

DRAFT Environmental Assessment

Algoma Harbor Breakwater Operations and Maintenance

Kewaunee County, Wisconsin



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

February 2023

DRAFT FINDING OF NO SIGNIFICANT IMPACT ALGOMA HARBOR BREAKWATER REPAIR ALGOMA, KEWAUNEE COUNTY, WISCONSIN

The U.S. Army Corps of Engineers, Chicago District (Corps) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The Environmental Assessment (EA) dated January 2023, for the Algoma Harbor Breakwater Operations and Maintenance Project addresses the need to support the navigability of Algoma Harbor, Kewaunee County, Wisconsin.

The EA, incorporated herein by reference, evaluated two alternatives that include the No Action plan and the Corp’s Recommended Plan, encapsulating the existing south breakwater and north pier in sheet pile armoring, installing a new concrete cap, and placing armor stone to prevent scouring along the structure.

For the Recommended Plan, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the Recommended Plan are listed in the below table:

	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"/>

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the Recommended Plan. Best management practices (BMPs) will be implemented, as appropriate, to minimize impacts. To minimize impacts to

threatened and endangered species, or migratory species, work will not be conducted during critical life stages (i.e., breeding or nesting).

No compensatory mitigation is required as part of the Recommended Plan.

Public review of the draft EA and Finding of No Significant Impact (FONSI) was completed on [REDACTED]. All comments submitted during the public review period were considered in the Final EA and FONSI.

Pursuant to Section 7 of the Endangered Species Act of 1973, as amended, the U.S. Army Corps of Engineers determined that the Recommended Plan would have “no effect” on the federally listed northern long-eared bat, Hine’s emerald dragonfly, monarch butterfly (candidate), and Dwarf Lake Iris, or their designated critical habitat.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that historic properties would not be adversely affected by the Recommended Plan. The Wisconsin State Historic Preservation Office concurred with the determination on [REDACTED]. The Miami Tribe of Oklahoma submitted a letter on June 28, 2022, indicating no historic properties or sites would be affected.

Pursuant to the Clean Water Act of 1972, as amended, the discharge of dredged or fill material associated with the Recommended Plan has been found to be compliant with section 404(b)(1) Guidelines (40 CFR 230). The Clean Water Act Section 404(b)(1) Guidelines for evaluation are found in Appendix 1 of the EA.

A water quality certification pursuant to section 401 of the Clean Water Act will be obtained from the State of Wisconsin prior to construction. It is anticipated that the Recommended Plan will meet the requirements of the water quality certification, pending confirmation based on information to be developed during the pre-construction engineering and design phase. All conditions of the water quality certification will be implemented to minimize adverse impacts to water quality.

A determination of consistency with the Wisconsin Coastal Zone Management (CZM) program pursuant to the Coastal Zone Management Act of 1972 will be obtained from the Wisconsin Department of Administration’s Coastal Management Program prior to construction. The CZM program was notified of this project in a scoping letter dated 21 October 2022, Wisconsin stated that the recommended plan will be fully reviewed along with any applicable permits during the public comment period for this environmental assessment. All conditions of the consistency determination shall be implemented in order to minimize adverse impacts to the coastal zone. The Corps believes that the Recommended Plan is consistent with Wisconsin’s Coastal Management Program and shall be implemented to minimize adverse impacts to the coastal zone.

All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed.

Technical, environmental, and cost effectiveness criteria used in the formulation of alternative plans were those specified in the Water Resources Council's 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

Date

Paul B. Culberson
Colonel, Corps of Engineers
District Commander

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Chapter 1 Purpose & Need

1.1 National Environmental Policy Act and Related Procedures

The National Environmental Policy Act (NEPA) (42 United States Code [USC] 4321 et seq.), the Council on Environmental Quality (CEQ) NEPA regulations (Final Rule 2020) (40 Code of Federal Regulations [CFR] Parts 1500 to 1508), and the U.S. Army Corps of Engineers' (USACE) NEPA implementing regulations (33 CFR Part 230) require that the USACE consider the potential environmental effects of a proposed action before recommending a plan for implementation. This Environmental Assessment (EA) includes the direct, indirect, and cumulative effects of repairing the existing south breakwater and north pier at Algoma Harbor (hereafter breakwater). This EA provides the USACE, other decision makers, and the public with the information needed to make an informed decision about the breakwater repair activities.

1.2 Project Location & Authorization

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 **Error! Reference source not found.**). 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: Algoma Harbor breakwater project site and vicinity map.

1.3 Purpose & Need

The primary purpose of this federal action is to support the navigation functions of Algoma Harbor.

The need is to repair the structure and install new sheet pile along approximately 1,102 linear feet of the north pier and 1,530 linear feet of the south breakwater. A concrete cap would also be installed over both structures. Both actions are to maintain operational integrity of the structure. The proposed project would provide a more stable and long-lasting structure, better maintaining safe passage for vessels entering and exiting the port.

1.4 Related NEPA Documentation, Previous Studies & Projects

This EA was prepared to comply with NEPA of 1969, as amended and includes a 404(b)(1) evaluation pursuant to Section 404 of the Clean Water Act. This EA addresses only the maintenance and repair of the existing breakwater structures.

- River and Harbor Act of March 3, 1871, authorized the Algoma Harbor project, which includes operation, maintenance and repair when needed.
- Negative Declaration (Statement of Facts) Algoma Harbor, Wisconsin Maintenance Dredging. July 1975. USACE – Chicago District.
- Algoma small boat harbor, Wisconsin. Report on the degree of pollution of bottom sediments. October 1977. USEPA – Region V
- The results of analyses performed of sediment samples for Algoma, WI. 1987. USACE analytical report.
- Algoma Harbor analytical results. 1992. Aquatec Inc.
- Sediment sampling and analysis Algoma Harbor, Wisconsin. June 2002. Altech Environmental Services Inc. Contract No DACW-35-98-D0007.
- Algoma Marina and Harbor Sedimentation Study, June 2013. USACE – Detroit District
- Algoma Harbor/Marina Study June 2017. USACE – Detroit District.

1.5 Breakwater Maintenance and Repair History at Algoma Harbor

In 2014, the City of Algoma submitted an application for a study of the feasibility of constructing additional navigation improvements at Algoma Harbor, Wisconsin. In response to that request, the USACE Detroit District completed a study under the authority of Section 107 of the River and Harbor Act of 1960, as amended. An initial assessment of the project and its proposed alternatives were conducted. It was recommended that the No Action Alternative be undertaken, as the current harbor configuration is functioning as designed and there is no Federal interest in a Section 107 project. It was recommended that the City of Algoma seek further analysis through the Planning Assistance to States (PAS) program.

Prior to the Section 107 study, the federal navigation channel was dredged only rarely and was last dredged in 1993 with 17,000 cubic yards (cy) of material being removed. Prior to 1993 the channel was dredged in 1964 and 1957 with 8,675 and 19,760 cy of material being removed, respectively. The marina within the harbor was dredged to bedrock in 2010 and dredged again in 2013 by the City of Algoma. Prior to 2010, it is unknown when the marina was last dredged.

Chapter 2 Proposed Alternatives

This EA evaluates alternatives for the repair and maintenance of the north pier and the south breakwater at Algoma Harbor.

2.1 List of Alternatives

There are two alternatives considered to support navigability of the Algoma Harbor.

- 1. No Action Plan** – Under the no action alternative, USACE would not encase the breakwater at Algoma Harbor in sheet pile. The no action alternative would not adversely impact cultural and archaeological resources. Physical, biological, and social resources, however, could be impacted in that if breakwater repairs are not made, the structure will further deteriorate, thereby limiting safe access to the harbor and potentially reducing employment, business, and recreational activity in the area by limiting the recreational and transportation capabilities of the harbor.
- 2. Breakwater Repair** - The breakwater repair alternative proposes to install a sheet pile encapsulation for the entirety of the breakwater. The current breakwater's internal timber crib has deteriorated to the point where stone fill has been lost, leading to voids and increased channel sedimentation. To repair the breakwater, it will undergo encapsulation along 1,102 linear feet of the north pier and 1,530 linear feet of the south breakwater. This sheet pile encapsulation will include scour protection, likely placement of toe stone. The footprint of the breakwater will increase in all sections of the breakwater. Sections A, B, D, and E will have an increased footprint of 4-feet (2-feet on either side), section C will increase by 5-feet, and section F by 7-feet. These sections are depicted in Figure 2. The Breakwater Repair alternative 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.

2.2 Recommended Plan

Algoma Harbor Breakwater Repair is the Preferred Alternative and the Recommended Plan. The Algoma breakwater, constructed in 1871, currently requires stabilization. The structure has not been repaired since the 1930s when the superstructure was constructed and needs significant repair. USACE proposes to encapsulate the full length of the north pier and south breakwater in 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. Toe stone will be placed along the new sheet pile as necessary and may contribute to the increased footprint of 4-feet in sections A, B, D, and E, 5-feet in section C, and 7-feet in section F (Figure 2). Locations of section A through F are shown in Figure 1. 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. 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.

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 7 established and licensed commercial quarries, all of which are located in Wisconsin. In order to feasibly perform this work, any new stone will be transported by trucks from quarries to a contractor designated stone dock, from where they will be transported by barge to the site. The staging area is currently six parking spots in the parking lot outside of the Algoma Parks and Recreation Department and the rock peninsula to the south of the marina. The peninsula will be used to hold and load materials (e.g., sheet pile and stone) and equipment onto the work barge. There is also potential that any stone that is able to be reused from the current breakwater will be stored either in the staging area or on a work barge. All transportation would be performed in compliance with federal, state, and local regulations.

