

**Appendix 1:
Section 404(b)(1) Evaluation
Algoma Harbor Breakwater Repair
Operations and Maintenance
Kewaunee County, Wisconsin**



**U.S. Army Corps of Engineers
Chicago District**

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1.0 Project Description

1.1 Location

Algoma Harbor is a recreational harbor located in Algoma, Wisconsin on the western shore of Lake Michigan at the mouth of the Ahnapee River (Figure 1). The federal project consists of an outer basin enclosed by a 1,102-foot-long north pier and a 1,530-foot-long south breakwater. The harbor also has a 2,100-foot-long entrance channel with the channel extending about 1,000-feet upriver. The harbor is located 30 miles east of Green Bay and 115 miles north of Milwaukee. The harbor supports mainly recreational navigation and serves as a harbor of refuge (i.e., a port, inlet, or other body of water normally sheltered from heavy seas by land and in which a vessel can navigate and safely moor). The project was authorized by the River and Harbor Acts of March 3, 1871, March 2, 1907, August 30, 1935, and July 3, 1958.

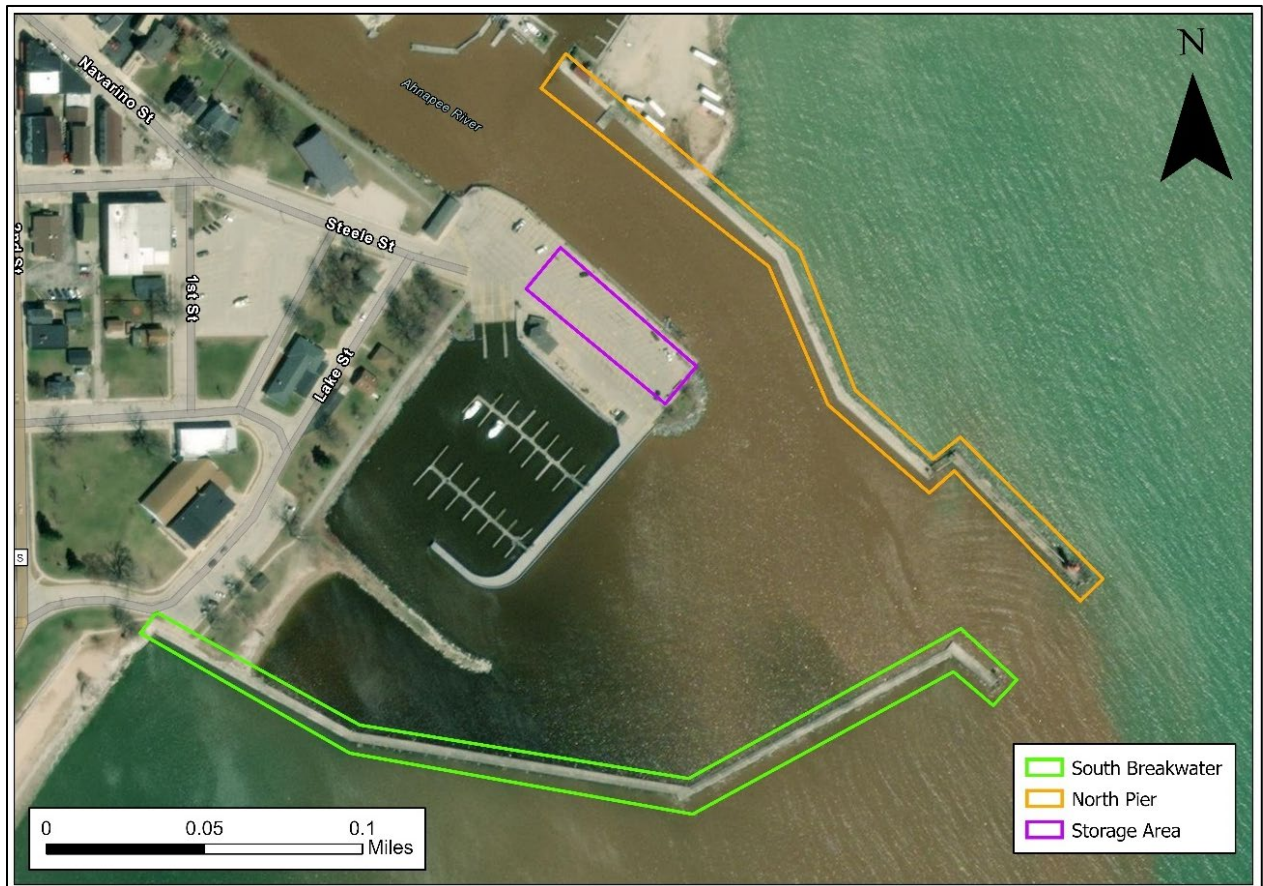


Figure 1: Vicinity Map of the Algoma Harbor Area.

