



Leveraging Water-Based Infrastructure to Maximize the Restoration of Coastal Ecosystems

Mark O'Leary, JJR

mark.oleary@jjr-us.com

Engineering with Nature: Designing Navigation
Infrastructure for Greater Environmental Sustainability

September 7-8, 2011

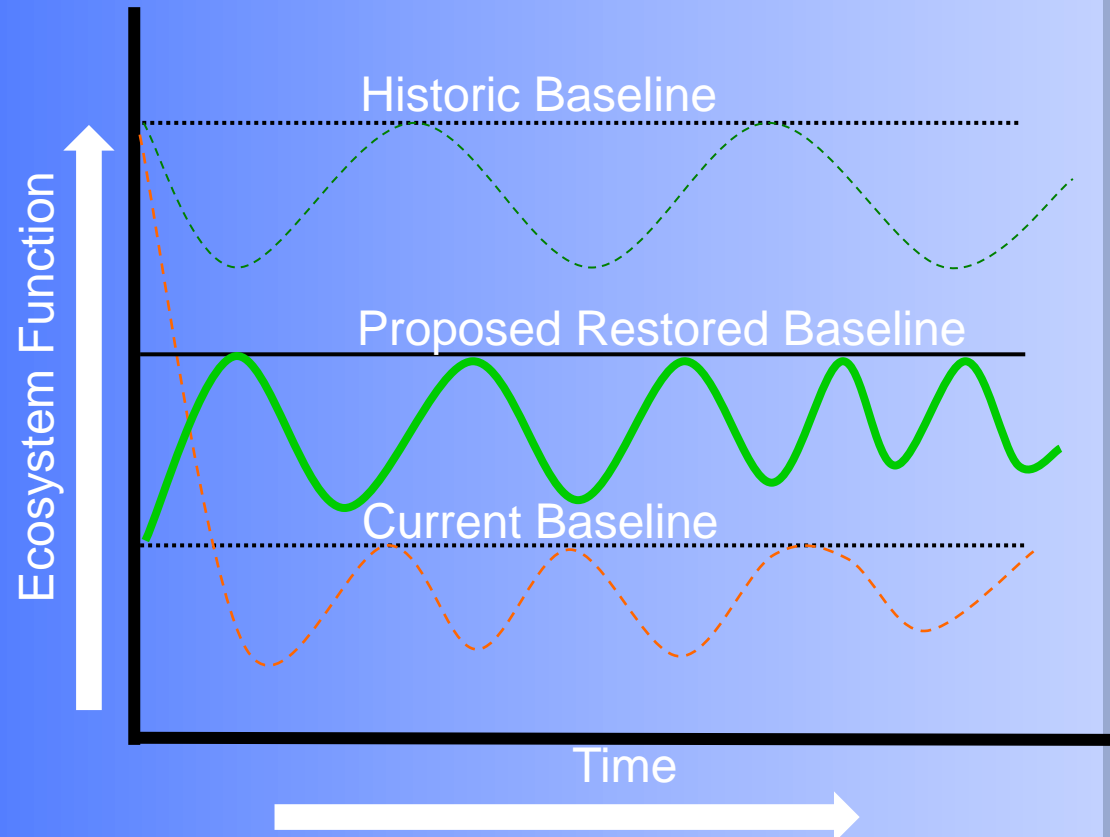
Presentation Framework

- Background
- Process
- Projects
- Conclusion



Sustainable, Functioning Landscapes

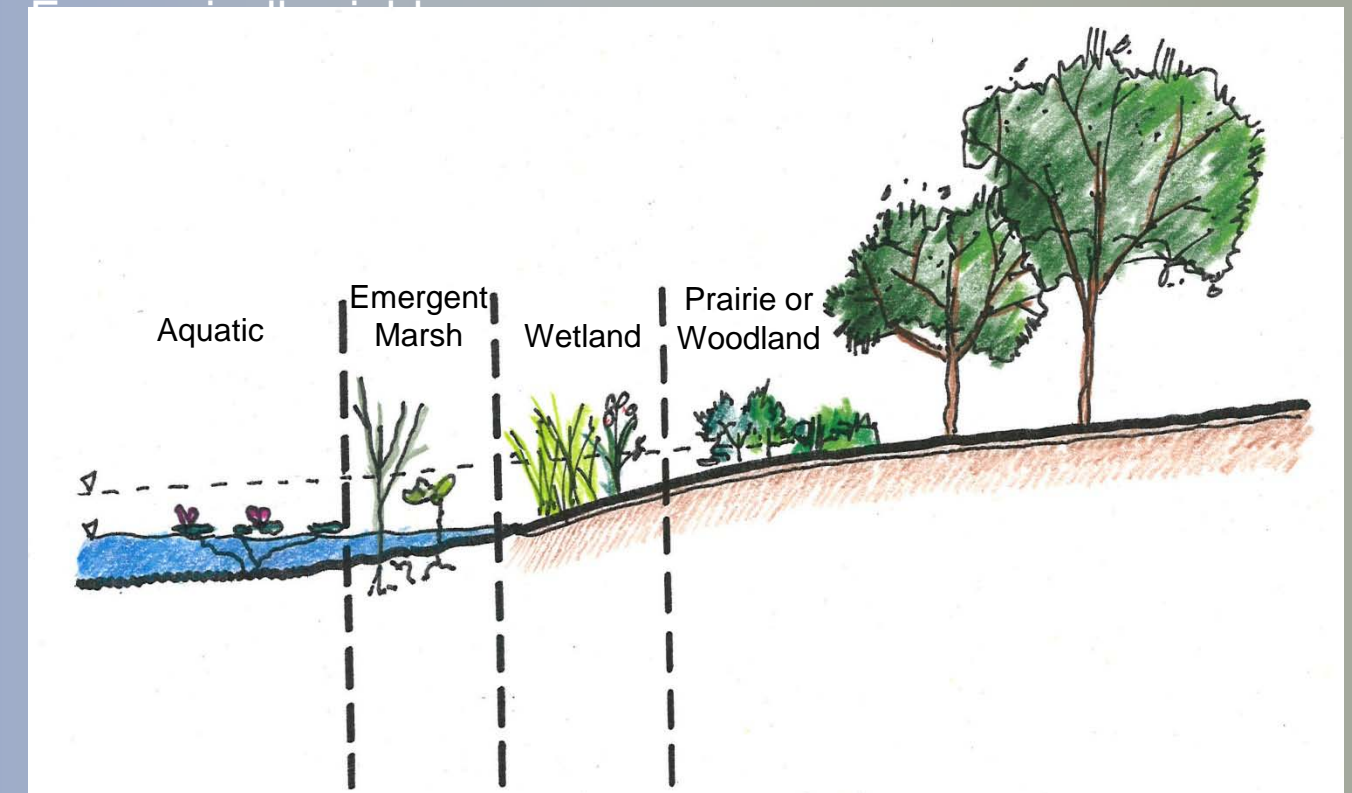
- Flood Control
- SW Conveyance
- Water Quality
- Nutrient Cycling
- Habitat
- Biodiversity
- Soil Stability
- Food Production
- Spiritual
- Recreational
- Educational



...Are Landscapes that Work . . .

At least maintain (hopefully improve) the ecosystem functions (or work) of the landscape relative to a specific baseline

Provide for the needs of the human community



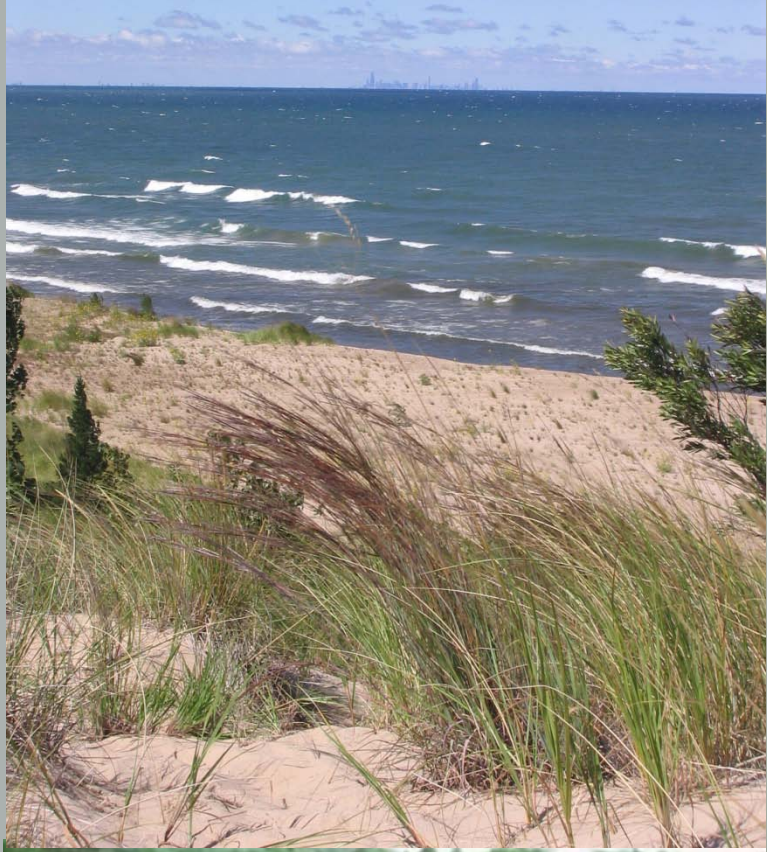
SURFACE DEPOSITS IN THE CHICAGO WILDERNESS REGION