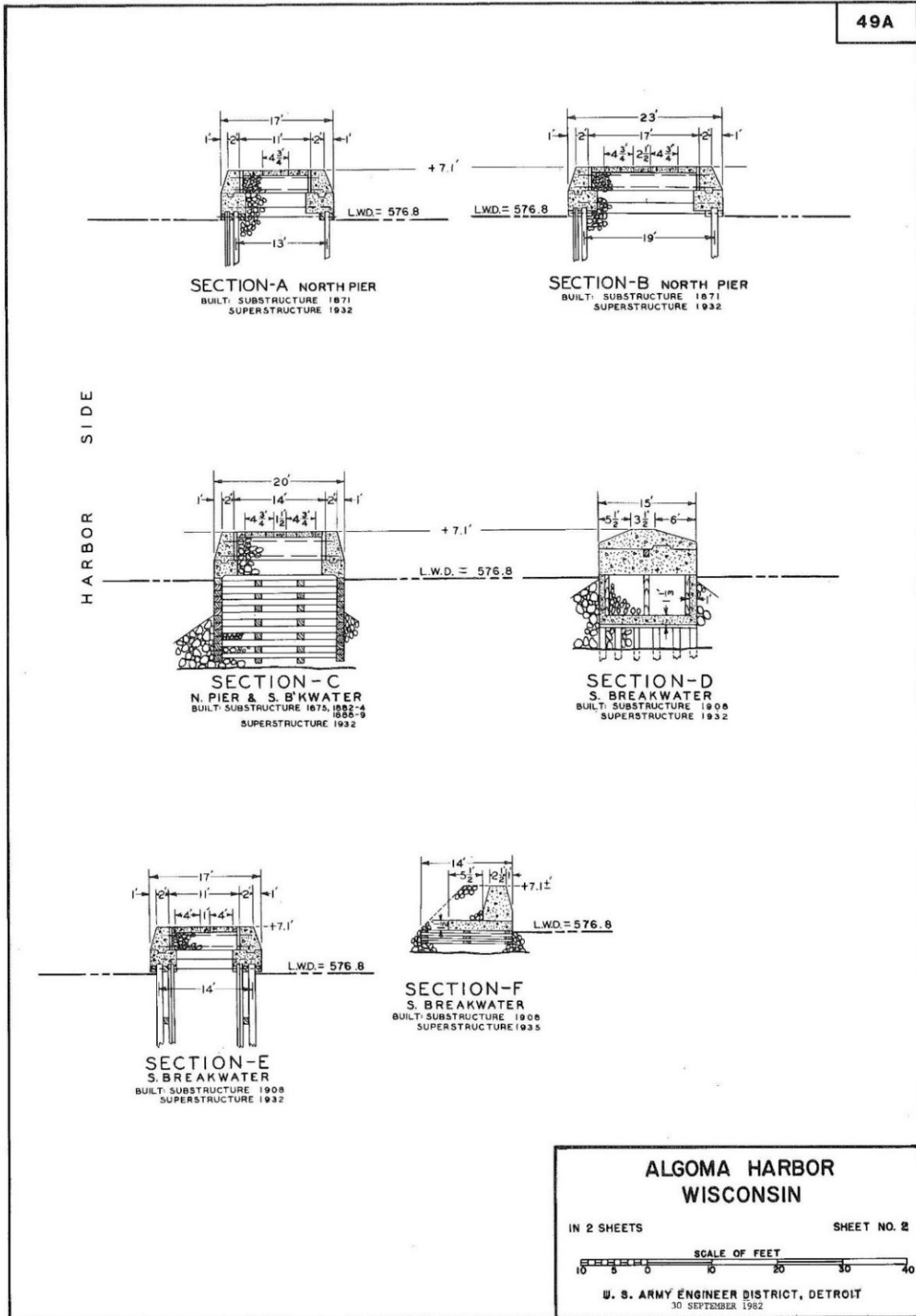


Figure 3: Existing Breakwater Cross Section

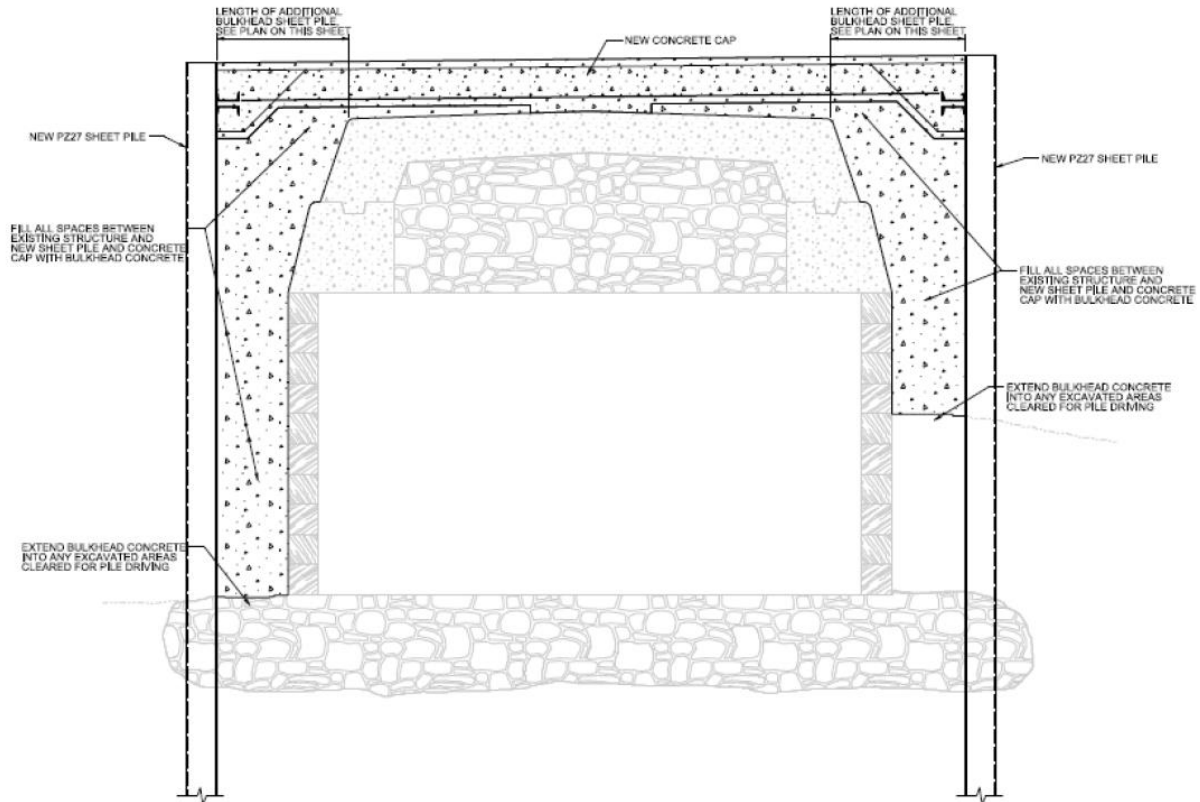


Figure 4: Example cross section of the proposed breakwater encapsulation.

2.2.1 Miscellaneous Project Details

The recommended plan may require the construction of temporary upland structures. The staging area is currently six parking spots in the parking lot outside of the Algoma Parks and Recreation Department and the rock peninsula to the south of the marina. The peninsula will be used to hold and load materials (e.g., sheet pile and stone) and equipment onto the work barge. There is also potential that any stone that is able to be reused from the current breakwater will be stored either in the staging area or on a work barge. The barge will be moored within the harbor. 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 additional 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 properties listed on the Wisconsin's State Register of historic places. 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. All construction activities will be carried out in accordance with federal and state laws and regulations, and local ordinances.

2.3 Compliance with Environmental Protection Statutes, Executive Orders, and Regulations

As discussed in detail below, the recommended plan is in full compliance with appropriate statutes, executive orders and regulations, including the National Historic Preservation Act of 1966, as amended, Fish and Wildlife Coordination Act, as amended, Endangered Species Act of 1973, as amended, Coastal Zone Management Act (CZMA), 16 USC 1451, 1456 et seq and implementing regulations at 15 CFR Part 930, Section 10 of Rivers and Harbors Act of 1899, Clean Air Act of 1963, as amended, National Environmental Policy Act of 1969, as amended, Executive Order 12898 (Environmental Justice), Executive Order 11990 (Protection of Wetlands), Executive Order 11988 (Floodplain Management), and the Clean Water Act of 1972, as amended.

Chapter 3 Existing Conditions and Alternative Impacts

3.1 Level of Environmental Impact Significance

This section discusses the existing conditions by resource category and any potential environmental impacts associated with the No Action Plan as well as with implementation of the Recommended Plan of Breakwater Repair.

The USACE evaluated the potentially affected environment and the degree of the effects of the action, respectively, to consider whether the proposed action's effects are significant. In considering the potentially affected environment, USACE considered the affected area and its resources. USACE defined effects or impacts to mean changes to the human environment from the proposed action or alternatives that are reasonably foreseeable, including direct, indirect, and cumulative effects. In considering the degree of the effects, USACE considered short- and long-term effects; beneficial and adverse effects; any effects to public health and safety; and whether the action threatens to violate federal, state, or local laws established for the protection of the human and natural environment. USACE considered the severity of an environmental impact as follows:

- None/negligible – No measurable impacts are expected to occur.
- Minor – A measurable and adverse effect to a resource. A slight impact that may not be readily obvious and is within accepted levels for permitting, continued resource sustainability, or human use. Impacts should be avoided and minimized if possible but should not result in a mitigation requirement.
- Significant – A measurable and adverse effect to a resource. A major impact that is readily obvious and is not within accepted levels for permitting, continued resource sustainability, or human use. Impacts likely result in the need for mitigation.
- Adverse – A measurable and negative effect to a resource. May be minor to major, resulting in reduced conditions, sustainability, or viability of the resource.
- Beneficial – A measurable and positive effect to a resource. May be minor to major, resulting in improved conditions, sustainability, or viability of the resource.
- Short-Term – Temporary in nature and does not result in a permanent long-term beneficial or adverse effect to a resource. For example, temporary construction-related effects (such as, an increase in dust, noise, traffic congestion) that no longer occur once construction is complete. May be minor, significant, adverse or beneficial in nature.
- Long-Term – Permanent (or for most of the project life) beneficial or adverse effects to a resource. For example, permanent conversion of a wetland to a parking lot. May be minor, significant, adverse or beneficial in nature.

