

ALGOMA HARBOR BREAKWATER REPAIR PROJECT

02 March 2023



US Army Corps
of Engineers®



AGENDA



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INTRODUCTIONS



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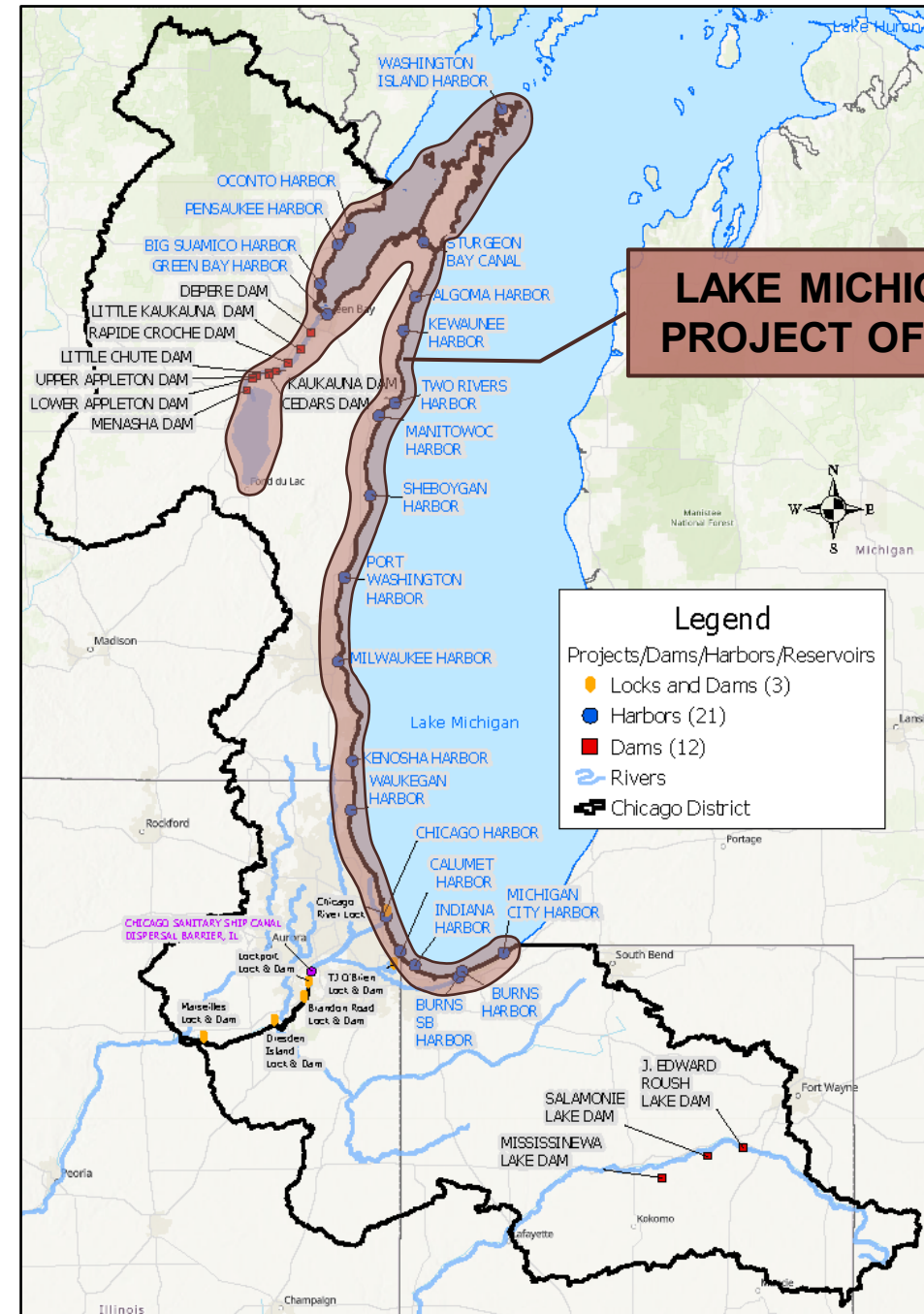
CHICAGO DISTRICT