1.2 General Description

The Algoma Harbor south breakwater and north pier (hereafter breakwater), constructed in 1871, currently requires stabilization. The structure has not been repaired since the 1930s when the superstructure was constructed and now needs significant repair. USACE proposes to encapsulate the full length of the breakwater within steel sheet pile and a new concrete cap will be installed along the entire length. The interior timber crib has deteriorated and much of the interior fill has been lost. This has created voids within the breakwater and as a result has increased sedimentation within the channel. Sections A, B, D, and E will have an increased footprint of 4-feet (2-feet on either side), section C will

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increase by 5-feet, and section F by 7-feet. The section locations are shown in Figure 2. Existing cross sections of the breakwater and north pier are shown in Figure 3 and an example cross section of the proposed project is shown in Figure 4. Toe stone will be placed along the new sheet pile as needed and may contribute to the increased footprint size where armor/toe stone is not currently located. The recommended plan would provide a more stable and long-lasting structure, better maintaining safe passage for vessels entering and exiting the port. The majority of repairs would be conducted by barge with the work in the nearshore areas being conducted from land due to the shallow waters of the lake.



Figure 2: Aerial view of Algoma Harbor showing Sections A through F of the North Pier and South Breakwater.

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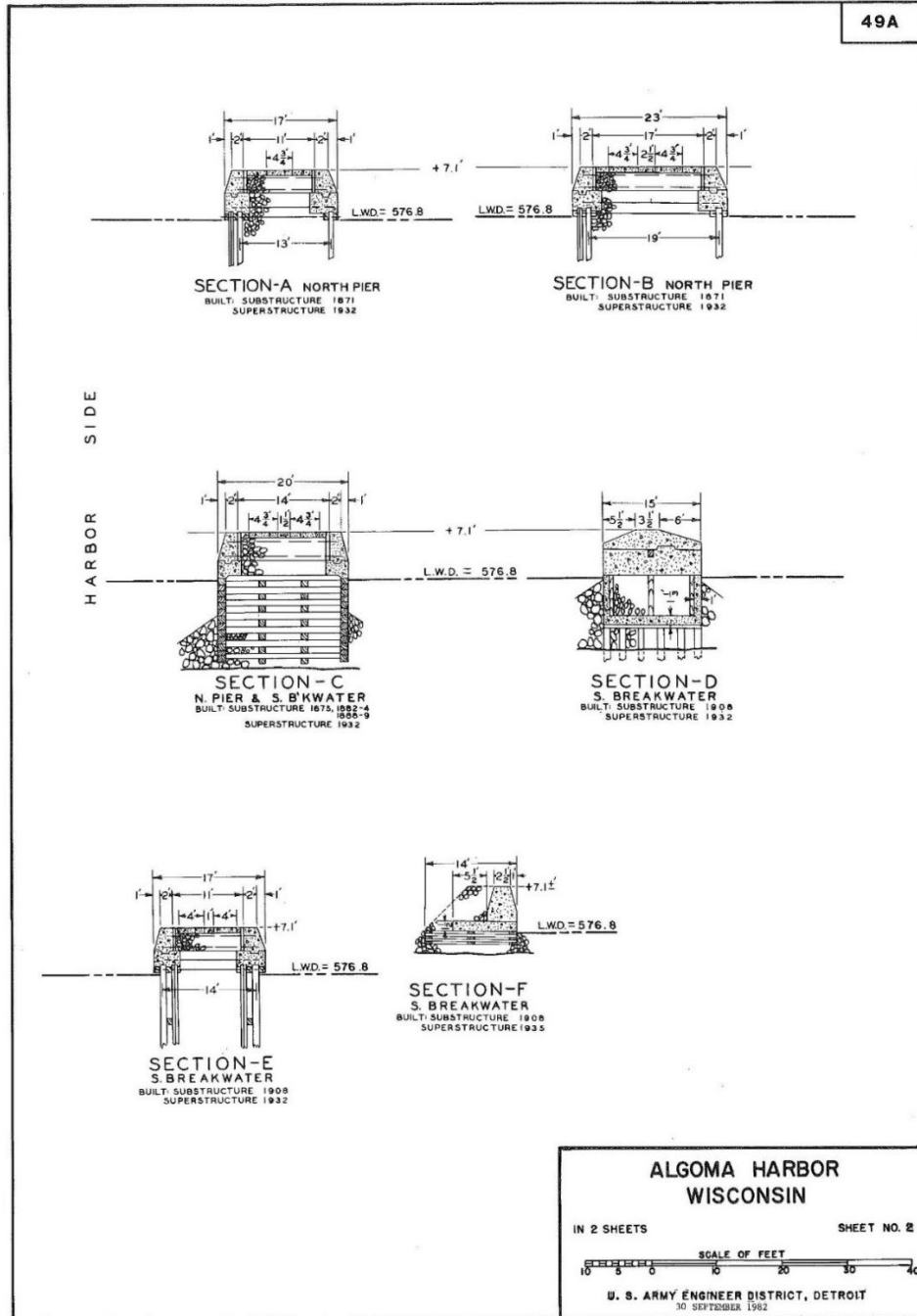