USACE used quantitative and qualitative analyses, as appropriate, to determine level of potential impact from proposed alternatives. USACE analyzed ecological, aesthetic, historic, cultural, economic, social, and health effects, as applicable. Based on the results of the analyses, this Environmental Assessment (EA) identifies whether a particular potential impact would be adverse or beneficial, and to what extent. This chapter discusses the existing conditions by resource category and any potential environmental impacts associated with the implementation of the Recommended Plan and the No Action Plan.

3.2 No Action Plan

Under the No Action plan, there would be no repair of the breakwater at Algoma Harbor. This alternative would not adversely impact cultural, environmental, and archaeological resources. Physical and social resources, however, economic resources could be impacted in that if breakwater repairs are not made, the structure will further deteriorate, thereby limiting safe access to the harbor and potentially reducing employment, business, and recreational activity in the area by limiting the recreational, commercial, and transportation capabilities of the harbor.

3.3 Alternative Impacts

The following sections identify those environmental, cultural, and social resources that could potentially be affected by the proposed breakwater repair activities at Algoma Harbor.

3.4 Physical Resources

3.4.1 Climate

3.4.1.1 Existing Condition

The climate of the project area is predominantly continental with some modification by Lake Michigan. There is no climatological data available from the National Oceanic and Atmospheric Administration's (NOAA) Online Weather Data Portal for the City of Algoma. The closest available data is for the City of Kewaunee, WI which is 12-miles south of the project area. Given the proximity of Kewaunee to Algoma and the fact that they are both located on the western coast of Lake Michigan, it is expected that the climate data will be similar for both cities. Daily and monthly normals for temperature, precipitation, and snowfall between 1991 and 2020 were available for the City of Kewaunee (NOAA 2021a). The mean winter high temperature is 26.1°F while the mean winter low temperature is 12.4°F (January). The mean summer high temperature is 76.3°F while the mean summer low temperature is 60.2°F (July). Annual total precipitation normal for the Kewaunee City area is 31.08 inches. In winter, total snowfall is generally heavy with an annual total snowfall normal for the area of 48.1 inches. The majority of snowfall occurs between December and March with total snowfall normals ranging from 6.2 inches (i.e., March) to 13.5 inches (i.e., January) during this timeframe. All climate normals can be found in **Figure 5** **Error! Reference source not found.** and Table 1.

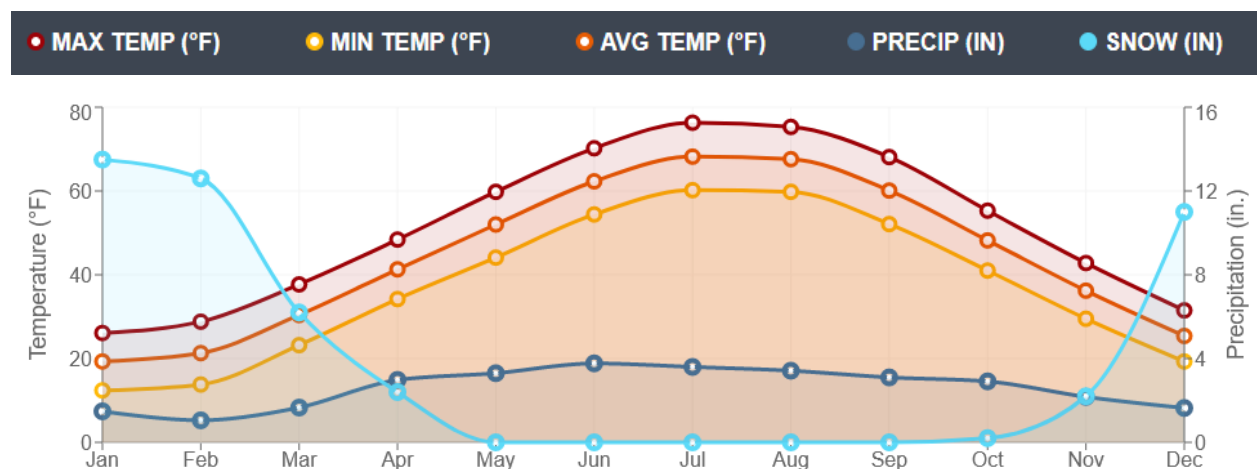


Figure 5: Precipitation and Temperature Normals for the City of Kewaunee, Wisconsin Area Between 1991 and 2020 (NOAA 2021a).

Table 1: Precipitation and Temperature Normals for the Kewaunee City, Wisconsin Area (NOAA 2019a)

Month	Total Precipitation Normal (inches)	Mean Max Temperature Normal (°F)	Mean Min Temperature Normal (°F)	Mean Avg Temperature Normal (°F)	Mean Snowfall Normal (inches)
January	1.48	26.1	12.4	19.3	0.0
February	1.05	28.8	13.8	21.3	0.0
March	1.66	37.7	23.2	30.4	0.0
April	2.98	48.4	34.2	41.3	0.2
May	3.30	59.8	44.1	52.0	2.2
June	3.77	70.2	54.4	62.3	11.0
July	3.60	76.3	60.2	68.2	13.5
August	3.42	75.3	59.8	67.6	12.6
September	3.10	68.1	52.1	60.1	6.2
October	2.91	55.3	41.0	48.2	0.0
November	2.17	42.8	29.5	36.2	0.0
December	1.64	31.5	19.3	25.4	0.0
Annual	31.08	51.7	37.0	44.3	0.2

3.4.1.2 Alternative Impact

Construction of the recommended plan would not have short-term, long-term, direct, or indirect impacts on 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.

3.4.2 Geology

3.4.2.1 Existing Conditions

The City of Algoma lies on the western shore of Lake Michigan and east of a major subcontinental divide between the Mississippi River and the Great Lakes – St. Lawrence River drainage basins within Kewaunee County. This is in the Eastern Ridges and Lowlands region of Wisconsin. The bedrock formations underlying the county consist of the Maquoketa Formation that is overlain with over 500-feet of Silurian Dolomite. In some parts of Kewaunee County, the dolomite is overlain by more than 150-feet of Pleistocene sediment (Carson et al. 2016). The Maquoketa Formation includes shale, dolomitic shale, and dolomite. The dolomite underlying the city consists of Cayungan, Niagaran, and Alexandrian series. There are no geologic sites of importance in the City of Algoma. Within the harbor, bedrock was encountered at 19.2 – 39.5 feet below the top of the breakwater at elevations of 539.8 – 561.8 (NADV 88 datum).

The U.S. Department of Agriculture web soil survey was consulted to assess the soil makeup of the areas around Algoma Harbor. The surrounding soils are composed of Hortonville silt loam and Oakville loamy fine sand. Sediment borings were conducted in the harbor by Prairie-Hanson SBA 8(a) JV and the lakebed was found to consist of loamy fine sand followed by silt loam and bedrock. The unconsolidated materials overlaying the bedrock in the harbor are mostly loose sands with scattered gravel overlying very soft loamy clays from 2.1 – 19.4 feet thick. The loamy clays are 2.5 – 11.3 feet thick.

3.4.2.2 Alternative Impact

The recommended plan would be to encapsulate the old timber crib and breakwater in sheet pile armoring, install a new concrete cap, and place toe stone along the base of the breakwater. This would be done on both the inland and Lake Michigan side of the breakwater. The worksite is currently Lake Michigan bottom and is directly adjacent to the existing breakwater bounding the recreational Algoma Harbor. The sheet pile would need to 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. Lake Michigan nearshore bottom is relatively uniform and vast and the amount of bottom that is lost due to the expanded footprint is insignificant when compared to the larger available habitat. 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.

3.4.3 Sediment Quality

3.4.3.1 Existing Conditions

Algoma Harbor is 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. The marina was dredged to bedrock in 2010 and, because of excessive sedimentation, needed to be dredged again in 2013. Material removed from the federal channel has historically been placed at an upland disposal site. Factors potentially affecting sediment quality in the harbor include effluent from industries, agricultural runoff, and stormwater discharges. Sediment quality is monitored by USACE and was last sampled in 2012 at several locations in and around the harbor (USACE 2013). The sediment from the littoral zone outside the harbor is composed primarily of sand with low organic content. Samples taken from the outer harbor were also primarily comprised of sand, though the sample taken at the harbor mouth was approximately 58% sand, 35% silt, and 7% clay. The material in the outer harbor, especially near the mouth of the harbor, is likely being deposited by the Ahnapee River, as the composition of the materials are similar. Sediment taken from the marina is highly organic in nature with little to no mineral material found. Any sediment that is carried into the marina is likely sourced from the river as well. The overall sediment quality in the harbor is generally good. Sediment quality issues are related to sediment particle distribution and point sources. These localized issues do not significantly detract from the overall high quality of the sediment in Lake Michigan.

3.4.3.2 Alternative Impact

The recommended plan includes the placement of sheet pile and toe stone along the north and south harbor structures. No sediment will be dredged for this project, and the sheet pile will be driven into the existing lake bottom. 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.