Chicago District AOR

- Cover 3 states (WI, IL, IN)
- 31,500 square miles
- Diverse Portfolio

Lake Michigan Project Office

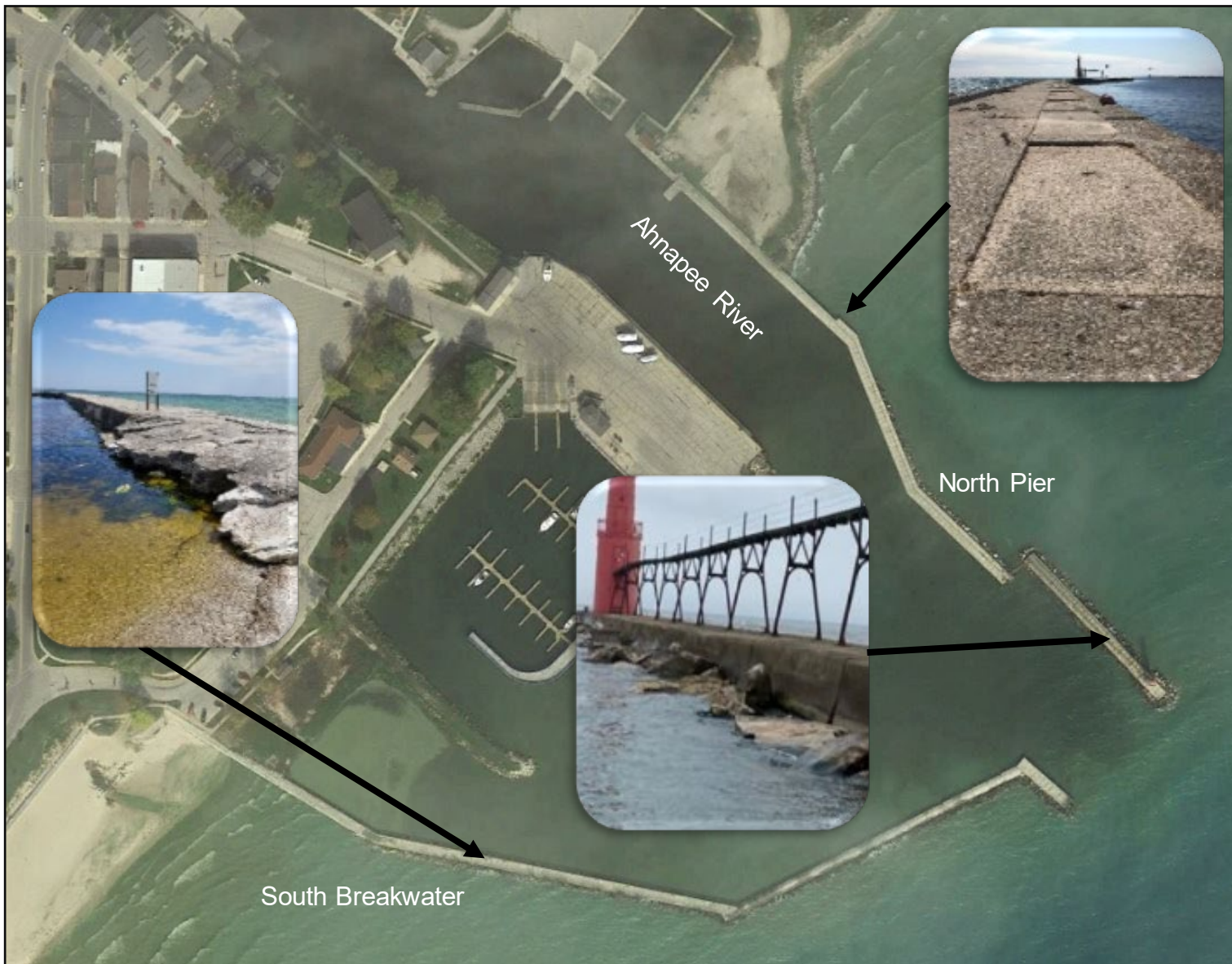
- Located within the Operations Division
- Oversees the operation and maintenance of 21 harbors, 9 dams and 6 CDF's





PROJECT OVERVIEW

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Authorization:
River and Harbors Act
3 March 1871