Figure 3: Existing Breakwater Cross Section

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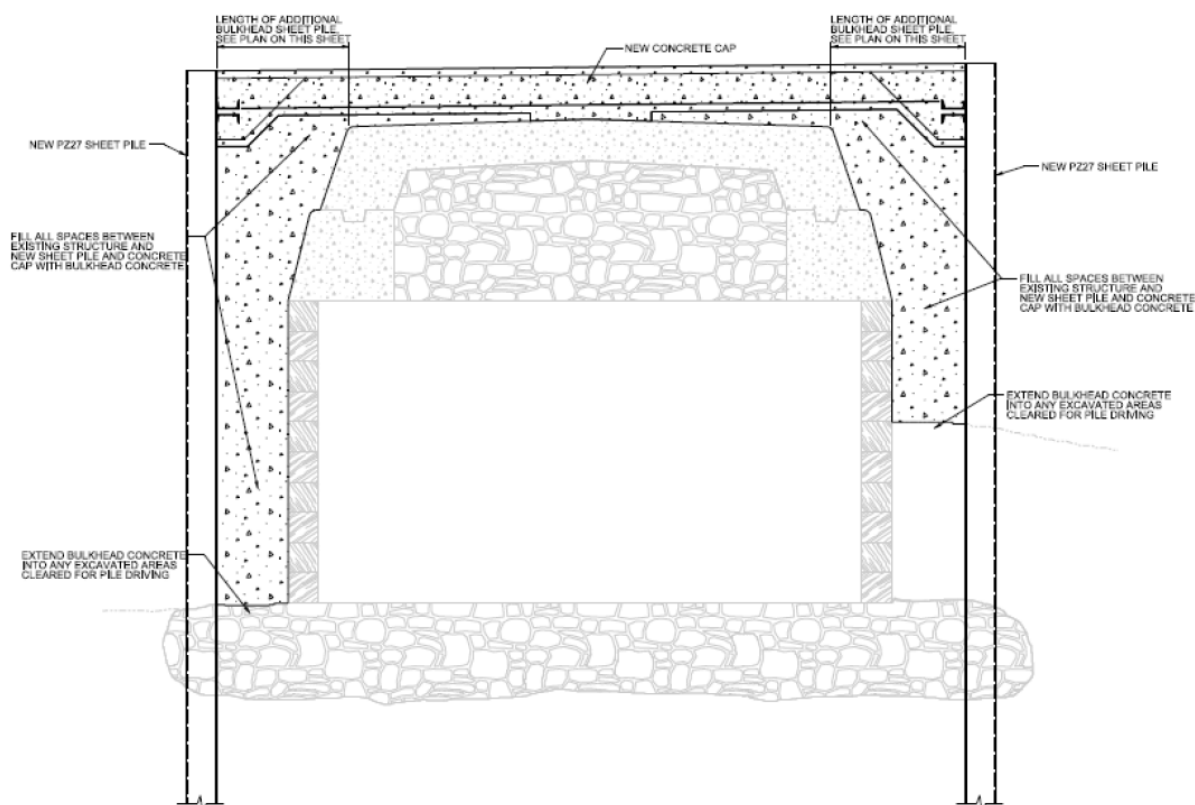


Figure 4: Proposed New Breakwater Cross Section

The recommended plan may require the construction of temporary upland structures. There will be a staging area located within the harbor on Christmas Tree Point used for equipment storage and temporary placement. Additional types and locations of temporary structures and/or construction materials cannot be determined at this time, since they would be incidental to the contractor's methods for the work being performed. Potential examples are work and storage areas, access roads, and office facilities. Any necessary temporary structures would be at USACE-approved locations within project boundaries or rights-of-way, outside of any wetlands, areas containing federal or state protected species or their critical habitat, or properties listed on or eligible for listing on the National Register of Historic Places, or state-listed properties. Temporary activities will include appropriate precautionary measures to prevent erosion and sedimentation or other undesirable environmental impacts. These construction aids would be removed when no longer needed and their sites would be restored to pre-project conditions upon project completion.

1.3 Authority and Purpose

The Algoma Harbor was authorized by the River and Harbor Acts of March 3, 1871, March 2, 1907, August 30, 1935, and July 3, 1958. The existing project provides for a federal navigation channel with authorized depths of 14-feet for the 2000-foot long and 200-foot wide entrance channel and a depth of 14-feet for the channel within the Ahnapee River that extends from the harbor to the Second Street bridge. The sediment is not dredged regularly and sediment removal in the federal navigation channel last took place in 1993.