3.4.4 Water Quality

3.4.4.1 Existing Condition

The City of Algoma draws its drinking water from three, 500-foot or greater deep ground water wells located within Algoma (well numbers BG094, BG096, and BG097). As ground water flows through the

ground, metals such as iron and manganese are dissolved, and their concentration can become elevated within the water. Industrial discharges, urban activities, agriculture, groundwater pumpage, and waste disposal can all affect groundwater quality. The groundwater quality within Kewaunee County was analyzed in 2014 by the Land and Water Conservation Department and the University of Wisconsin-Stevens Point Environmental Analysis Lab. Their tests showed that 29.7% of the private rural wells throughout the County were not safe for human consumption due to the presence of coliform bacteria and/or nitrates above the human health standard of 10 ppb (Kewaunee Co., 2014). The quality of water used in people's homes or businesses in Algoma is monitored for many contaminants by Wisconsin Department of Natural Resources (WDNR) and Algoma Utilities (public utility). Contaminants regularly being tested for include arsenic, manganese, and strontium. The WDNR's Groundwater Retrieval Network webpage (<https://dnr.wisconsin.gov/topic/Groundwater/GRN.html>) houses the ground water well information. In general, the water quality of the ground water used in Algoma is good, with all tested contaminates being well below WDNR limits.

Water quality of Lake Michigan in the vicinity of Algoma is monitored by WDNR. There is a stormwater discharge for the City of Algoma located in the south end of the harbor. The City of Algoma created a bioretention pond in 2020 that can filter approximately 42,000 gallons of stormwater before flowing directly into Lake Michigan. At various times of year, aquatic plant material does accumulate on the harbor side of the breakwater in the same area as the stormwater discharge. According to Algoma residents, it is predominantly duckweed (*Lemna sp.*), a free-floating aquatic plant. This material is described as not causing a significant odor issue and is quickly eaten by the waterfowl in the area (Photo 1).



Photo 1: Accumulation of duckweed at the southern corner of Algoma Harbor. Photo taken August 2022.

On the lake side of the breakwater, at the north end of Crescent Beach, green filamentous algae (predominantly *Cladophora sp.*) accumulates where the south breakwater meets the shore (Photo 2). According to residents, as the algae accumulates and decays, it produces an offensive odor that can travel a significant distance from the beach. In recent years, *Cladophora* is becoming more prevalent within Lake Michigan, especially along the western shores due, in part to increased water clarity caused by the established population of invasive *Dreissena* mussels and by phosphorus and nitrogen levels in Lake Michigan. *Cladophora* is a native species to the Great Lakes and an important component of the food web. It does not produce toxins the way blue-green algae does, but as it decays it can promote bacterial

growth within the algae mats. Crustaceans can become trapped with the floating algae mats and be washed onto shore with the algae. This can attract numerous gulls, which can deposit fecal material and subsequently bacteria onto the beach or into the lake. Nearshore issues with bacteria (*Escherichia coli*) are not uncommon on public beaches, but in general, the water quality of the nearshore zone of Lake Michigan is good. Beach water quality issues can also be related to several factors, including the beach/shore configuration, point sources, wildlife, and human use. These localized issues do not significantly detract from the overall high quality of Lake Michigan water.



Photo 2: Accumulation of *Cladophora* on Algoma's Crescent Beach, just south of harbor. Photo taken August 2022.

3.4.4.2 Alternative Impact

The proposed activities associated with the breakwater repair would cause localized, minor, and temporary increases in turbidity within Lake Michigan around the work area. The increase in turbidity is expected to be a direct short-term effect to Lake Michigan, temporary in duration and will not have a direct or indirect effect to the ground water supply in either the short or long-term. The short-term localized impact to water quality of Lake Michigan is expected to subside when construction activities end. There is not expected to be direct or indirect long-term effects to the water quality of Lake Michigan. Best Management Practices such as use of floating containment booms will be used to control spills, if necessary. The Contractor will maintain a spill plan and response materials on site. The proposed activities will not have a direct or indirect long or short-term effect to the presence of *Cladophora* or duckweed in or around the harbor as the general shape as the configuration of the breakwater will remain the same and not significantly impact the present Lake Michigan currents that carry the algae to the shore.

3.4.5 Air Quality

3.4.5.1 Existing Condition

The Federal Clean Air Act requires the U.S. Environmental Protection Agency (USEPA) to set national ambient air quality standards (NAAQS) for six criteria pollutants that are considered harmful to public health and the environment. These include carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur oxides. Areas not meeting the NAAQS for one or more of the criteria pollutants are designated as “nonattainment” areas by the USEPA. Kewaunee County is listed as being in attainment and in maintenance for the revoked 1-hour ozone standard (1979) and the revoked 8-hour ozone standard (1997). The most recent year of non-attainment is 1995 and 2007 respectively (Table 2).

Table 2: Non-attainment Status for Kewaunee County, Wisconsin.

NAAQS	Area Name	Most Recent Year of Nonattainment	Current Status	Classification
1-Hour Ozone (1979) – NAAQS revoked	Kewaunee Co, WI	1995	Maintenance (since 1996)	Moderate
8-Hour Ozone (1997) – NAAQS revoked	Kewaunee Co, WI	2007	Maintenance (since 2008)	Former Subpart 1

USEPA Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants (aka “Green Book”), accessed on April 12, 2022 at https://www3.epa.gov/airquality/greenbook/anavo_wi.html

3.4.5.2 Alternative Impact

The local air quality in Kewaunee County is considered ‘in attainment’ under the Clean Air Act. Due to the small scale and short duration of this project, the main sources of releases would be vehicle emissions and dust associated with the construction activities. The project does not include any stationary sources of air emissions, and a General Conformity Analysis was not completed. The temporary (short-term) mobile source emissions from this project are minor in terms of the NAAQS and the State Implementation Plan. The project is not expected to be a significant source of greenhouse gas emissions. All construction equipment would be in compliance with current air quality control requirements for diesel exhaust, fuels, and similar requirements. USACE follows Engineering Manual (EM) 385-1-1 for worker health and safety and requires all construction activities to be completed in compliance with Federal health and safety requirements.

All equipment operation, activities, or processes performed by the Contractor shall be in accordance with all federal, state, and local air emission and performance laws and standards. Also required is an Air Pollution Control Plan that details provisions to assure that dust, debris, materials, trash, etc. do not become airborne and travel off the project site. Air pollution control shall comply with NR 415, Wis. Adm. Code. Once implemented, the breakwater project itself would be neutral in terms of air quality, with no features that either emit or sequester air pollutants to a large degree, including greenhouse gas emissions. Therefore, no direct or indirect long-term impacts to air quality are expected.

3.4.6 Limnology

3.4.6.1 Existing Condition

Lake Michigan’s ordinary high-water mark (OHWM) is on average approximately 581.5 feet (International Great Lakes Datum [IGLD] 1985) for 2020 (Table 3). The lake has a total surface area of 22,404 square miles (mi²), with an average depth of 279 feet and a maximum depth of 923 feet. At its

greatest extent, Lake Michigan is 307 miles long and 118 miles across. Only a relatively small amount of water flows out the bottleneck straits between lakes Michigan and Huron, so Lake Michigan holds its water a long time, nearly 100 years. Lake Michigan is bordered by 1,659 miles of shoreline, of which 495 miles of shoreline are located in Wisconsin.

Table 3: Characteristics of Lake Michigan

Great Lake	Water Surface Area (mi ²)	OHWL (IGLD, feet)	Length (miles)	Breadth (miles)	Maximum Depth (feet)	Drainage Area (mi ²)
Lake Michigan	22,404	581.5	307	118	923	67,900

The natural hydrology and littoral hydraulic processes have been considerably altered from their natural state. Sand is now transported and trapped at many different points due to the numerous structures along the whole southern basin of Lake Michigan. Water levels within lakes Michigan and Huron have been recorded since 1918. The lake wide period of record average (1918 to present) is currently 578.8 feet (IGLD 85) (NOAA 2021b). Table 4 depicts the monthly observed water levels for 2020, the monthly and annual averages, and the monthly minimum and maximums. The data for these lakes (i.e., Michigan and Huron) are presented together since hydrologically they are considered one lake.

Table 4: Final 2020 and long-term (1918-2020) mean, max, and min monthly mean water levels (Based on gage networks) for Lakes Michigan-Huron (Feet, IGLD85). Accessed Feb 3, 2021 (USACE 2022).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2020	581.56	581.53	581.43	581.69	581.96	582.19	582.22	582.09	581.82	581.53	581.36	581.17	581.73
Mean	578.44	578.41	578.48	578.74	579.07	579.30	579.40	579.33	579.17	578.94	578.74	578.61	578.87
Max	581.56	581.53	581.43	581.69	581.96	582.19	582.22	582.09	581.96	582.35	581.96	581.56	
Year	2020	2020	2020	2020	2020	2020	2020	2020	1986	1986	1986	1986	
Min	576.02	576.08	576.05	576.15	576.57	576.64	576.71	576.67	576.64	576.44	576.28	576.15	
Year	2013	1964	1964	1964	1964	1964	1964	1964	1964	1964	1964	2012	

3.4.5.2 Alternative Impact

Construction of the recommended plan does not include the placement of material that would further disrupt lacustrine processes and therefore would have no direct or indirect, short-term or long-term impacts to lacustrine processes. Construction would not impact the surface elevation of Lake Michigan.