Superstructure Built – 1932
Substructure Complete – 1889

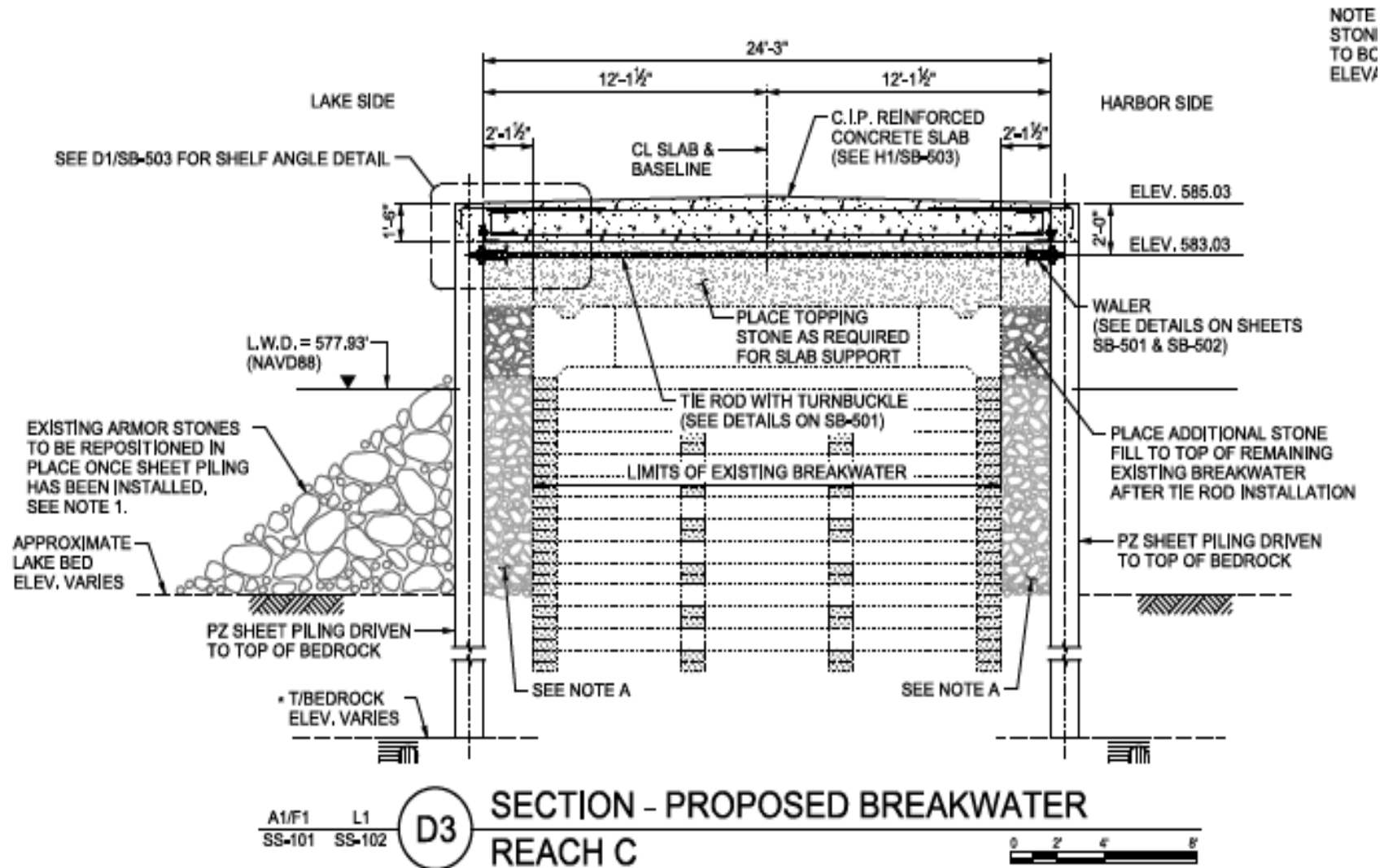
North Pier - 1,102 feet long
South Breakwater - 1,530 feet long
Channel – 2,000 feet long

CURRENT CONDITIONS: DAMAGED BREAKWATER



- Concrete cross-section deterioration and loss
- Reinforcement exposure
- Localized slab failure
- Timber crib degradation
- Loss of aggregate fill

PROPOSED DESIGN



Sheet pile and Concrete Encapsulation



WHY THIS DESIGN?