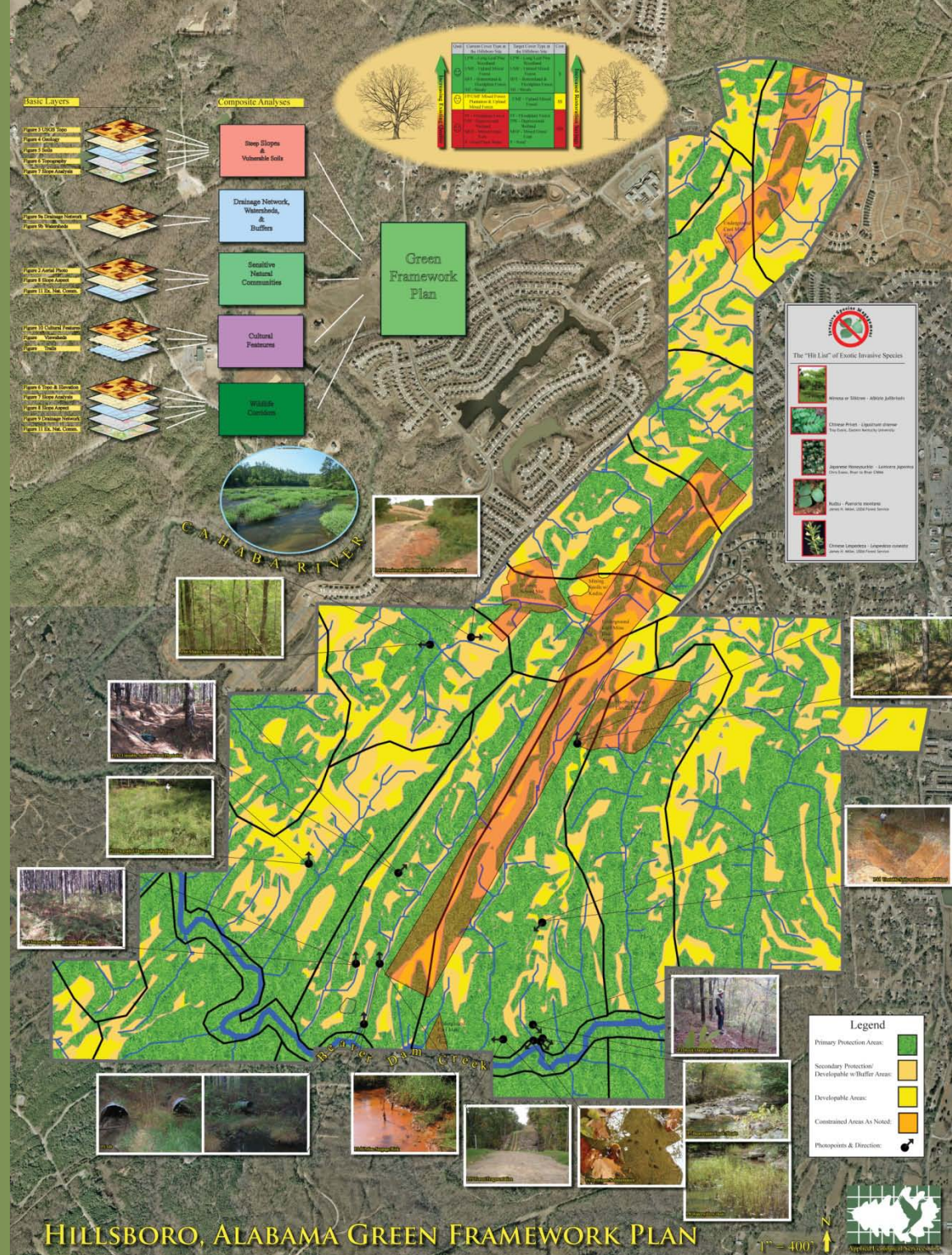
SOILS FORMED UNDER PRAIRIE GRASSES

- DARK SOILS IN GLACIAL TILL
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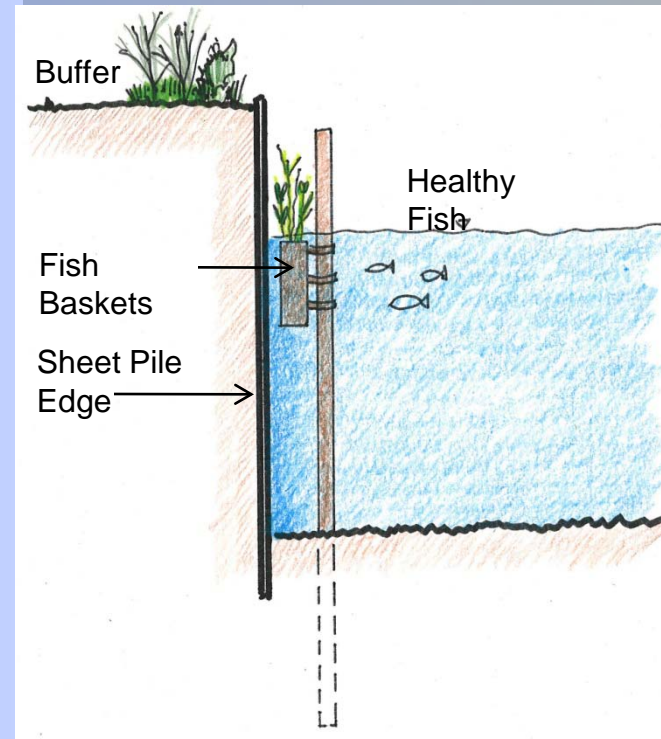
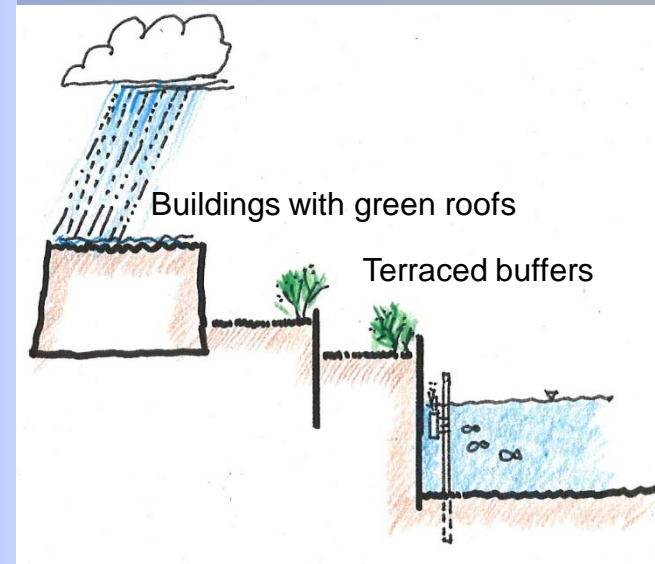
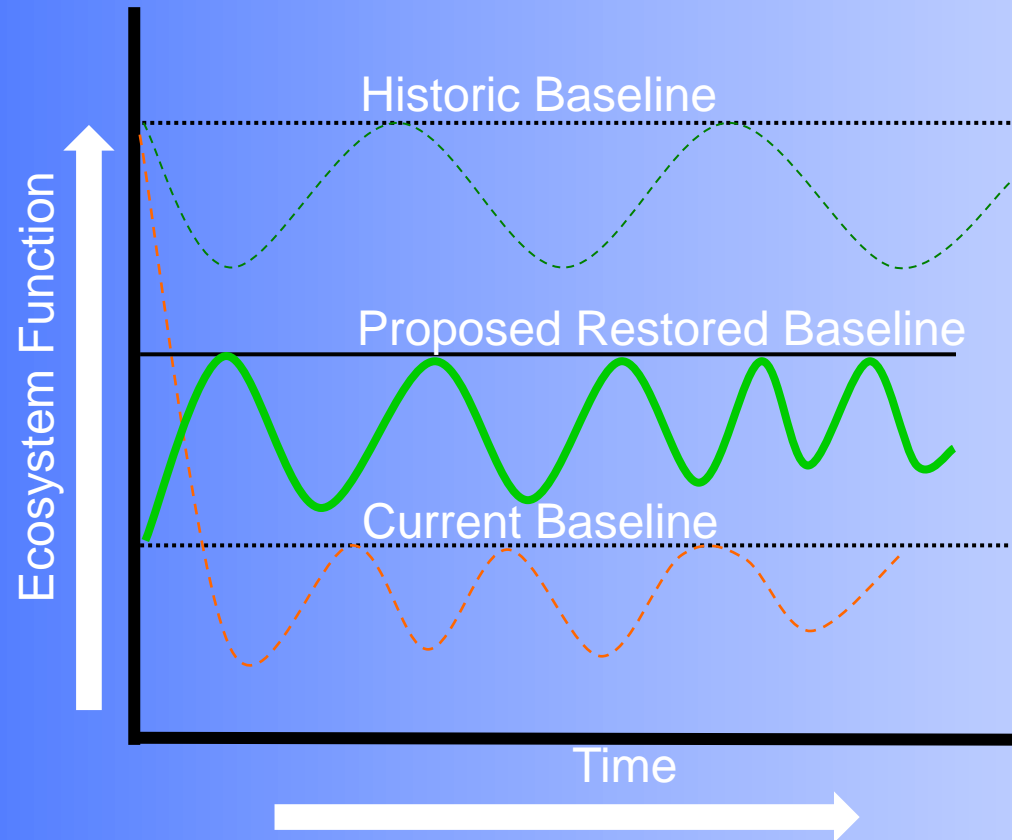
How does the Milwaukee Inner Harbor size up?