3.5 Ecological Resources

3.5.1 Macroinvertebrates

3.5.1.1 Existing Condition

Macroinvertebrate populations in Northeastern Lake Michigan near the project site were sampled in 1999 and 2019 by Burlakova of the Great Lakes Center in Buffalo, NY. In those two sampling years *Diporeia sp.*, *Enchytraeidae*, *Gammarus sp.*, *Heterotrissocladius subpilosus*, *Limnodrilus sp.*, *Lumbriculid*, *Micropsectra sp.*, *Monodiamesa sp.*, *Mysis relicta*, *Nemertea*, *Oligochaeta*, *Paracladopelma winnelli*, *Rhyacodrilus sodalis*, *Sphaeriidae*, *Spirosperma ferox*, *Stylodrilus heringianus*, *Tanytarsus sp.*, *Tubificid*, *Vejdovskyella intermedia* were the macroinvertebrates found. Other populous macroinvertebrates within Lake Michigan include the non-native zebra and quagga mussels (*Dreissena polymorpha* and *D. rostriformis bugensis*) (personal communication).

3.5.1.2 Alternative Impact

The recommended plan would remove the existing toe stone, drive steel sheet pile into the sediment along the existing breakwater, and replace the toe stone along the sheet pile. Placement of the sheet pile and stone would likely smother aquatic macroinvertebrates located where the material is to be placed. In

addition, the work may temporarily increase turbidity in the area which in turn would affect filter-feeding macroinvertebrates. Therefore, the placement of sheet pile and filling of stone as part of the breakwater repair would have a direct short-term impact to aquatic macroinvertebrates in the project area. The macroinvertebrate community of Lake Michigan is very large and most species are considered very abundant. Therefore, these short-term impacts are not significant. Long-term it is anticipated that aquatic macroinvertebrates adjacent to the project area would colonize the newly placed sheet pile and stone, therefore, there would be no direct or indirect long-term impacts to macroinvertebrate communities.

3.5.2 Fishes

3.5.2.1 Existing Condition

In general, the surf zone fish assemblage of Lake Michigan would be the target community that occurs within the project vicinity at Algoma Harbor. No formal surveys of the harbor or river exist, but Algoma has a strong recreational fishing community. Local fishermen and WDNR personnel were consulted about the possible fish community for this report. The species assemblage in the Algoma Harbor is likely to be quite diverse much of the year. Particularly because of the transition of fish in and out of the Ahnapee River. During the spring there is likely to be Steelhead (Rainbow) Trout (*Oncorhynchus mykiss*) in the harbor and in the fall there will be Chinook Salmon (*Oncorhynchus tshawytscha*) there. Various members of the Centrarchidae family such as Smallmouth Bass (*Micropterus dolomieu*), Largemouth Bass (*Micropterus salmoides*), Pumpkinseed (*Lepomis gibbosus*), and Bluegill (*Lepomis macrochirus*) will be present around the harbor. Rock Bass (*Ambloplites rupestris*) and Yellow Perch (*Perca flavescens*) are consistently caught off of the breakwater. Crappies (*Pomoxis sp.*) and Northern Pike (*Esox lucius*) have been caught by anglers around the mouth of the Ahnapee and are expected to be present in the harbor at times. Invasive species such as Round Goby (*Neogobius melanostomus*), Rainbow Smelt (seasonal) (*Osmerus mordax*), and Alewife (seasonal) (*Alosa pseudoharengus*) are present in and around the harbor. There are likely a variety of forage/minnow species present including a variety of shiners. The occasional sucker species, Bowfin (*Amia calva*), gar, bullheads (*Ameiurus sp.*), Common Carp (*Cyprinus carpio*), and Burbot (*Lota lota*) have also been caught in the harbor.

3.5.2.2 Alternative Impact

This effort will not be implemented between a March 15 and July 1 spawning window to avoid impacts to fish during their critical life stages. During construction, appropriate erosion control measures will be taken to minimize potential adverse impacts of the sheet pile placement and stone removal and placement activities on the aquatic ecosystem. General construction scheduling and sequencing would minimize impacts to any spawning fish present in the project area. Best management practices such as erosion control fabric, silt fencing, and containment booms would be implemented to minimize any temporary upland sources of turbidity, spill, or debris impacts associated with the proposed activities. Overall, the placement/replacement of stone has the potential to smother nekton and increase turbidity in the area, which in turn would affect sight feeding fish species. However, this would be a short-term, less than significant impact to fish species in the project area. In the long-term, it is anticipated that fish species could utilize the newly placed sheet pile and stone as shelter and a foraging location. Therefore, there would be no negative direct or indirect long-term impacts to the surf zone fish community.

3.5.3 Amphibians & Reptiles

3.5.3.1 Existing Condition

Reptiles and amphibians that may be present in the area include those that utilize beach habitat. These are quite limited along the coast of Lake Michigan, and may include Painted Turtle (*Chrysemys picta*), Red Ear Slider (*Pseudemys scripta*), Snapping Turtle (*Chelydra serpentina*), and the Garter Snake

(*Thamnophis sirtalis*). The existing breakwater structure could also support Mudpuppy Salamander (*Necturus maculosus*), which spend their entire life underwater and forage along rocky shoals.

3.5.3.2 Alternative Impact

Limited areas for food, cover, and reproduction result in reptile and amphibian population diversity that is absent to low. However, the existing structure could support the Mudpuppy Salamander. Overall, the placement of sheet pile and stone would have a potential less than significant impact to aquatic salamanders that may be currently using the existing breakwater structure. This potential impact would be further reduced with the implementation of best management practices, such as construction scheduling and sequencing, to minimize impacts to any reproducing salamanders and the use of floating containment booms to control spills. In the long-term, aquatic salamanders would be expected to return to the area around the repaired breakwater structure; therefore, there would be no direct or indirect long-term impact to amphibians or reptiles.

3.5.4 Birds

3.5.4.1 Existing Condition

The open water of Lake Michigan provides resting and foraging habitat for many waterfowl such as divers, mergansers, terns, gulls, and raptors. According to the eBird citizen scientist observations associated with The Cornell Lab of Ornithology, common birds observed within a 0.25 miles radius of Algoma Marina/Harbor and the existing breakwater, include: Red-breasted Merganser (*Mergus serrator*), Canada Goose (*Branta canadensis*), Herring Gull (*Larus argentatus*), Mallard (*Anas platyrhynchos*), Common Goldeneye (*Bucephala clangula*), Great Blue Heron (*Ardea herodias*), Common Merganser (*Mergus merganser*), and Greater Scaup (*Aythya marila*). In total, 129 bird species have been recorded within the vicinity of the harbor.

A list of migratory birds that could be present at the project site was generated using the U.S. Fish and Wildlife Service's (USFWS) Environmental Conservation Online System Information for Planning and Consultation (ECOS-IPaC) tool on February 6, 2023. The migratory birds that could be present at or near the project site are the American Golden-plover (*Pluvialis dominica*), Bald Eagle (*Haliaeetus leucocephalus*), Black Tern (*Chlidonias niger*), Black-billed Cuckoo (*Coccyzus erythrophthalmus*), Bobolink (*Dolichonyx oryzivorus*), Golden-winger Warbler (*Vermivora chrysoptera*), Lesser Yellowlegs (*Tringa flavipes*), Red-headed Woodpecker (*Melanerpes erythrocephalus*), Ruddy Turnstone (*Arenaria interpres morinella*), Rusty Blackbird (*Euphagus carolinus*), Short-billed Dowitcher (*Limnodromus griseus*), and Wood Thrush (*Hylocichla mustelina*).

3.5.4.2 Alternative Impact

Harbor breakwaters are inhospitable structures where birds do not typically nest, although pelicans, terns, and gulls may congregate there seeking a safe place to roost during the night. Additionally, the current breakwater is utilized by the public as a popular fishing and walking location, preventing anything more than short-term resting and usage of the breakwater by bird species. The open water of Lake Michigan provides resting and foraging habitat for these and other bird species such as mergansers and other divers, as well as raptors. These and other avifauna would temporarily avoid the immediate breakwater repair area because of construction noise and activity but would be expected to return shortly following these operations. Therefore, having a direct short-term effect during active construction times, but the proposed project would not have direct or indirect, long-term impacts on migratory birds.

3.5.5 Threatened & Endangered Species

3.5.5.1 Existing Conditions

Federal

A query of the USFWS’s ECOS-IPaC on February 6, 2023, resulted in an official species list (Project Code: 2022-0045007) of federally-listed species that may be present within the project area. Obtaining the official species list from ECOS-IPaC fulfills the requirement for federal agencies to “request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action”. Federally listed species for the Algoma Harbor vicinity (Table 5) include the Northern Long-eared Bat (*Myotis septentrionalis* [threatened]), Hine’s Emerald Dragonfly (*Somatochlora hineana* [endangered]), the Monarch Butterfly (*Danaus plexippus* [candidate]), and Dwarf Lake Iris (*Iris lacustris* [threatened]). There are no designated critical habitats in the project vicinity.

Table 5: Federally Listed Species with the Potential to Occur in the Project Area.

Species Name	Federal Status	Preferred Habitat	Potential to Occur
Northern Long-eared Bat (<i>Myotis septentrionalis</i>)	Threatened	During summer roost underneath bark, in cavities or in crevices of both live trees and snags. During winter hibernate in caves and mines.	Not Present; lack of suitable habitat.
Hine’s Emerald Dragonfly (<i>Somatochlora hineana</i>)	Endangered	Found in spring fed wetlands, wet meadows, and marshes.	Not Present; lack of suitable habitat.
Monarch Butterfly (<i>Danaus plexippus</i>)	Candidate	Prefer grassland ecosystems with native milkweed and nectar plants.	Not Present; lack of suitable habitat.
Dwarf Lake Iris (<i>Iris lacustris</i>)	Threatened	Shallow soil over moist calcareous sands, gravel and beach rubble, and limestone crevices.	Not Present; lack of suitable habitat

State of Wisconsin

State-listed endangered species were reviewed for the project area by the Chicago District. Wisconsin listed species and their critical habitats are identified by WDNR as occurring within Kewaunee County and listed in Table 6.