Routine operation & maintenance is authorized by Congress

Consistent with authorized purpose

- Rivers and Harbors Act of 1871 and 1988

Cost effective

Environmentally acceptable

What about potential modifications to the breakwater design?

- Significant modifications to completed projects require Congressional authorization
- Cost shared study
- Previously considered/modelled design alternatives (2017):
 - Removing dogleg
 - Opening in south jetty
 - Widening harbor entrance



NEPA PROCESS



Compliance requirement for federal actions

Describes current conditions and effects of proposed projects

Requires input from the public and resource agencies

Federal laws and executive orders:

- Section 7, Endangered Species Act
- Section 106, National Historic Preservation Act
- Section 401, Clean Water Act
- Section 306, Federal Coastal Zone Management Act
- Fish and Wildlife Coordination Act

National Environmental Policy Act





NEPA PROCESS (CONT'D)



Environmental Assessment

- Includes required analyses and documentation of coordination and any agency concurrence of effects
- Available for a 30-day comment period for the public and resource agencies (*February 22 through March 24, 2023*)
- Final assessment considers all comments and ends with approval of the Finding of No Significant Impact (FONSI)



SUMMARY OF DRAFT NEPA ANALYSIS



No significant adverse impacts on natural or cultural resources

No Environmental Impact Statement (EIS) required

Finding of no significant impact (FONSI)

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aesthetics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Air quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aquatic resources/wetlands	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Invasive species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Fish and wildlife habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Threatened/Endangered species/critical habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Historic properties	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other cultural resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Floodplains	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hazardous, toxic & radioactive waste	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hydrology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Land use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Navigation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Noise levels	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public infrastructure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Socioeconomics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental justice	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tribal trust resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Water quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climate change	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



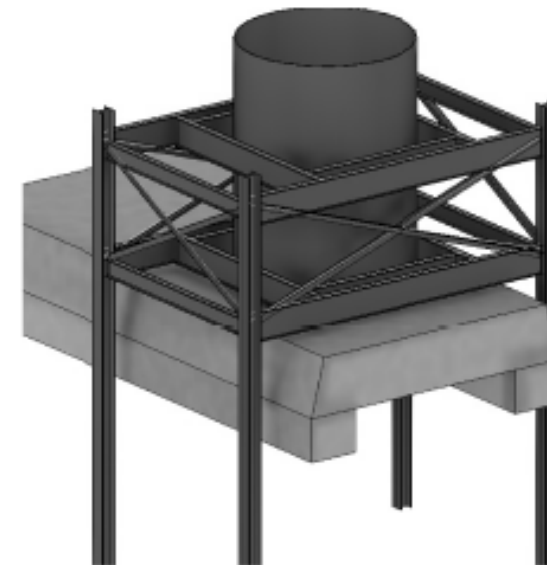
ALGOMA HARBOR LIGHTHOUSE

Catwalk structure cannot be preserved

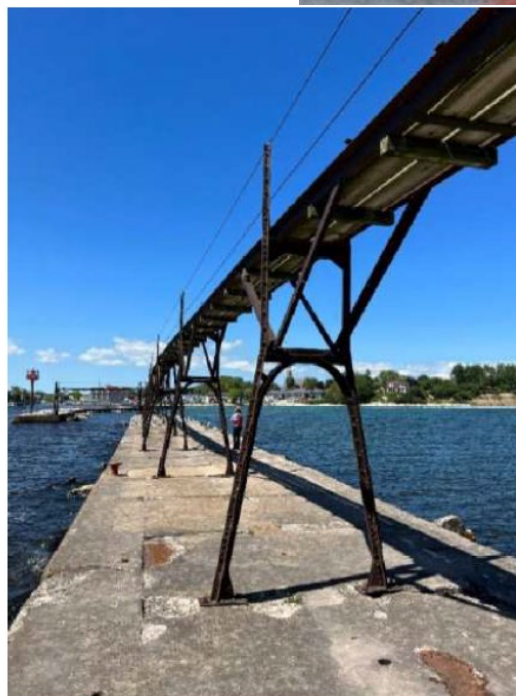
- Advanced corrosion
- Compromised structural integrity
- Deformation of many sections