- Active, working harbor
- Contaminated soils (our site is an AOC)
- Sheet pile walls
- Dredging for maintenance and remediation
- Tributaries are mostly hardened and channelized
- Wave action through port traffic and seiche
- One wetland
- CDF used by birds



What can we do here?

- Flood Control
- SW Conveyance
- Water Quality
- Nutrient Cycling
- Habitat
- Biodiversity
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William G. Milliken State Park and Harbo



Recycling on a 476-acre scale.

From a Great Lakes Marsh
to Farmland Back to Natural,
Self-Sustaining Wetlands



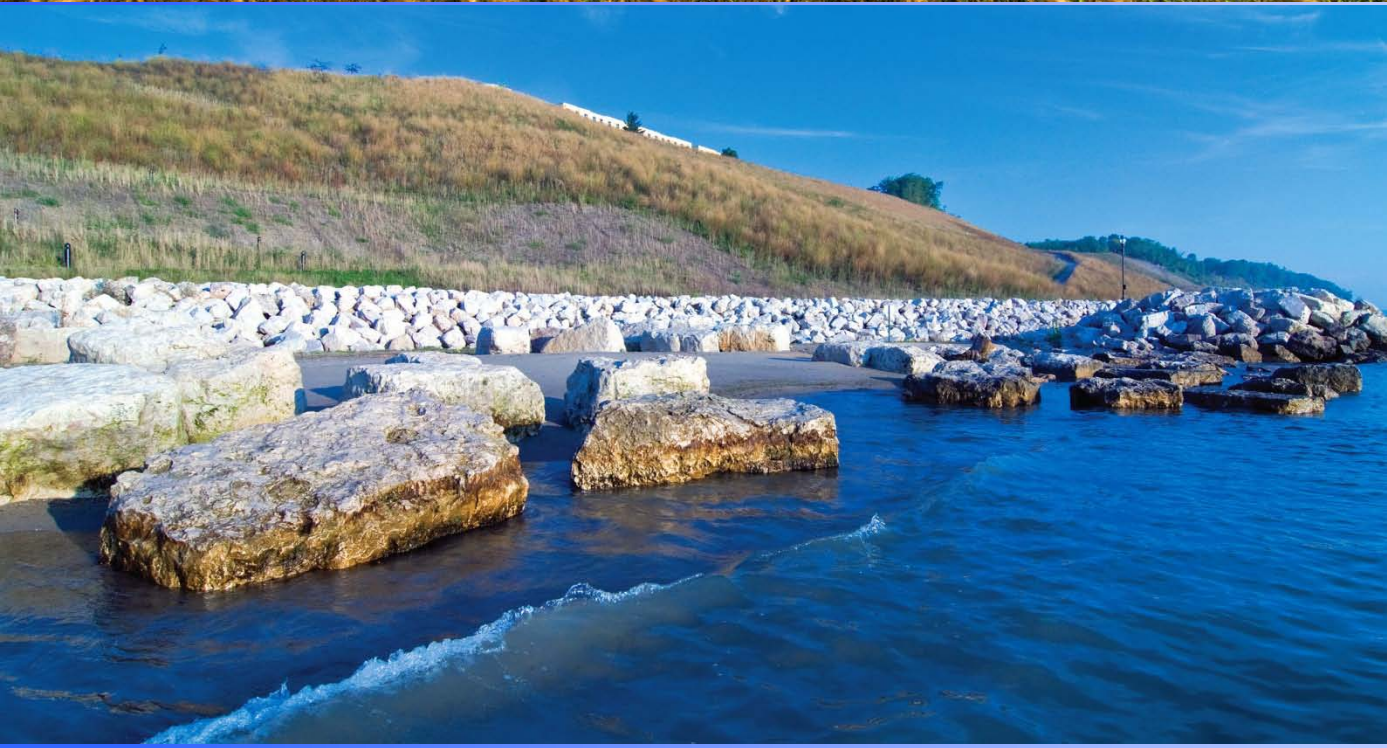
Beauty is in the Eye of...the Jury.

JJR

.....
“Crosswinds Marsh is a living demonstration that landscape architecture can reconcile the seemingly competing goals of economic development and ecological integrity.”

ASLA President's Award
Jury Comments





The Kinnickinnic River Restoration, Milwaukee's "Lost River"