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The proposed project would support the navigability of Algoma Harbor by encapsulating the existing breakwater that is currently in a deteriorated state with crumbling surfaces and interior voids along the entire length. Encapsulation will restore the structural integrity of the breakwater and extend the useful lifetime of the structure and harbor by using a more stable and long-lasting material, and better maintaining safe passage for vessels entering and exiting the port.

1.4 Regulatory Considerations

Section 404 of the Clean Water Act contains the permit requirements for the discharge of dredged or fill material into the navigable waters of the United States. Although Section 404 authorizes USACE to issue permits for the discharge of dredged or fill material, 33 Code of Federal Regulation [CFR] 336.1(a) explains that the USACE does not process and issue permits for its own activities. The USACE authorizes its own discharges of dredged or fill material by applying all applicable substantive legal requirements, including public notice, opportunity for public hearing, and application of the Section 404(b)(1) guidelines, which are described in 40 CFR 230.

Under Section 401 of the Clean Water Act, a federal agency, such as the USACE, may not conduct any activity that may result in any discharge into waters of the United States unless a certifying authority issues a Section 401 water quality certification verifying compliance with existing water quality requirements or waives the certification requirement. An individual water quality certification or waiver is required for activities that would result in the discharge of dredged or fill material, unless the discharge is for an activity where a general water quality certification has already been issued, often under a nationwide or regional permit.

The Chicago District has obtained an individual 401 water quality certification with the State of Wisconsin and has completing the 404(b)(1) analysis included in this document to determine the environmental impacts on aquatic resources associated with the proposed placement of fill material.

1.5 General Description of Fill Materials

1.5.1 General Characteristics and Purpose of Material

Fill material would consist of existing armor stone that was removed from the current breakwater in order to drive sheet pile and/or new armor stone that would be used to replace armor stone that has been dislodged and moved by wave action. Armor stone would be placed along approximately 1,102 linear feet of the north pier and 1,530 linear feet of the south breakwater in order to maintain operational integrity of the structure and prevent scouring.

1.5.2 Quantity of Material

To the extent practicable, existing armor stone that has been dislodged will be reset back in position to provide sufficient protection. It is unknown if any new armor stone will be needed for this project because the quantity of usable existing stone is not fully known. If any new stone is needed, it will be of the same relative size as the existing stone (approximately 2-10 tons).

1.5.3 Source of Material

Optimally, the maximum amount practical of existing armor stone will be used. Any new stone will be purchased from a commercial supplier. USACE armor stone specifications require stone to be clean and free of contaminants and organic debris. Sources can be newly quarried stone, to be approved by USACE assessment and inspection, or reuse of the stone that is currently in use as toe stone along the breakwater. The specifications do not identify required sources, however all armor stone for projects on the west side of Lake Michigan in the last 10 years has come from one of seven established and licensed commercial quarries, all of which are located in Wisconsin.

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1.5.4 Material Quality

The stone will be clean, inert materials free from fines and free of surface pollution.

1.6 Description of Proposed Discharge Site

1.6.1 Location

The proposed discharge site for placement of fill is the existing Algoma Harbor south breakwater and north pier.

1.6.2 Size

The size of the proposed discharge site is approximately 1,102 linear feet of both sides of the north pier and 1,530 linear feet of both sides of the south breakwater for a total of 5,300 linear feet. The approximate extent of lakebed that will be occupied by this discharge will be 15-25-feet from either side of the breakwater for a total approx. acreage of up to 8.8 acres.

1.6.3 Type of Site

The proposed discharge site is Lake Michigan on either side of the breakwater.

1.6.4 Type of Habitat

The type of habitat within the proposed discharge site is freshwater lacustrine.

1.6.5 Timing and Duration of Discharge

The proposed placement will occur during the 2023-2024 construction season. Work will begin after the fish window closes on July 1 and, once commenced, will take approximately a month to complete.

1.7 Description of Placement Method

Armor stone will be delivered by barge and moved into place via barge-mounted crane, as necessary. In shallower habitats, stone will be delivered by truck and moved into place via terrestrially mounted crane.

2.0 Factual Determinations

2.1 Physical Substrate Determinations

2.1.1 Substrate Elevation and Slope

Elevation of the project area is approximately 585 feet North American Vertical Datum (NAVD) 88 to the top of the breakwater. The surrounding lake bottom extends from shore to as deep as 564 feet NAVD where the existing lighthouse is located.

2.1.2 Substrate Type

On the lakeward side of the breakwater, the placement site was previously Lake Michigan bottom (sand). On the harbor side of the breakwater is a mix of organic material and sediment deposited by the Ahnapee River. The placement area is currently an existing breakwater (armor stone) adjacent to Algoma Harbor and Lake Michigan bottom.