Table 6: Wisconsin State listed threatened and endangered species, Kewaunee County.

Scientific Name	Common Name	Scientific Name	Common Name
<i>Acipenser fulvescens</i>	Lake Sturgeon	<i>Jefersonia diphylla</i>	Twinleaf
<i>Bartramia longicauda</i>	Upland Sandpiper	<i>Lepomis megalotis</i>	Longear Sunfish
<i>Bombus insularis</i>	Indiscriminate Cuckoo Bumble Bee	<i>Notropis anogenus</i>	Pugnose Shiner
<i>Bombus perplexus</i>	Confusing Bumble Bee	<i>Nycticorax nycticorax</i>	Black-Crowned Night-Heron
<i>Cakile edentula var. lacustris</i>	American Sea-Rocket	<i>Paravittrea multidentate</i>	Dentate Supercoil
<i>Calamovilfa longifolia var. magna</i>	Sand Reedgrass	<i>Phalaropus tricolor</i>	Wilson’s Phalarope
<i>Chlidonias niger</i>	Black Tern	<i>Polystichum acrostichoides</i>	Christmas Fern
<i>Eriogenia bulbosa</i>	Harbinger-of-spring	<i>Somatochlora hineana</i>	Hine’s Emerald Dragonfly

ScientificName	Common Name	ScientificName	Common Name
<i>Euphorbia polygonifolia</i>	Seaside Spurge	<i>Striatura exigua</i>	Ribbed Striate
<i>Eurybia furcata</i>	Forked Aster	<i>Sturnella neglecta</i>	Western Meadowlark
<i>Falco peregrinus</i>	Perigrine Falcon	<i>Vertigo nylanderii</i>	Deep-throated Vertigo
<i>Hendersonia occulta</i>	Cherrystone Drop	<i>Viola rostrata</i>	Long-spurred Violet
<i>Heterosternuta wickhami</i>	Hydroporus Diving Beetle	<i>Vitrina angelicae</i>	Transparent Vitrine Snail
<i>Hydroprogne caspia</i>	Caspian Tern	<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird
<i>Ixobrychus exilis</i>	Least Bittern		

3.5.5.2 Alternative Impact

Federally Listed Species

The USACE determined that the recommended plan would have ‘no effect’ on the Northern Long-Eared Bat, Hine’s Emerald Dragonfly, Monarch Butterfly, and Dwarf Lake Iris. This is because construction activities are planned to take place along the harbor’s existing breakwater structures away from coastal wetlands, prairies, and woodlands, which are the preferred habitats for these species, and would not directly impact any established terrestrial habitats. Therefore, the proposed project would not have direct or indirect, short-term or long-term impacts on threatened and endangered species.

Wisconsin State Listed Species

Potential state listed species that could be within the project area include surf zone fish species such as the Pugnose Shiner, Longear Sunfish, and Lake Sturgeon. Appropriate erosion control measures would be taken to minimize potential adverse impacts of the stone removal and placement/replacement activities on the aquatic ecosystem. General construction scheduling and sequencing would minimize impacts to any spawning fish present in the project area. Best management practices such as erosion control fabric, silt fencing, and containment booms would be implemented to minimize any temporary upland sources of turbidity, spill, or debris impacts associated with the proposed activities. Overall, the removal and placement/replacement of stone has the potential to disturb state listed fish species that may be within the project area. However, this would be a short-term less than significant impact to state listed fish species. In the long-term, fish could use any toe stone present along the new sheet pile as shelter and foraging habitat.

3.5.6 Natural Areas & Nature Preserves

3.5.6.1 Existing Conditions

There are not state natural areas within Kewaunee County. However, there are several unique and diverse areas in Kewaunee County Wisconsin, including the Ahnapee River, Crescent Beach, Threemile Creek, Stony Creek, Krohns Lake, Kurtz Woods, Gardener Swamp State Wildlife Area, Big Creek Ida Bay Preserve. These sites vary in distance from the offshore Algoma breakwater from directly adjacent (Crescent Beach and Ahnapee River) to several miles away.

3.5.6.2 Alternative Impact

Construction activities are planned to take place along the harbor’s existing breakwater away from coastal wetlands, prairies, and woodlands and would not directly or indirectly impact any established natural areas and nature preserves. The proposed breakwater repair results in a potential disturbance of Lake Michigan bottom directly adjacent to the current breakwater. While this minimally productive ecosystem

supports a small amount of flora and fauna, the proposed action will provide structural diversity in the form of rubble mound habitat. This is unlikely to significantly impact the habitat’s productivity of Lake Michigan and may have minor habitat benefits in the future. The proposed action is not expected to have a more than minimal direct or indirect, short-term or long-term impact on existing ecosystem functions.

3.6 Cultural & Social Resources

3.6.1 Social Setting

3.6.1.1 Existing Condition

Algoma Harbor is located in the City of Algoma, Wisconsin. The 2022 population was 3,054, 19.8% of whom are under the age of 18 years. The median household income is \$53,259. Algoma is not listed as a top 100 city in Wisconsin by population. The City of Algoma is not racially and/or ethnically diverse and has a low-income population on-par with the larger geographic area of Wisconsin (Table 7).

The U.S. Census Bureau’s American Fact Finder and Quick Facts (U.S. Census Bureau 2020) for Algoma, Kewaunee County and the State of Wisconsin were reviewed for socioeconomic information, which is presented in Table 7.

Table 7: 2019 U.S. Census data for Algoma, Kewaunee County, and Wisconsin.

Category	Algoma	Kewaunee County	Wisconsin
Total Population	3,243	20,543	5,895,908
Under 18 years	19.1%	21.5%	21.8%
Under 5 years	5.4%	5.2%	5.7%
White	92.4%	97.3%	87.0%
Black or African American	0.7%	0.6%	6.7%
American Indian and Alaska Native	0.7%	0.5%	1.2%
Asian	0.4%	0.5%	3.0%
Native Hawaiian and Other Pacific Islander	0.6%	0.0%	0.1%
Hispanic or Latino	2.9%	3.4%	7.1%
Two or more races	4.4%	1.1%	2.0%
High School Graduate or Higher	94.5%	93.6%	92.6%
Bachelor’s Degree or Higher	17.7%	19.9%	30.8%
Median Household Income	\$53,259	\$68,474	\$63,293
Below Poverty Level	10.0%	6.7%	10.0%

3.6.1.2 Alternative Impact

The Chicago District conducted an evaluation of potential environmental justice impacts using minority and low-income populations as criteria. This evaluation was conducted to ensure that no minority and/or low-income populations in the area were disproportionately affected due to activities from this project.

As defined in Executive Order 12898 and CEQ guidance, a minority population occurs where one or both of the following conditions are met within a given geographic area:

- The American Indian, Alaskan Native, Asian, Pacific Islander, Black, or Hispanic population of the affected area exceeds 50 percent.
- The minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

A minority population also exists if more than one minority group is present, and the aggregate minority percentage meets one of the above conditions. The selection of the appropriate unit of geographic analysis could be a governing body's jurisdiction, a neighborhood, census tract, or other similar unit. Note that the Hispanic/Latino population is a multi-racial group, which may overlap with other minority groups.

Executive Order 12898 does not provide criteria to determine if an affected area consists of a low-income population. For this assessment, the CEQ criteria for defining a minority population has been adapted to identify whether the population in an affected area constitutes a low-income population. An affected geographic area is considered a low-income population (i.e., below the poverty level, for purposes of this analysis) where one or both of the following conditions are met within a given geographic area:

- The poverty rate of the total population is above 50 percent.
- The percentage of individuals in poverty is meaningfully greater than in the general population or other appropriate unit of geographic analysis.

The City of Algoma does not appear to have a disproportionate number of minority individuals, households below the poverty line, or children under the age of 18 in relation to the county and state.

The U.S. EPA's Environmental Justice Screening and Mapping Tool (<https://ejscreen.epa.gov/mapper/>) was used to investigate environmental justice indexes and socioeconomic indicators for the City of Algoma. Algoma and the surrounding area are classified as being within or below the 60th percentile for the demographic index and low-income indices. Additionally, the area was within or below the 60th percentile for each of the environmental justice indices.

The socioeconomic environment of the affected area was also investigated using the following web based analytical tool:

- Council on Environmental Quality (CEQ) Climate and Economic Justice Screening Tool (<https://screeningtool.geoplatform.gov/en/>)

This tool uses various geographically based data visualization methods to analyze the socioeconomic conditions in an area using census and other data sources. This tool was used to assess conditions in the City of Algoma.

The CEQ tool uses these data sets to determine if a census tract area is considered disadvantaged based on eight categories. Under the current formula, a census tract will be identified as disadvantaged in one or more categories of criteria if the census tract is above the threshold for one or more environmental or climate indicators (8 total) and the census tract is above the threshold for two socioeconomic indicators which have been identified as relevant to the environmental indicator. For the majority of the environmental indicators, the corresponding socioeconomic indicators involve relative income and education levels. More information on the methodology can be found on the CEQ web site (<https://screeningtool.geoplatform.gov/en/methodology>).

Based on the methodology of this screening tool, the City of Algoma is not considered disadvantaged in multiple categories. An image of this tool, as applied to the relevant area is shown in Figure 6.

Given these facts this project will not have a disproportionate adverse effect on minority populations, low-income populations, or children under the age of 18 in the project area. It is anticipated that the recommended plan would have no short-term or long-term effects to the social setting of the project area.