Lighthouse is being preserved

- Requires temporary support structure during construction process



A1 CONCEPTUAL RENDERING - TEMPORARY LIGHTHOUSE SUPPORT

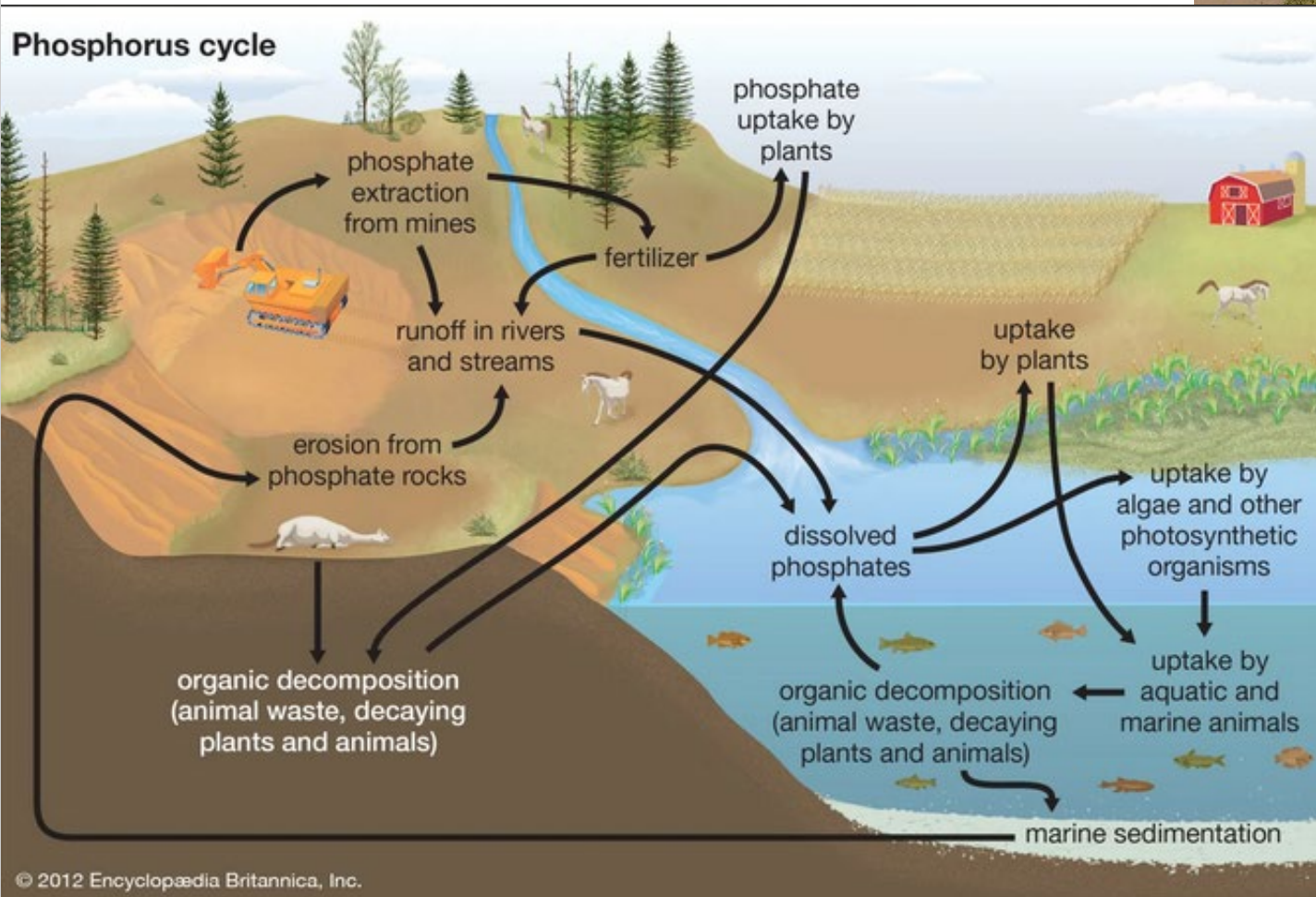




ALGAE CONCERNS

Algae increase lake wide

Lake and river currents moving algae





ALGAE CONCERNS: POTENTIAL SOLUTIONS

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Submitted to the Water Operation Technical Support (WOTS) Program