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2.1.3 Fill Material Movement

There would be no significant movement of the armor stone once placed. Armor stone would be sized appropriately to remain where placed along the breakwater. The sheet pile encapsulation will be driven into the sediment and will not move once placed.

2.1.4 Physical Effects on Benthos

The proposed fill activity would cover currently exposed Lake Michigan bottom as the footprint of the existing breakwater would be expanded. Below details the impacts of the proposed work on the climate, geology, and sediment quality of the project area.

Climate

The proposed fill activity would have no significant short-term or long-term impacts to climate. Additional fossil fuels would be needed during the breakwater repair process for the operation of associated construction vehicles. However, there would be no measurable impact on climate, even though there may be localized increases in greenhouse gas emissions during construction. Once construction is complete, additional fossil fuels would not be needed for operation of the breakwater.

Geology

The sheet pile would be driven into the Lake Michigan sediment with toe stone being placed as a scour prevention method in several locations. This would result in short term impacts in the form of a small amount of sediment displacement. There will be a long-term impact in that the breakwater will be expanded by several feet along some sections where there is no current armor stone. The amount of Lake Michigan near shore bottom that is lost due to the expanded footprint is insignificant compared to the larger available habitat as the bottom is relatively uniform and vast. While there is a long-term direct impact, it is anticipated that the recommended plan would have no direct or indirect long-term adverse impacts to geologic resources.

Sediment Quality

The existing toe stone would need to be removed in order to encapsulate the existing structure. It would then be replaced along the toe of the new structure as a means of erosion control. Removal and replacement may temporarily cause a short-term direct disturbance of the sediment in the area, but it is anticipated that this alternative would have no direct or indirect long-term impacts on sediment quality.

2.1.5 Water Circulation, Fluctuation, and Salinity Determinations

Water

The proposed fill activity would have no significant long-term negative impacts to water chemistry, water clarity, color, odor, taste, dissolved gas levels, nutrients, or increased eutrophication as a result. Only clean, quarried stone, free of surficial pollutants would be placed. Sheet pile is relatively inert and should not react with the lake water in such a way as to negatively impact Lake Michigan water quality.

Salinity

The proposed fill activity is occurring in a freshwater environment so no impacts to salinity are expected.

Water Chemistry

The activity associated with the construction of the proposed breakwater repair is not expected to have any short-term or long-term impacts to water chemistry.

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Clarity

The proposed activity associated with construction of the proposed breakwater repair is expected to have minor temporary impacts to water clarity. Turbidity of the water is expected to increase during placement activities. The minor increase in turbidity, however, would be temporary in duration. Overall, the proposed activity would have less than significant short-term impacts to water clarity and no long-term impacts to water clarity.

Color

The proposed activity associated with construction of the proposed breakwater repair is not expected to have short-term or long-term impacts to the water's color.

Odor

The proposed activity associated with construction of the proposed breakwater repair is not expected to have any short-term or long-term impacts to water odor.

Taste

The proposed activity associated with construction of the proposed breakwater repair is not expected to have any short-term or long-term impacts to water taste.

Dissolved Gas Levels

The proposed activity associated with construction of the proposed breakwater repair is not expected to have any short-term or long-term impacts to dissolved gas concentrations within the water.

Nutrients

The proposed activity associated with construction of the proposed breakwater repair is not expected to have any short-term or long-term effects to nutrient concentrations within the water.

Eutrophication

The proposed activity associated with construction of the proposed breakwater repair is not expected to cause any short-term or long-term increase in eutrophication.

2.1.6 Current Patterns and Circulation

Current Patterns and Flow

No changes are expected to current patterns or flow as a result of project implementation.

Velocity

No changes are expected to velocity as a result of project implementation.

Stratification

No changes are expected to stratification as a result of project implementation.

Hydrologic Regime

No changes are expected to the current hydrologic regime as a result of project implementation.

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2.1.7 Normal Water Level Fluctuations

No changes are expected to normal water level fluctuations as a result of project implementation.

2.1.8 Salinity Gradients

No changes are expected to current salinity gradients as a result of project implementation.

2.1.9 Other

The proposed activity associated with construction of the proposed breakwater repair is not expected to have any short-term or long-term effects to other known system components not specifically defined above.

2.1.10 Actions that will be Taken to Minimize Impacts

No specific actions are included to minimize impacts to the physical substrate based on the findings outlined in this section.

2.2 Suspended Particulate/Turbidity Determinations

2.2.1 Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Fill Site

There would be minor increases in suspended particulates and turbidity levels in the immediate area of the proposed placement activity during construction of the breakwater repair, which would likely be less than a typical summer thunderstorm that generates adverse weather conditions such as high winds and waves as well as strong currents. The increase in turbidity is expected to be temporary and no long-term changes to turbidity are expected because of the proposed activity.