Pre-concrete: 1960



Today

The Neighborhood: An Historical Melting Pot



Kinnickinnic River Corridor Neighborhood Plan





Northerly Island

Team Northerly

Chicago Park District

JJR

Studio Gang

AES

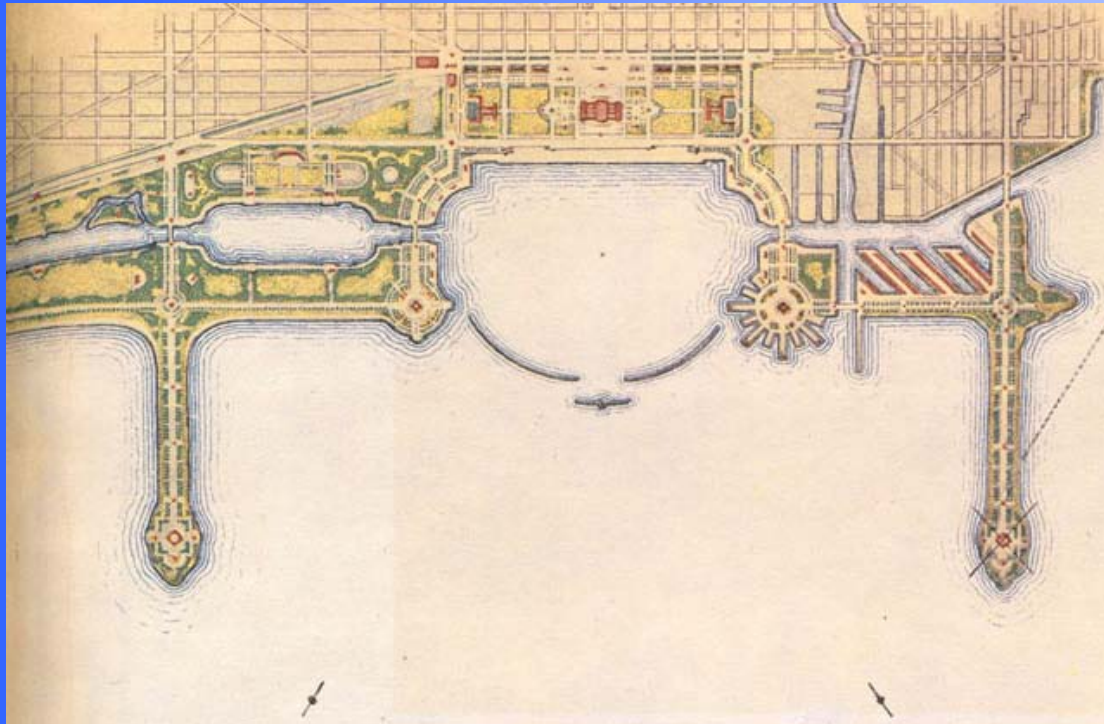
AREA

Fish Transportation Group

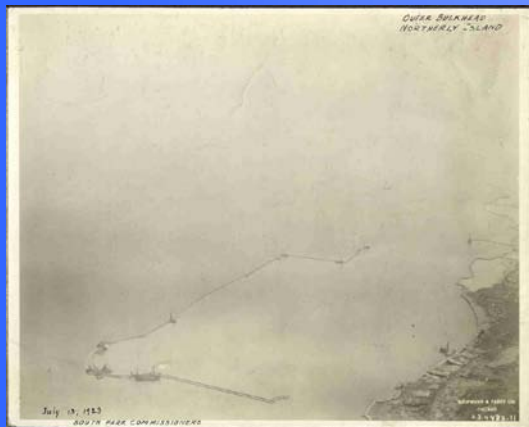
Studio V



History



Plan of Chicago (Burnham-Bennett) - 1909



Northerly Island - 1923



Northerly Island - 1929

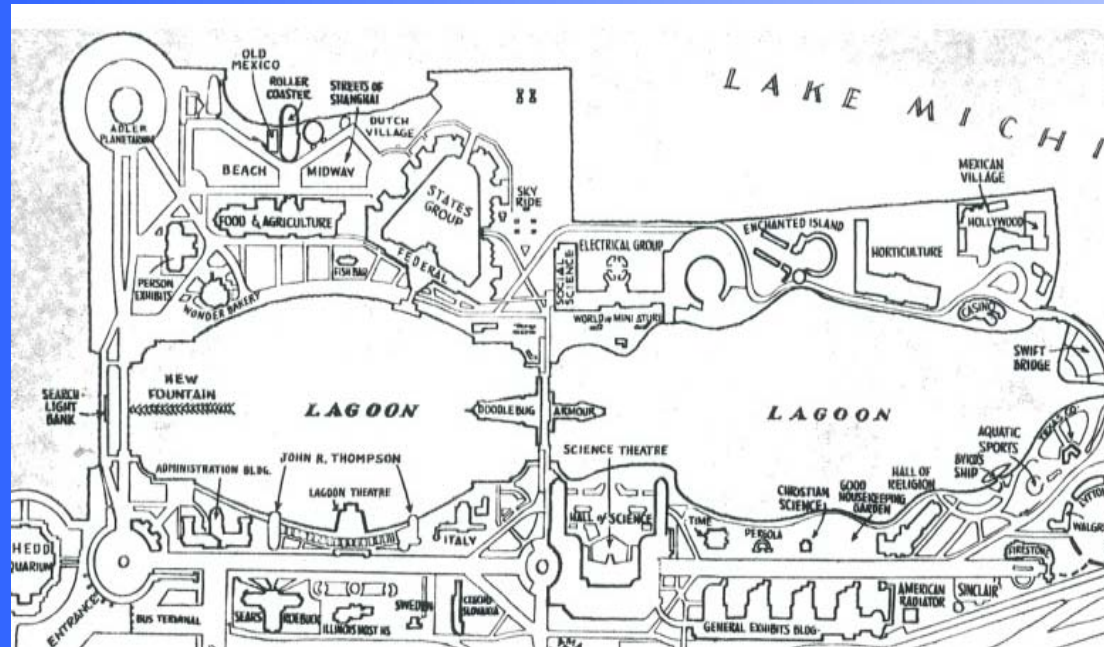


World's Fair- 1933

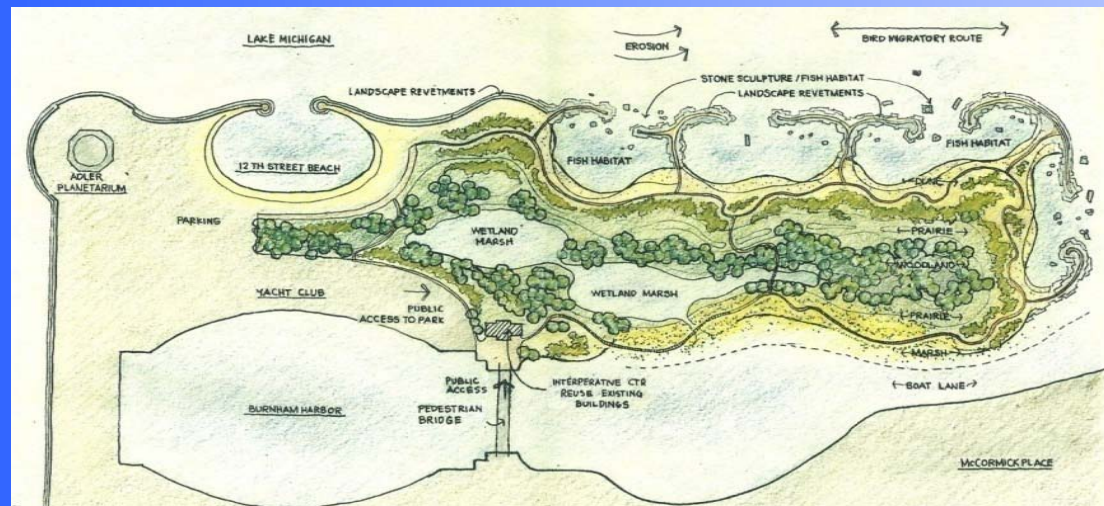


Meigs Field

Dreams