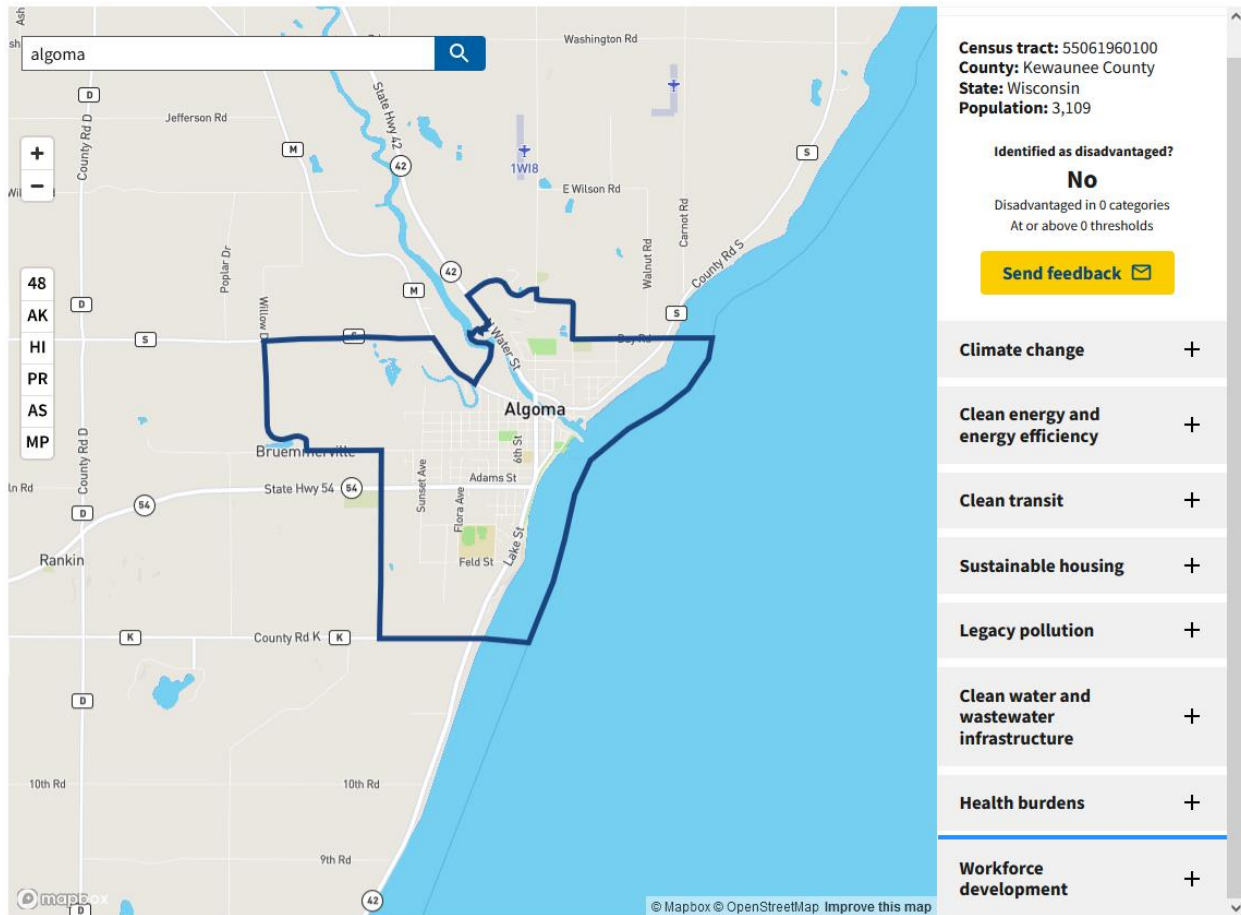


Figure 6: City of Algoma results of the Council on Environmental Quality’s Climate and Economic Justice Screening Tool.

3.6.2 Archaeological & Historic Properties

3.6.2.1 Existing Condition

The USACE has conducted a records search and literature review of the project APE on the Wisconsin Historic Preservation Database and the National Register of Historic Places (NRHP). The literature review and records search revealed that the wreck of the Abner Howes (47KE0069) is adjacent to the project APE to the northeast and would need to be avoided during the repair project. While the wreck meets the age threshold for listing on the NRHP, the condition of the wreck has not been confirmed by field investigation. The Algoma Pierhead Light (AHI # 26537) sits within the project APE on the Algoma North Pier and has been determined to be eligible for the NRHP along with the associated breakwaters.

3.6.2.2 Alternative Impact

The USACE has made a reasonable and good faith effort to identify historic properties that may be affected by this undertaking. While the removal of the deteriorated metal catwalk from the breakwater will be a visual change, the project would not alter the primary historic purpose of providing a safe harbor and safe passage through Algoma Harbor and the project would better preserve the Pierhead Light in the long term. Given the information above, the Corps has determined that the project would not adversely impact the potential NRHP eligibility of the Algoma Pierhead Light. Wisconsin SHPO was sent a letter dated 24 January, 2023 notifying them of the “No Adverse Effect to Historic Properties” determination and consultation is ongoing. Federally recognized tribes with potential historical ties to the area were

contacted at the beginning of this project and during the review period of the EA and were asked to provide information as to their historic connection to the land and the possibility of encountering historic tribal artifacts. Comments were received from The Miami Tribe of Oklahoma on June 28, 2022. No indication of impacts was given by any commenting tribe and it is unlikely that the project will have cumulative adverse effects on tribal resources.

3.6.3 Recreation

3.6.3.1 Existing Condition

The City of Algoma maintains multiple parks and beaches within a mile distance to the harbor: Crescent Beach and Boardwalk, American Legion Park, Perry Park, Peterson Park, Olson Park, and Heritage Park. Within the harbor is a recreational marina that is used by recreational boaters and charter companies to dock their boats. According to the city engineer, the harbor supports approximately three million dollars worth of charter fishing business annually. The breakwater itself may be used for fishing, bird watching, or other pedestrian recreation.

3.6.3.2 Alternative Impact

Proposed activities associated with the breakwater repair would have short-term, temporary effects on recreation to those areas that are immediately harbor adjacent but would not result in significant impacts to these areas. Inland parks and recreational areas outside of the harbor would be minimally impacted if at all. 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 frighten fish away from the construction area. Activities would also prohibit fishing from the breakwater during construction. Other recreational opportunities such as swimming and boating could potentially be impacted in the short-term due to construction related noise and temporary increases in turbidity. Noise from barges and cranes, if used, would generally be in accordance with local noise ordinances. Noise and aesthetic impacts from the sheet pile placement efforts would be limited to the breakwater area. Overall, the recommended plan would have direct and indirect short-term less than significant impacts to recreation and no direct or indirect long-term impacts to recreation.

3.7 Hazardous, Toxic & Radioactive Wastes (HTRW)

3.7.1.1 Existing Condition

USEPA's EnviroMapper online tool and the Wisconsin DNR Bureau for Remediation and Redevelopment Tracking System (BRRTS) were used to determine whether any environmental issues attributed to unresolved contaminated sites that would impact construction activities or armor stone re-setting and placement and steel sheet pile driving. Although various environmental compliance sites and regulated activities exist around the harbor, no sites are located on or adjacent to the breakwaters being repaired. There are no sites within the harbor proper or within Lake Michigan.

3.7.1.2 Alternative Impact

There are no identified regulated sites on or adjacent to Algoma Harbor. The armor stone placement/replacement and driving of steel sheet pile would not impact any regulated or unresolved environmental sites. There are no identified HTRW impacts associated with the recommended plan.

3.8 The 17 Points of Environmental Quality

The 17 points are defined in Section 122 of the Rivers, Harbors and Flood Control Act of 1970 (P.L. 91-611). Effects to these points are discussed as follows:

Noise – Temporary increases in noise from material off-loading machinery could be noticeable by harbor visitors. Construction material off-loading operations would be primarily water-based with a terrestrial staging area at Christmas Tree Point for some materials (e.g., sheet piling). Driving of sheet pile would also increase the noise level and be noticeable by harbor visitors. However, increased noise levels are only expected to be present during construction activities and end when construction has stopped. Construction activities would only occur during business hours and not at night. Therefore, noise impacts are expected to be minimal and temporary. Ambient noise levels would return once construction is complete.

Displacement of People – The proposed breakwater construction material placement will not displace any people.

Aesthetic Values – The proposed breakwater repair will not obstruct or otherwise diminish the visual quality of the adjacent lighthouse once the project is completed. The breakwater itself will also have improved visual appeal, as the deteriorated concrete cap and sides will be replaced with a new concrete cap and sheet pile sides.

Community Cohesion – The proposed construction material placement would not disrupt community cohesion.

Desirable Community Growth – The proposed construction material placement would not affect community growth.

Desirable Regional Growth – The proposed construction material placement would not affect regional growth.

Tax Revenues – The proposed construction material placement would not affect tax revenues.

Property Values – The proposed construction material placement would not negatively affect property values.

Public Facilities – The proposed construction material placement would restore the breakwater structure and function and will help to maintain public and semi-public facilities.

Public Services – The proposed construction material placement would allow public services to continue, including recreation, public safety, and economic driven activities.

Employment – The proposed construction material placement would provide short-term beneficial employment impacts during construction activities through the hiring of construction personnel.

Business and Industrial Activity – The proposed breakwater repair material placement would promote local business and industry that supports critical infrastructure construction and water recreation.

Displacement of Farms – There are no farms within the project area; none will be displaced.

Man-made Resources – The proposed construction material placement would positively affect the breakwater structure, function, and durability.

Natural Resources – The proposed construction material placement would have potential short-term, less than significant direct and indirect impacts to natural resources; however, there would be no long-term

direct or indirect impacts on natural resources. Refer to the individual discussions under Physical Resources section under Ecological Resources in chapter 3 of this report.

Air Quality – The proposed Algoma Harbor breakwater repair location is within an air quality attainment area. Due to the small scale, short duration and nature of the breakwater repair project, emissions will be limited to temporary vehicle/equipment emissions. Temporary vehicle emission impacts would meet current federal regulations. Greenhouse gas emissions are expected to be negligible.