2.2.2 Effects on Chemical and Physical Properties of the Water Column

It is expected that there would be negligible effects to light penetration or dissolved oxygen levels during construction. The placement of armor stone and driving of sheet pile will not introduce organic toxins, significant amounts of metals, or other pathogens into the project area.

Light Penetration

The proposed activity associated with construction of the proposed breakwater repair is expected to have localized and temporary impacts to light penetration due to the temporary increase in turbidity during construction. However, these effects are expected to be temporary in duration. Overall, no significant long-term negative effects to light penetration are expected with the proposed construction activities.

Dissolved Oxygen

The proposed activity associated with construction of the proposed breakwater repair is not expected to have any significant long-term negative effects to dissolved oxygen concentrations within the water column.

Toxic Metals and Organics

The proposed activity associated with construction of the proposed breakwater repair is not expected to introduce any toxic metals or organics to the project area.

Pathogens

The proposed activity associated with construction of the proposed breakwater repair is not expected to introduce any pathogens into the project area.

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Aesthetics

The proposed activity associated with construction of the breakwater repair is not expected to have any significant long-term negative effects to aesthetics. Localized and temporary effects to aesthetics are expected during the construction period of the project, but these impacts are expected to be temporary in duration. Repairs to the breakwater are likely to improve the aesthetics of the area as the breakwater is currently severely deteriorated. The proposed breakwater repair will not obstruct or otherwise diminish the visual quality of the adjacent lighthouse.

Other

No additional long-term negative impacts to known system components not listed above are expected as a result of the proposed activity.

2.2.3 Effects on Biota

The Algoma Harbor breakwater is located in Lake Michigan. Natural lacustrine functions and structure of the harbor are affected by the construction of manmade coastal structures; however, the project does not alter the habitat type(s) beyond what the current breakwater already provides. It does however take a small amount of lake bottom as the sheet pile would be placed adjacent to the breakwater and not within the current footprint in some areas. Manmade structures, such as the breakwaters, can provide shelter for various aquatic organisms. The proposed action would continue to provide a manmade rocky habitat, it would not significantly change the fish and macro-invertebrate assemblages presently encountered at the project area. The sandy lake bottom habitat that would be lost because of the expanded footprint is a negligible amount as this type of habitat is vast within Lake Michigan.

Primary Production, Photosynthesis

The proposed activity associated with construction of the proposed breakwater repair is expected to have localized and temporary impacts to light penetration due to the temporary increase in turbidity during construction. This could in turn temporarily impact primary production and photosynthesis by submergent aquatic vegetation within the area. Submergent aquatic vegetation has been identified as currently existing near the project area within the harbor and smaller marina. Some short-term effects will be present on the aquatic vegetation in the area during the construction phase of the project. No long-term negative effects to primary production or photosynthesis are expected with the proposed construction activities.

Suspension/Filter Feeders

The proposed activity associated with breakwater repair is expected to have localized and temporary increases to turbidity which could potentially impact suspension/filter feeders. These impacts are expected to be temporary in duration. In addition, the placement of the armor stone could smother any benthic suspension/filter feeders in the project area. Overall, there would be a short-term insignificant impact to suspension/filter feeders and no long-term impact as these species would be expected to recolonize the area from adjacent habitat once construction is complete.

Sight Feeders

The proposed activity associated with construction of the proposed breakwater repair is expected to have localized and temporary increases in turbidity that could potentially impact sight feeders. However, the impacts are expected to be temporary in duration and, since any fish/macroinvertebrate species present would likely be tolerant of poor water quality, no significant long-term negative effects to sight feeders are expected.

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Actions Taken to Minimize Impacts

Environmental windows have been coordinated with the state through the 401 water quality certification process to prevent impacts to any sensitive biota that could be impacted by the stone placement or driving of sheet pile. The state has asked that no in water work take place between October 1 and December 1 and between February 1 and June 15 to avoid impacts to fish species during the annual spawning season. Floating containment booms may be used to control spills, if necessary; the Contractor will maintain a spill plan and response materials on site.

2.2.4 Contaminant Determinations

The proposed fill material and sheet pile is not expected to introduce any new contaminants into Lake Michigan nor release existing contaminants (if any are present) through bottom disturbance within the construction zone. The stone will be placed on top of the existing sediment and minimal disturbance is expected.

2.2.5 Aquatic Ecosystem and Organism Determinations

Effects on Plankton

No long-term detrimental effects to planktonic organisms are expected.

Effects on Benthos

The placement area is currently covered by the existing breakwater and any armor stone that is present. The footprint of the existing breakwater would be expanded by several feet in the various sections of the structure. The breakwater area is relatively small in comparison to the wide expanse of natural lake bottom on which it sits. As such, it would have insignificant effects on the greater macro-invertebrate population of the area. There are no significant adverse effects expected.