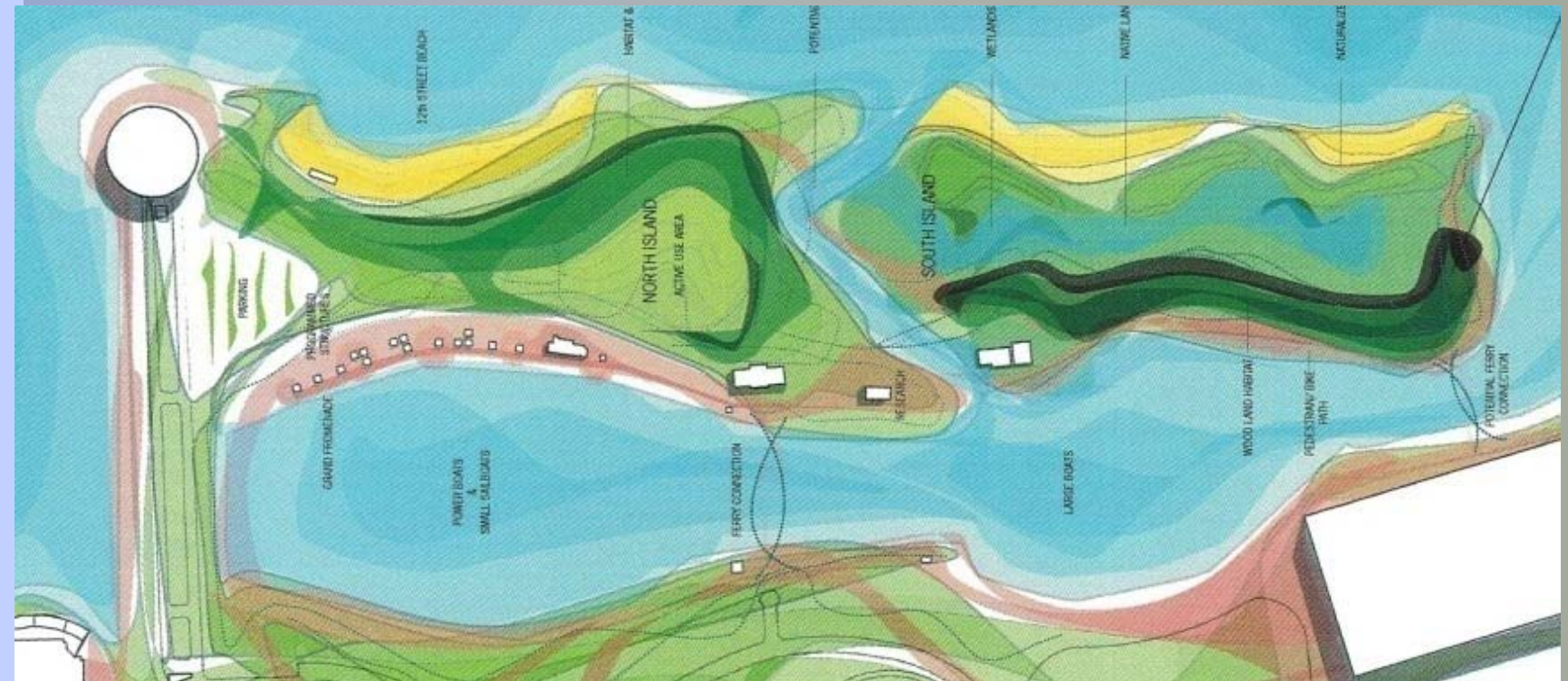
1933 World's Fair Plan



Lake Michigan Federation proposal 2004



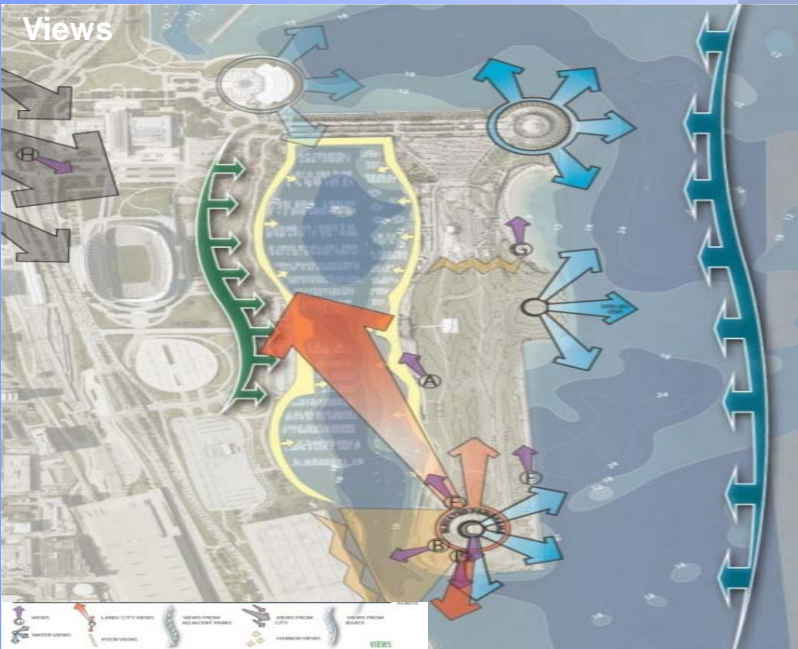
Teng proposal, 1996



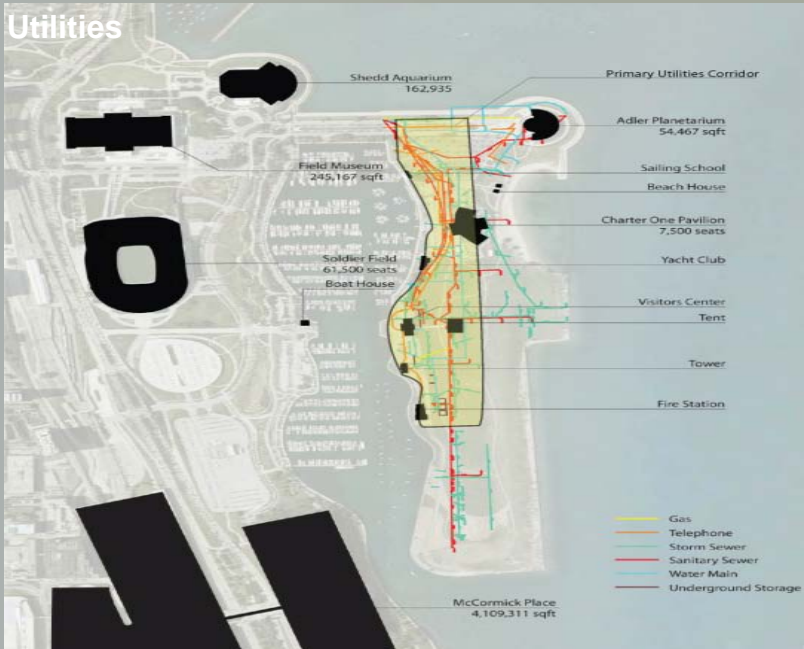
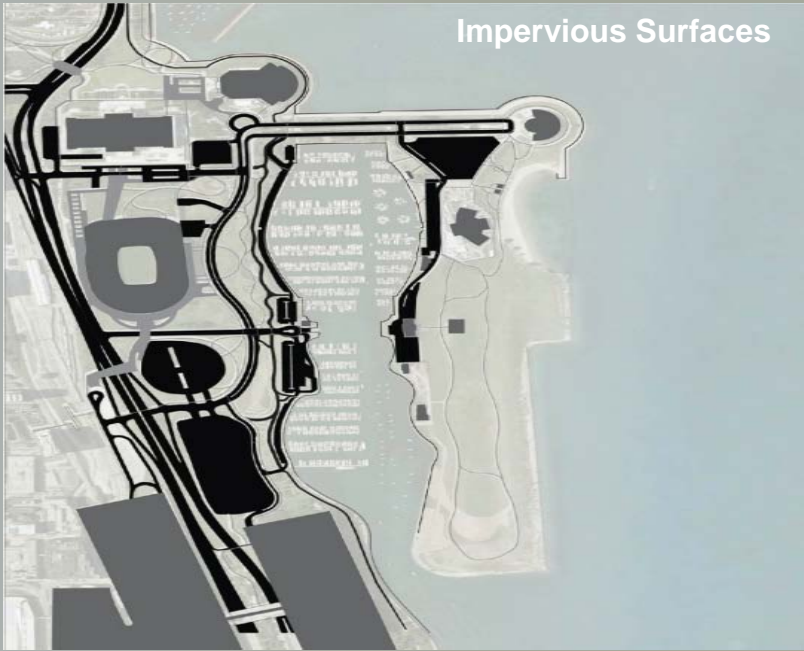
Alliance for the Great Lakes proposal 2005

Analysis

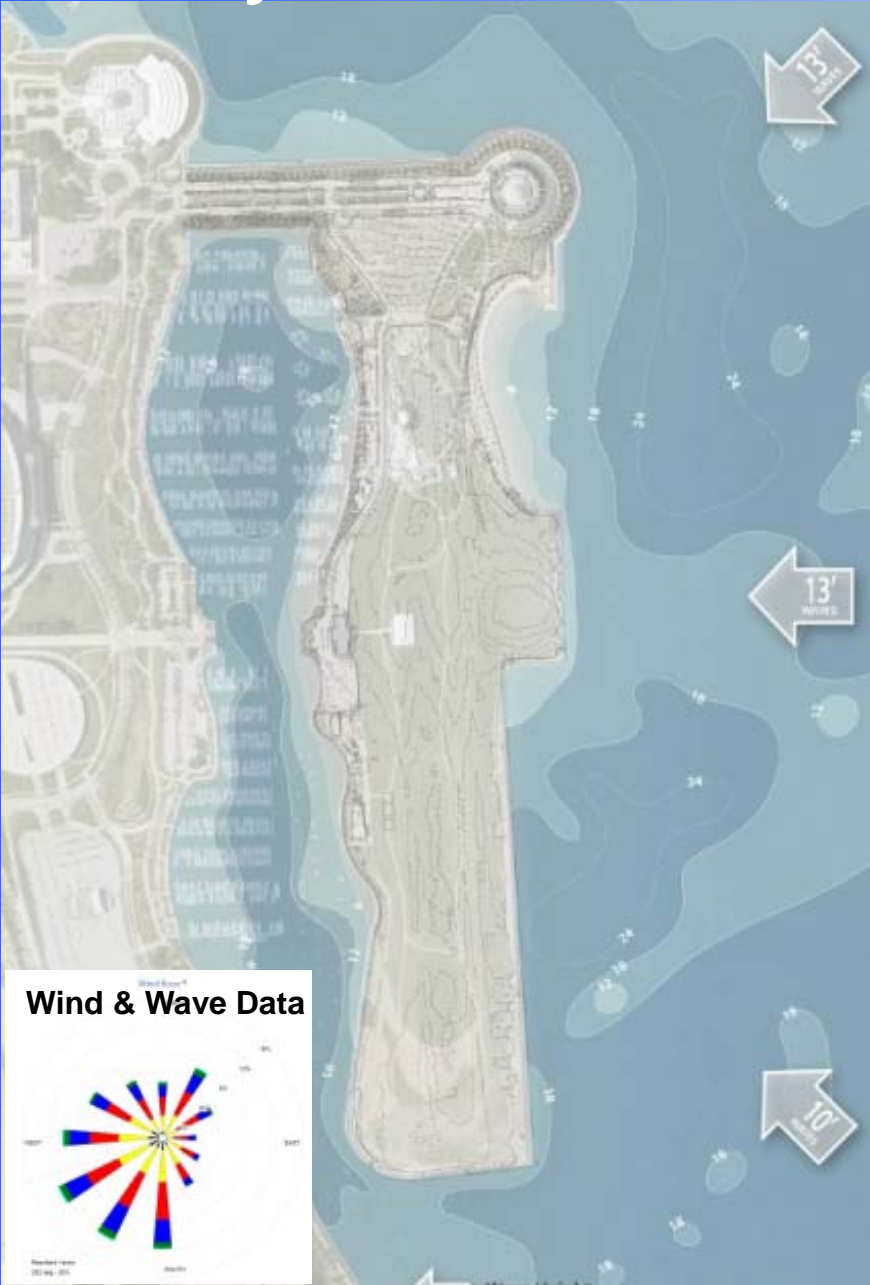
Natural Environment



Built Environment



Analysis



Coastal Environment



Shoreline Condition



Buildings and Infrastructure

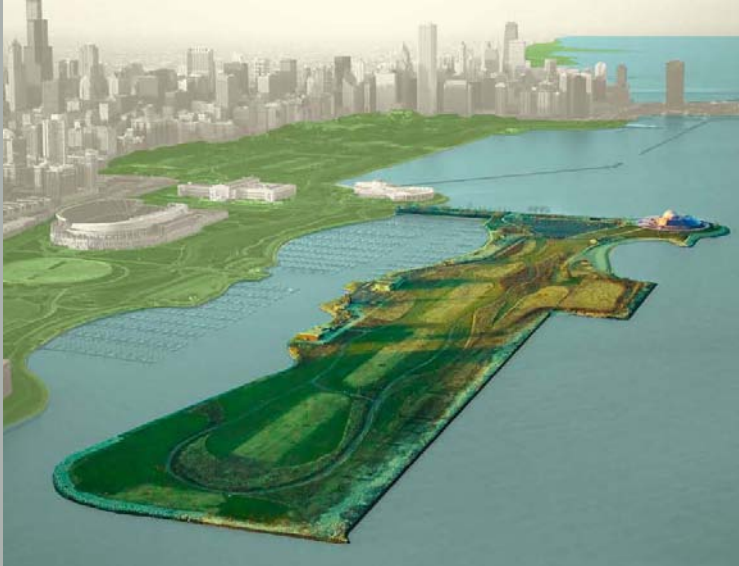
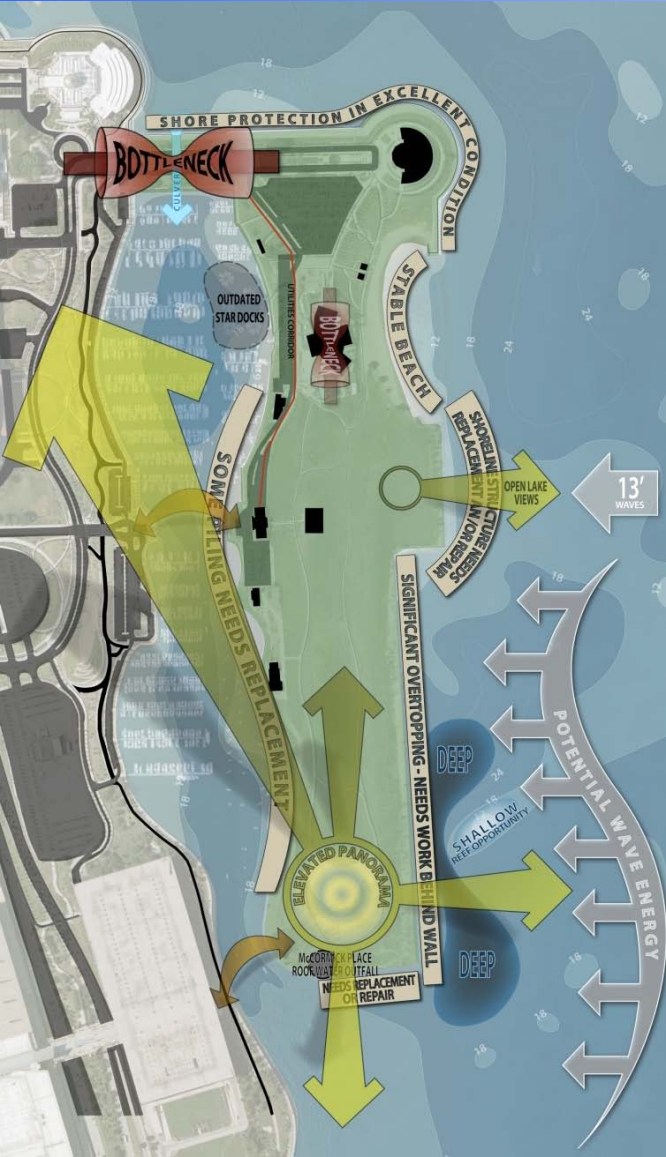