Submitted two Statements of Need with USACE Research and Development Center

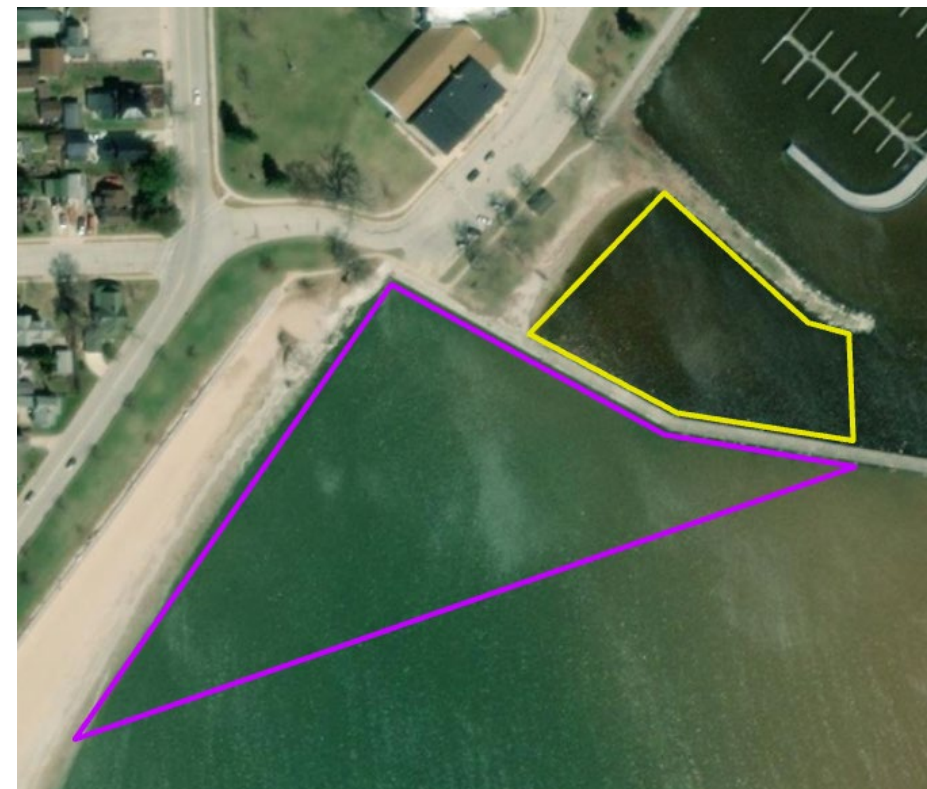
- Cladophora
- Blue-green algae

Alternate Solutions

- Ecosystem project

Reduction of phosphorus

Continuation of manual removal



ERDC
ENGINEER RESEARCH & DEVELOPMENT CENTER

DISCOVER | DEVELOP | DELIVER



SCHEDULE





CONTACT INFORMATION



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Algoma Harbor Project and Review Websites:

- <https://www.lrc.usace.army.mil/Missions/Civil-Works-Projects/Algoma-Harbor/>
- <https://www.lrc.usace.army.mil/Missions/Civil-Works-Projects/Public-Review-Documents/>

Comment Period:

February 22 to March 24, 2023

Submit Comments to John.t.Belcik@usace.army.mil



QUESTIONS? DISCUSSION.



BACK-UP SLIDES

BREAKWATER MODIFICATION ALTERNATIVES



Figure 28. Alternative 4. Increase Culvert Size to Promote "Flushing" of Marina



ALGOMA HARBOR BREAKWATER REPAIR PROJECT

Chicago District – Diverse Portfolio

Northerly Island, Chicago, IL - GLFER



Military Construction Projects
Environmental Assessments
Vertical construction

Civil Works Projects
Breakwaters
Dredging
Locks & Dams
Feasibility Studies

Drinking water, wastewater, and stormwater infrastructure
Great Lakes Fishery and Ecosystem Restoration (GLFER) Program