Effects on Nekton

Fish eggs and larvae would not be smothered by the proposed fill activity since the anticipated construction activities will not occur during reproductive or rearing seasons. Fish and other free-swimming organisms should tend to avoid the construction area. The construction area will be used again by those organisms soon after construction ends, so overall species presence is not expected to decrease. A fish window will be observed from October 1 and December 1 and between February 1 and June 15 as coordinated with the state through the 401 water quality certification process, to prevent impacts.

Effects on Aquatic Food Web

No adverse food web effects are expected as a result of the proposed breakwater repair.

Effects on Special Aquatic Sites

Sanctuaries and Refuges

The City of Algoma is not located near any aquatic sanctuaries or refuges. Therefore, the proposed activity associated with construction of the proposed breakwater repair is not expected to have a significant impact on these special aquatic sites.

Wetlands

No wetlands have been identified within the project area, so the proposed activity associated with construction of the proposed breakwater repair is not expected to have a significant impact on this habitat type.

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Mud Flats

No mudflats have been identified within the study area, so the proposed activity associated with construction of the proposed breakwater repair is not expected to have a significant impact on this habitat type.

Vegetated Shallows

No vegetated shallows have been identified within the study area, so the proposed activity associated with construction of the proposed breakwater repair is not expected to have a significant impact on this habitat type.

Coral Reefs

Not applicable to freshwater environments.

Riffle and Pool Complexes

No riffle and pool complexes have been identified within the study area, so the proposed activity associated with construction of the breakwater repair is not expected to have a significant impact on this habitat type.

Effects on Threatened and Endangered Species

Federally listed species for the Algoma Harbor vicinity include the Northern Long-Eared Bat (threatened), Hine's Emerald Dragonfly (endangered), the Monarch Butterfly (candidate), and Dwarf Lake Iris (threatened). There are no designated critical habitats in the project vicinity.

The project (transportation and placement of breakwater armor stone and sheet pile) would have no effect on these species. This is because construction activities are planned to take place along the harbor's existing breakwater away from coastal wetlands, prairies, and woodlands, which are the preferred habitats for these species, and would not directly impact any established terrestrial habitats.

State-listed endangered species were reviewed for the project area by the Chicago District. Wisconsin listed species and their critical habitats are identified by Wisconsin DNR as occurring within Kewaunee County include: Lake Sturgeon (*Acipenser fulvescens*), Upland Sandpiper (*Bartramia longicauda*), Indiscriminate Cuckoo Bumble Bee (*Bombus insularis*), Confusing Bumble Bee, (*Bombus perplexus*), American Sea-Rocket (*Cakile edentula* var. *lacustris*), Sand Reedgrass (*Calamovifa longifolia* var. *magna*), Black Tern (*Chlidonias niger*), Harbinger-of-Spring (*Erigenia bulbosa*), Seaside Spurge (*Euphorbia polygonifolia*), Forked Aster (*Eurybia furcate*), Perigrine Falcon (*Falco peregrinus*), Cherrystone Drop (*Hendersonia occulta*), Hydroporus Diving Beetle (*Heterosternuta wickhami*), Caspian Tern (*Hydroprogne caspia*), Least Bittern (*Ixobrychus exilis*), Twinleaf (*Jefersonia diphylla*), Longear Sunfish (*Lepomis megalotis*), Pugnose Shiner (*Notropis anogenus*), Black-crowned Night-Heron (*Nycticorax nycticorax*), Dentate Supercoil (*Paravitrea multidentate*), Wilson's Phalarope (*Phalaropus tricolor*), Christmas Fern (*Polystichum acrostichoides*), Hine's Emerald Dragonfly (*Somatochlora hineana*), Ribbed Striate (*Striatura exigua*), Western Meadowlark (*Sturnella neglecta*), Deep-throated Vertigo (*Vertigo nylanderi*), Long-spurred Violet (*Viola rostrata*), Transparent Vitrine Snail (*Vitrina angelicae*), Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*). Due to the minor footprint and short window of disturbance during construction, the preferred plan would potentially have a short-term less than significant impact to fish species in the project area. Long-term, it is anticipated that fish species could utilize the newly placed stone as shelter, therefore, there would be no long-term impacts to the surf zone fish community.

Effects on Other Wildlife

No other wildlife would be significantly impacted by the proposed activity.

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Actions to Minimize Impacts

General construction scheduling and sequencing would minimize impacts to any reproducing macroinvertebrates and fishes present. Floating containment booms would be used to control spills, as necessary.

2.2.6 Proposed Disposal/Discharge Site Determinations

Mixing Zone Determination

A mixing zone is not applicable to this project since no violation of applicable water quality standards is expected during construction.

