrial environments present a tremendous set of opportunities.

Landscape Urbanism plays a major role in the way we understand and approach these urban issues. Students conduct intensive research at the start of the semester, producing a series of maps and infographics to better understand and explain the wasted waterfront conditions of The Great Lakes Region. Students work at a variety of scales as they explore ideas related to water remediation, urban vacancy and the reuse of urban infrastructure.

A series of precedents, from global to local are analyzed to understand how other designers have struggled with similar issues. Research and design focuses on hydrology, landscape,

ecology, infrastructure and urban form. Students are challenged to synthesize the information they obtain throughout the first half of the semester to develop creative design strategies at the intersection of architecture, landscape and infrastructure. Student design proposals transform wasted waterfronts into productive urban environments that remediate the post-industrial landscape, provide educational opportunities and reinvigorate "Rust Belt" Cities.

NOTE

1. "The Great Lakes." *EPA: The United States Environmental Protection Agency*. N.p., 23 Oct. 2015. Web.

106TH ACSA ANNUAL MEETING 2018 / The Ethical Imperative: Design Research in the Studio Context

Waste Mishwaukee Sloop Club + Club Inner Harbor, Milwaukee, WI

Start with the Right Context (How do you read the site?)

Historical Research

- 1830s - 1850s: Industrial Revolution
- 1850s - 1900s: Urbanization
- 1900s - 1950s: Industrial Boom
- 1950s - 1980s: Urban Decline
- 1980s - Present: Urban Revival

Site Context

- Waterfront
- Urban Core
- Industrial District
- Historic District
- Public Space
- Transportation

Physical Context

- Topography
- Vegetation
- Soils
- Water
- Climate

Historical Context

- Historic District
- Industrial District
- Public Space
- Transportation

Historical Research

- Historic District
- Industrial District
- Public Space
- Transportation

Waste Mishwaukee Sloop Club + Club Inner Harbor, Milwaukee, WI

Site of the Wisconsin State Fair (1900-1950)

Site Context

- Waterfront
- Urban Core
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- Historic District
- Public Space
- Transportation

Inhabiting Urban Ruins In Generative New Life Inner Harbor, Milwaukee, WI

Site Context

- Waterfront
- Urban Core
- Industrial District
- Historic District
- Public Space
- Transportation

Site Context

- Waterfront
- Urban Core
- Industrial District
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Contaminated Soil Mishwaukee Sloop Club + Club Inner Harbor, Milwaukee, WI

Soil Remediation and Site Reuse

Site Context

- Waterfront
- Urban Core
- Industrial District
- Historic District
- Public Space
- Transportation

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Phytoremediation Plant Species Study Inner Harbor, Milwaukee, WI

Phytoremediation: Plants that clean up soil and water pollution

Plant Species

- 1. Sunflower
- 2. Alfalfa
- 3. Barley
- 4. Clover
- 5. Dandelion
- 6. Fescue
- 7. Grass
- 8. Lentil
- 9. Lupine
- 10. Mung Bean
- 11. Pea
- 12. Radish
- 13. Soybean
- 14. Sunflower
- 15. Tobacco
- 16. Turnip
- 17. Wheat
- 18. Yarrow

Phytoremediation Mechanism Study Inner Harbor, Milwaukee, WI

Phytoremediation Mechanisms

Mechanism	Description	Plant Species
Phytoremediation	Plants absorb and store pollutants in their tissues.	Sunflower, Alfalfa
Phytodegradation	Plants break down pollutants into less toxic substances.	Barley, Clover
Phytovolatilization	Plants take up pollutants and release them into the atmosphere.	Dandelion, Fescue
Phytostabilization	Plants reduce the mobility of pollutants in the soil.	Grass, Lentil
Phytobioaccumulation	Plants absorb pollutants and store them in their leaves.	Lupine, Mung Bean
Phytoremediation	Plants absorb and store pollutants in their tissues.	Pea, Radish
Phytodegradation	Plants break down pollutants into less toxic substances.	Soybean, Sunflower
Phytovolatilization	Plants take up pollutants and release them into the atmosphere.	Tobacco, Turnip
Phytostabilization	Plants reduce the mobility of pollutants in the soil.	Wheat, Yarrow

Inhabiting Urban Ruins In Generative New Life Inner Harbor, Milwaukee, WI

Levels of Habitat | Remediation Timeline

ENVIRONMENT
Cut off the structure of materials from the site.
Plant / Some Animals / No Humans
Level of Remediation

REFERENCE
Add Post-Industrial for expanding the quality of air and water quality.
Plant / Animals / Humans or Visitor
Level of Remediation

ECONOMY
Sustainable development on site to create jobs and local economy.
Plant / Animals / Humans or Co-Habitants
Level of Remediation

FROM WASTE TO WONDER Research & Design Studio
Re-Inhabiting the Ruin by Graduate Student Rachel Mornenee