Trails



Access, Circulation & Parking

Analysis



Influences, Opportunities & Constraints

Analysis



Natural and Urban Influences



Basic Elements

topography



edges



habitats



sustainability



Basic Elements



discovery



activities

Opportunities For New....



connections



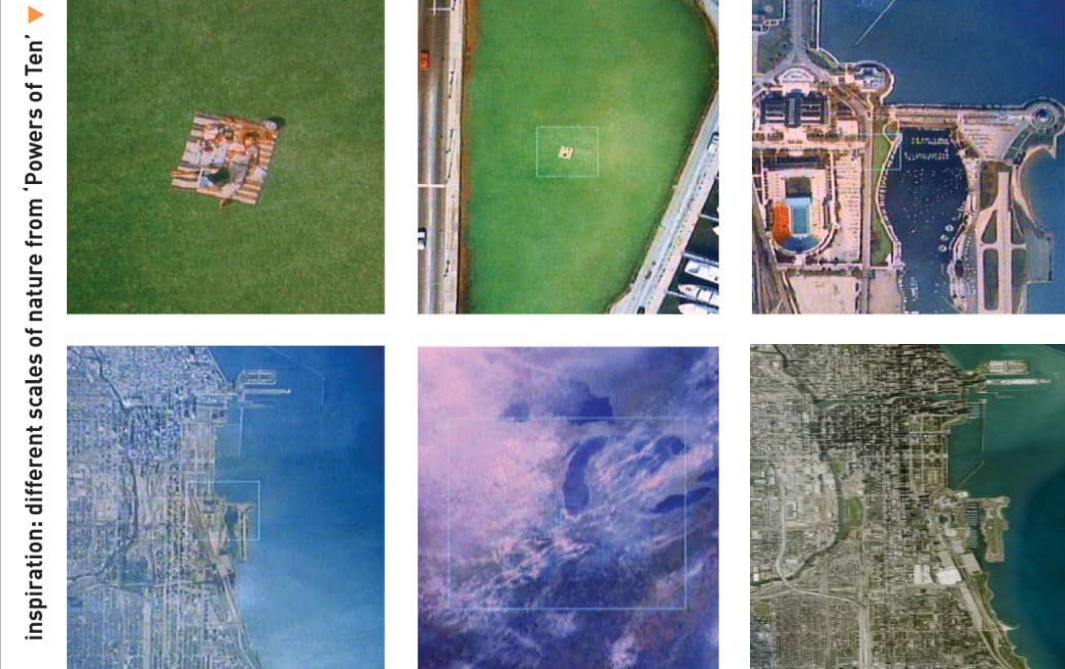
attractions

Ideas and Inspirations



Clocks

Reef



Viewfinder

Chicago

Ideas and Inspirations

Clocks



Reef



Viewfinder



Chicago



Community Input

Summary of Findings

A significant preference for the “**Reef**” diagram in all exercises.

A strong preference towards a high-quality and **unique habitat** and a generally passive and natural focus for the park.

Significant **negative feedback on the “Chicago”** diagram and overly “designed” elements.

A desire for **topography and landforms** as integral design elements.

Minimal support for new internal waterways, especially if used for active boating.

Minimal support for adding new cultural attractions or built facilities and minimal support for historic preservation or adaptive re-use of the former terminal building and other airport-related structures.

Significant support for clustering of the most active elements at the north end of the park, with a desire to keep the **southern portion more quiet and natural**.

Lack of support for **new or enhanced bridges**.

A general desire to **minimize parking on the island**. Equal feedback for and against concealed structured parking at the north end.

A desire for diversifying means of access with an emphasis for **non-motorized transportation**.