Determination of Compliance with Applicable Water Quality Standards

The proposed activity is not expected to cause significant or long-term degradation of water quality within lake Michigan and would comply with all applicable water quality standards.

Potential Effects on Human use Characteristic

Overall, no significant impacts to municipal and private water supplies, water-related recreation, aesthetics, or recreational or commercial fisheries are expected. No significant adverse effects are expected.

Municipal and Private Water Supply

The proposed activity associated with construction of the proposed breakwater repair is not expected to have any significant short-term or long-term negative impacts on municipal or private water supply.

Recreational and Commercial Fisheries

The proposed activity associated with construction of the proposed breakwater repair is not expected to have any significant long-term negative impacts on recreational or commercial fisheries in the area. Recreational fishing, should it occur within the proximity of the project site, could potentially be impacted in the short term due to construction activities that would likely scare fish from the area and construction would limit access to the breakwater where anglers would typically fish. These impacts are expected to be temporary.

Water Related Recreation

Recreation near the project site could potentially be impacted in the short-term due to construction related noise and temporary increases in turbidity. The proposed activity associated with construction of the breakwater repair is not expected to have any significant long-term negative impacts on water related recreation in the area.

Aesthetics

The proposed activity would have short-term less than significant impacts to aesthetics in the project area due to the presence of construction equipment. Once construction is complete, the aesthetics of the project area would return and no long-term effects to aesthetics would occur.

Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites and Similar Preserves

Algoma harbor is located one mile from the Ice Age National Scenic Trail. The proposed activity associated with construction of the proposed breakwater repair is located entirely within the harbor and is not expected to have a significant impact on this or other special sites.

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2.2.7 Determination of Cumulative Effects on Aquatic Ecosystem

No cumulative adverse impacts to the aquatic ecosystem or to aquatic organisms are expected to result from the construction of the proposed breakwater repair. The proposed action is on the site of the existing Algoma breakwater which has been present in the aquatic environment since 1871.

2.2.8 Determination of Secondary Effects on the Aquatic Ecosystem

No significant secondary effects on the aquatic ecosystem are expected as a result of the proposed breakwater repair.

3.0 Findings of Compliance or Non-Compliance with the Restrictions on Discharge

- a. No significant adaptations of the Section 404(b)(1) guidelines were made relative to this evaluation.
- b. No practical alternatives are available that produce fewer adverse aquatic impacts than the proposed plan.
- c. The proposed construction activity at the site of the existing Algoma breakwater would not violate any applicable water quality standards.
- d. The project is in compliance with applicable Toxic Effluent Standards under Section 307 of the Clean Water Act; with the Endangered Species Act of 1973; with Section 106 of the National Historic Preservation Act of 1966; and with the Fish and Wildlife Coordination Act of 1958.
- e. The proposed fill activity would not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish, shellfish, wildlife communities (including community diversity, productivity, and stability), or special aquatic sites. The life stages of aquatic life and other wildlife would not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic and economic values would not occur.
- f. Appropriate erosion control measures will be taken to minimize potential adverse impacts of the fill activity on aquatic ecosystems. General construction scheduling and sequencing would minimize impacts to any reproducing macro-invertebrates and fishes present. Erosion control fabric, silt fencing and containment booms would be implemented as needed to minimize any temporary turbidity, spill or debris impacts associated with the proposed activity.
- g. Based on the Guidelines, the proposed site for the discharge of fill material is specified as complying with the inclusion of appropriate and practical conditions to minimize pollution or adverse impacts to the aquatic ecosystem.

3.1 Compensatory Mitigation

The purpose of compensatory mitigation is to offset losses of waters of the United States and ensure that the net adverse effects are no more than minimal. The proposed breakwater repair does result in a potential loss of waters of the United States. Additionally, certain fill actions similar to the proposed action in Lake Michigan are often not required to implement compensatory mitigation if it can be demonstrated that the affected environment has low functional value and that no additional mitigation would be required to result in minimal impacts.

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In this instance, the affected environment is not entirely within the footprint of the existing rubble mound dikes and breakwater, and is a highly disturbed, man-made environment that lacks structural diversity. There will be a small increase in the structure's footprint due to the installation of sheet pile. While this minimally productive ecosystem supports a small amount of flora and fauna, the proposed action will continue to provide structural diversity in the form of a rubble mound habitat and may have minor habitat benefits in the future. The proposed action is not expected to have a more than minimal impact on existing ecosystem functions (as described previously in Section 2.0 Factual Determinations) and therefore no compensatory mitigation is being considered as part of the proposed project.

3.2 Conclusions

Based upon this evaluation, the construction of the proposed breakwater repair, subject to appropriate and reasonable conditions, determined to comply with Section 404(b)(1) Guidelines, and is determined to protect the public interest.