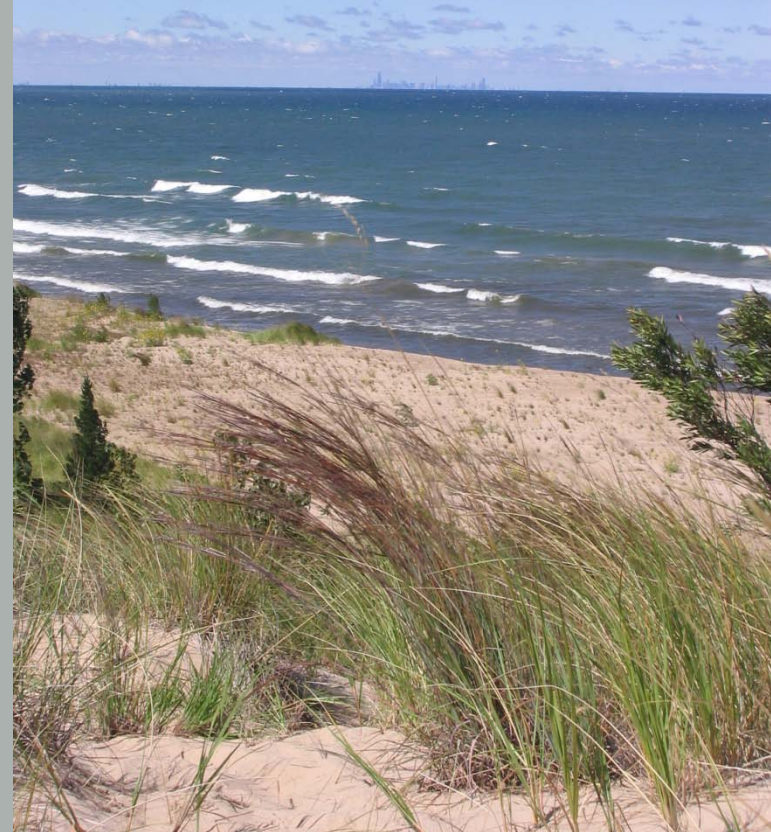
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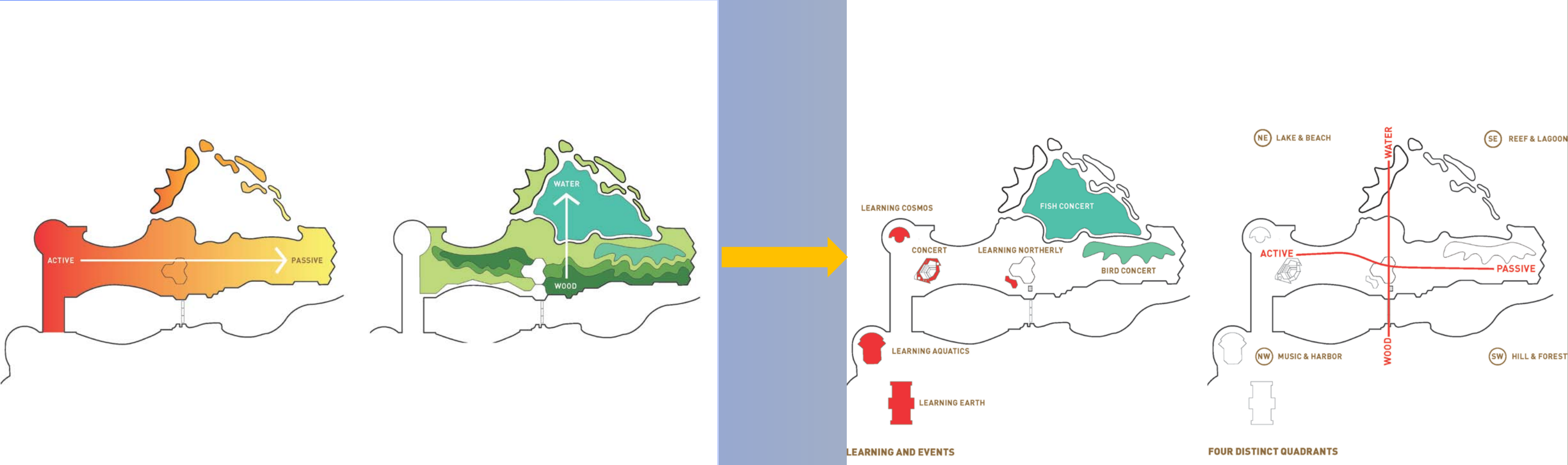
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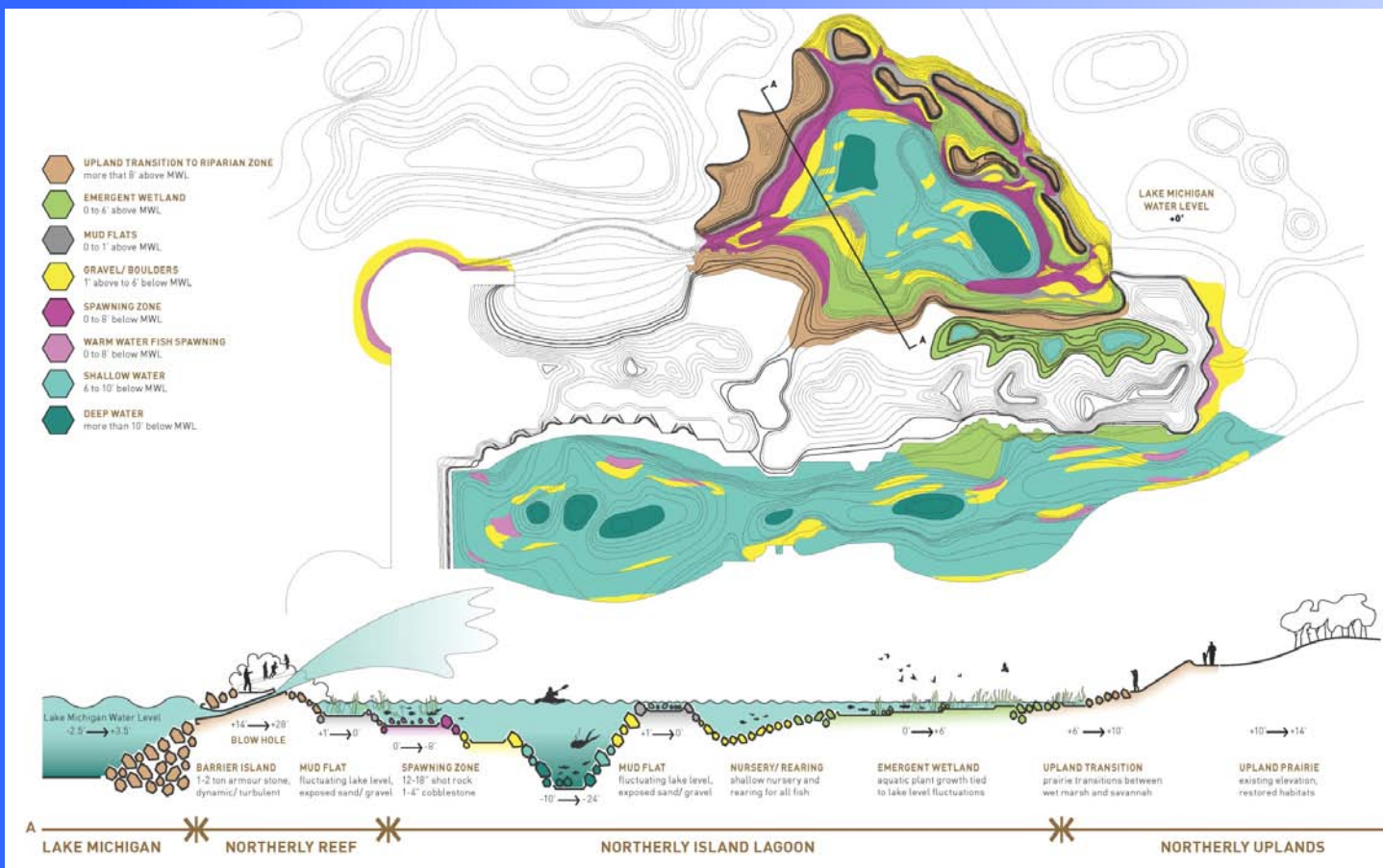
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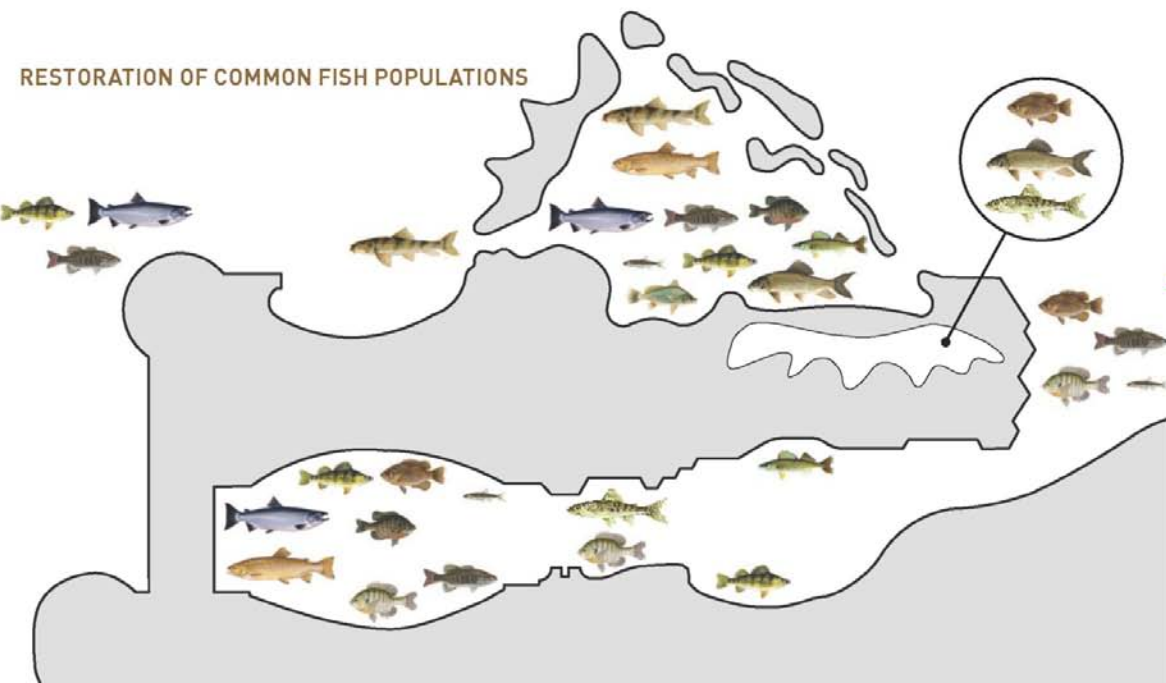
Natural Resource Framework



Natural Resource Framework

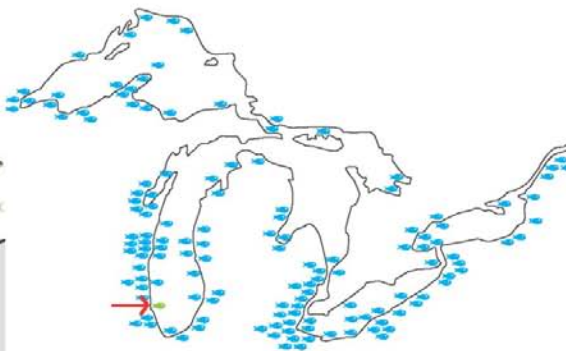


RESTORATION OF COMMON FISH POPULATIONS



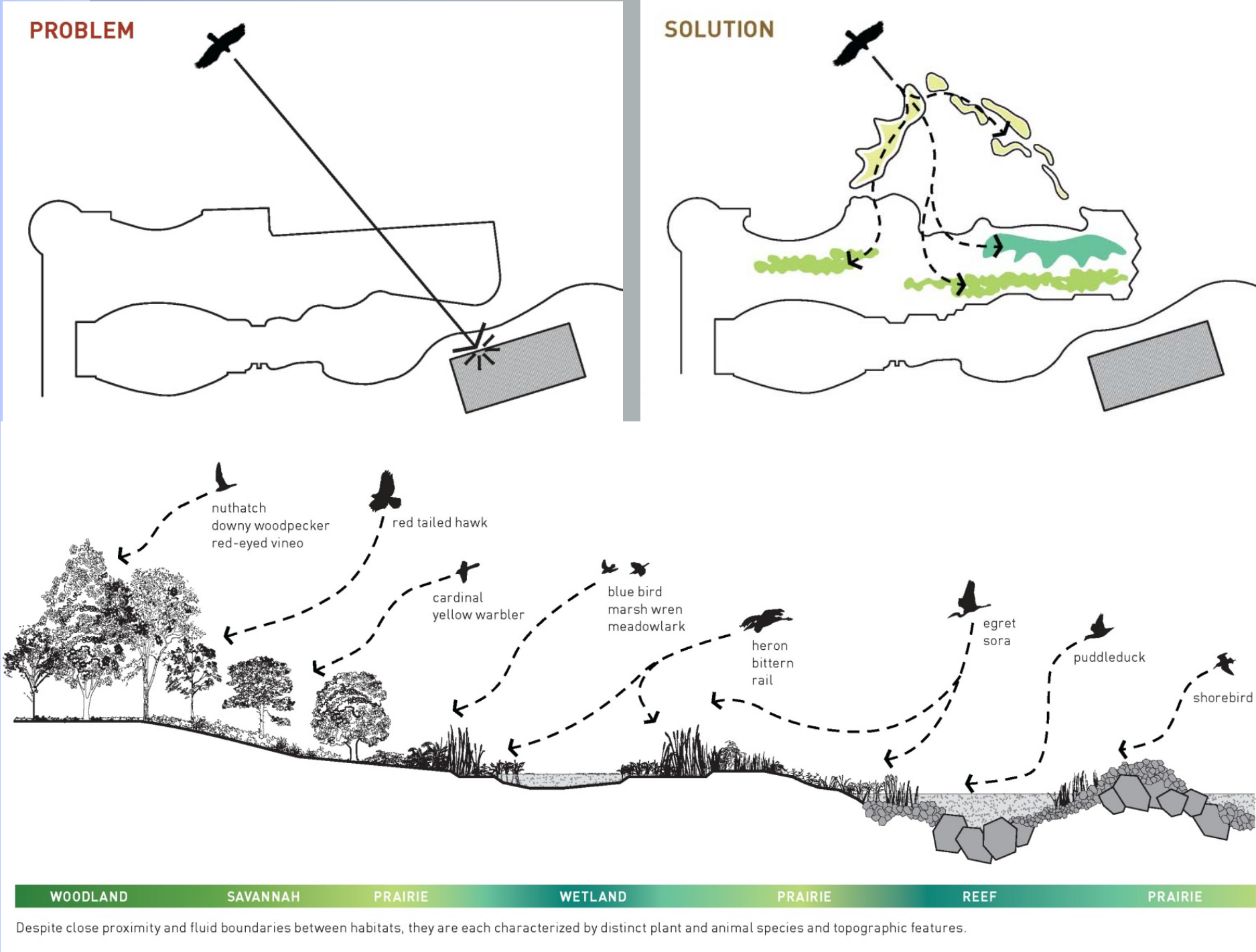
RESTORATION IN THE GREAT LAKES

Northerly Island is part of a larger effort to restore native fish population and habitat in the Great Lakes (fish in lake) and their watershed (fish on land).

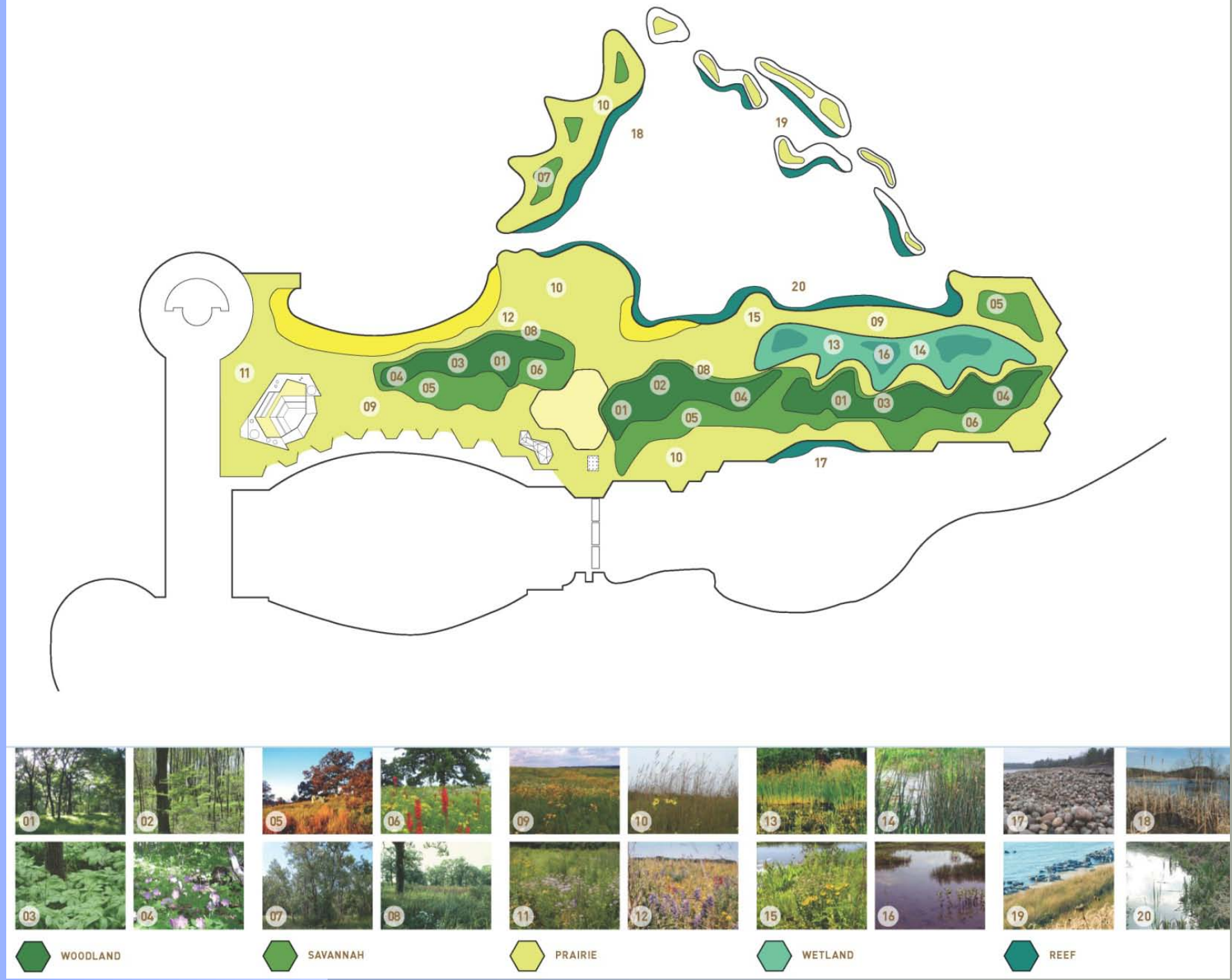


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|-----------------|------|---------|-----------|----------|-----------------|--------------|----------------|--------------|-------------|-------|-------------|-----------------|
| | | | | | | | | | | | | |
| Largemouth bass | Drum | Walleye | Rock bass | Bluegill | Silver redhorse | White sucker | Emerald shiner | Yellow perch | Coho salmon | Panic | Brown trout | Smallmouth bass |

Natural Resource Framework



Natural Resource Framework







Amphitheatre



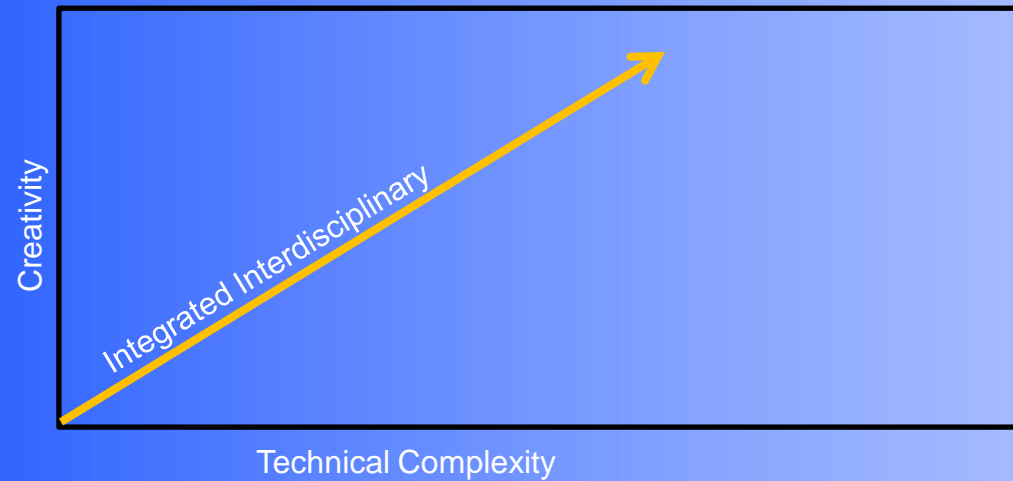
Ecological Design Guidance

- A functioning landscape is a landscape that works
- Let nature be your guide and inspiration
- Integrate ecology at the beginning, the middle, and the end
- Need an ecologist on the team
- Keep your boots in the water



Integrated Interdisciplinary Team

Chicago Park District
JJR
Studio Gang
AES
AREA
Fish Transportation Group
Studio V



At the end of the day



- Flood Control
- SW Conveyance
- Water Quality
- Nutrient Cycling
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