Water Quality – The proposed breakwater repair would have temporary, minor, localized impacts on water quality during construction material placement activities, particularly in the form of turbidity. Those impacts are expected to subside after construction is completed and return to pre-project levels.

3.9 Irreversible and irretrievable commitment of Resources

NEPA requires that an EA include a discussion of the irreversible and irretrievable commitments of resources that may be involved should the project be implemented. The irreversible and irretrievable commitments of resources are the permanent loss of resources for future or alternative purposes. The irreversible and irretrievable resources are those that cannot be recovered or recycled or those that are consumed or reduced to unrecoverable forms. Project implementation would result in the irreversible and irretrievable commitments of energy and material resources during project construction and maintenance, including the following:

1. Construction materials, including such resources as sand, rock, and metals.
2. Energy expended in the form of electricity, gasoline, diesel fuel, and oil for equipment and transportation vehicles that would be needed for project construction and operations and maintenance.

The use of these nonrenewable resources are expected to account for only a small portion of the region's resources and would not meaningfully affect the availability of these resources for other needs in the region. Construction activities would not result in the inefficient use of energy or natural resources. As described throughout this EA. Without implementation of the plan, the risk of increased sedimentation within the harbor and loss of an economic resource for Algoma would continue to grow. The harbor itself contributes approximately \$3 million to the local economy annually, and any impacts to the resource would negatively impact both residential incomes and the local government tax base. This loss in revenue could impact the city's ability to finance new projects. To mitigate increased sedimentation, increased dredging of the harbor would need to be undertaken to keep the harbor navigable and/or periodic, smaller scale breakwater repairs would need to occur. Thus, implementation of the proposed plan preempts potentially substantial future consumption of resources and is likely to result in long-term energy and materials conservation.

3.10 Short-term uses of Man's Environment and long-term productivity

NEPA, Section 102(2)(C)(iv) calls for a discussion of the relationship between local short-term uses of man's environment as well as the maintenance and enhancement of long-term productivity in an environmental document. The recommended alternative would repair the south breakwater and north pier, positively affecting the function and durability of the structure as part of keeping the harbor navigable. This repair would lead to wave attenuation that would reduce water turbidity cause by Lake Michigan and provide calmer hydrologic processes for navigational purposes. Under the no action alternative, no project would be implemented, therefore, physical, biological, and social resources could be impacted in that the structure will further deteriorate. This would limit safe access to the harbor and potentially reduce

employment, business, and recreational activity in the area by limiting the recreational, commercial, and transportation capabilities of the harbor.

Algoma Harbor breakwater repairs will have no negative impact on harbor access or navigation. The harbor will remain open and navigable and will function normally during the construction period. The contractor will accommodate the passage of commercial and recreational vessels during construction. Breakwater repair activities will not impede traffic into and out of the harbor.

3.11 Probable adverse effects which cannot be avoided

There are no significant effects which cannot be avoided from the implementation of the preferred alternative. The short-term effects described above are not significant and overall would not have significant direct or indirect long-term effects to the project area.

3.12 Cumulative Effects

Consideration of cumulative effects requires a broader perspective than examining just the direct and indirect effects of a proposed action. It requires that reasonably foreseeable future impacts be assessed in the context of the past and present effects to important resources. Often it requires consideration of a larger geographic area than just the immediate “project” area. One of the most important aspects of cumulative effects assessment is that it requires consideration of how actions by others (including those actions completely unrelated to the proposed action) have and will affect the same resources. When assessing cumulative effects, the key determinate of importance or significance is whether the incremental effects of the proposed action will alter the sustainability of resources when added to other present and reasonably foreseeable future actions.

Cumulative environmental effects for the proposed maintenance and repair project were assessed in accordance with guidance provided by the President’s Council on Environmental Quality. This guidance provides for identifying and evaluating cumulative effects in NEPA analysis.

The overall cumulative impact of the project is considered to be beneficial environmentally, socially, and economically.

The cumulative effects, issues, and assessment goals are established in this environmental assessment. The spatial and temporal boundaries are determined, and reasonably foreseeable future actions are identified. Cumulative effects are assessed to determine if the sustainability of any of the resources are adversely affected, with the goal of determining the incremental impact to key resources that would occur should the proposal be permitted. The spatial boundary for the assessment encompasses the harbor and the associated facilities. The temporal boundaries are:

1. Past-1834, settlement Ahnapee (eventually known as Algoma) founded.
2. Present-2023, when the breakwater repair plan was being developed.
3. Future-2073, the year used for determining project life end.

Projecting reasonably foreseeable future actions is difficult at best. Clearly, the proposed action is reasonably foreseeable, however, the actions by others that may affect the same resources are not as clear. Projections of those actions must rely on judgment as to what are reasonable based on existing trends and, where available, projections from qualified sources. Reasonably foreseeable does not include unfounded or speculative projections. In this case, reasonably foreseeable future actions include:

1. Dredging the harbor to restore the authorized navigational depth.

2. Continued application of the environmental requirements such as the Clean Water Act.

Cumulative Effects on geology and soils

Other developments in the study area would be subject to the same types of geology, topography, and lake sediment characteristics as the proposed project. Impacts on these types of characteristics represent site-specific effects and do not result in a greater combined impact than the individual impacts.

Cumulative Effects on Water Quality and Aquatic Communities

The project would have no cumulative adverse effects on water quality or aquatic communities in Lake Michigan.

Cumulative Effect of Terrestrial Resources

Relatively small modifications for this project will have no long-term adverse or cumulative effects to terrestrial resources, plants, or animals.

Cumulative Effects on Air Quality

The project will have no long-term cumulative effect on air quality.

Cumulative Effects on Land Use

The project will have no cumulative effect on land use.

Cumulative Effects on Aesthetic Values

Implementation of the project within the study area would result in temporary impacts to visual resources related to the loss of visual quality during construction. An algae and aesthetic issue is known to occur in the southwest portion of the project where the southern breakwater meets with the terrestrial environment. Depending on the wind direction, this corner of the harbor is known to collect algae and other detritus. As these materials decompose, it produces noxious odors that detract from the aesthetic value of the area. During the comment period residents have asked that this issue be examined and a way to reduce the collection and growth of material be sought. A water operations technical support program (WOTS) application was submitted to USACE's Army Engineer Research and Development Center (ERDC) on June 29, 2022, to determine if future breakwater modifications can be made to reduce the impacts of this material. Additionally, a Statement of Need (SoN) outlining the issue and requesting research into potential solutions was also submitted to ERDC. The project is not expected to increase the growth or collection of materials. However, it is not expected to reduce it either. This project is not expected to have a long-term negative impact on the visual setting of the project area.

Cumulative Effects on Public Facilities

The project will have no cumulative adverse effects on public facilities.

Cumulative Effects on Biological Resources

The project could contribute to impacts on foraging birds that utilize the breakwater as resting and hunting grounds, but it is anticipated that there will be no long-term or cumulative effects to the birds' ability to forage and find food. Likewise, modification of the breakwater would impact aquatic organisms by

potentially limiting foraging and nesting habitat. However, after construction is complete, the area is expected to be recolonized by a similar organismal community that was there previously, and as a result the project will have no cumulative adverse effects on biological resources.

Cumulative Effects on Cultural Resources

There is an historic lighthouse located on the end of the North Pier of the project and the project has the potential to impact this structure. This project will have no cumulative adverse effects on cultural resources.

Tribal Cultural Resources

The project is located entirely over and within Lake Michigan and is not anticipated to encounter tribal resources. Federally recognized tribes with potential historical ties to the area were contacted at the beginning of this project and during the review period of the EA and were asked to provide information as to their historic connection to the land and the possibility of encountering historic tribal artifacts. Comments were received from The Miami Tribe of Oklahoma on June 28, 2022. No indication of impacts was given by any commenting tribe or the SHPO and it is unlikely that the project will have cumulative adverse effects on tribal resources.

Cumulative Effects Summary

Along with direct and indirect effects, cumulative effects of the proposed project were assessed following the guidance provided by the Presidents’ Council on Environmental Quality (Table 8). There have been numerous effects to resources from past and present actions, and reasonably foreseeable future actions can also be expected to produce both beneficial and adverse effects. The effects of the proposed project are relatively minor.

Table 8: Cumulative effects summary.

Potential Impact Area	Past Actions	Construction Impacts	Operation Impacts	Cumulative Impact
Geology & Soils	adverse	insignificant effects	no impact	no impact
Hydrology	adverse	no impact	no impact	no impact
Water Quality	adverse	no impact	no impact	no impact
Sediment Quality	adverse	no impact	no impact	no impact
Aquatic Resources	major adverse	insignificant effects	no impact	no impact
Terrestrial Resources	adverse	insignificant effects	no impact	no impact
Air Quality	no impact	insignificant effects	no impact	no impact
Land Use	adverse	no impact	no impact	no impact
Aesthetics	adverse	insignificant effects	no impact	no impact
Biological Resources	adverse	insignificant effects	no impact	no impact
Cultural Resources	no impact	no impact	no impact	no impact
Tribal Resources	no impact	no impact	no impact	no impact

Chapter 4 Conclusions & Compliance

Algoma Harbor breakwater maintenance activities would not result in significant adverse environmental effects, nor would they be expected to contribute to any significant cumulative adverse impacts. Adverse effects would be negligible and include short-term noise and air emissions from equipment operation; temporary, minor turbidity from stone placement operations; and temporary displacement of some macroinvertebrate, fish, amphibian, and bird species as well as associated recreational fishing activities. Macroinvertebrates, fish, amphibians, birds, and recreational fishermen would return upon completion of construction. The analysis detailed in this EA documents these conclusions. The drive line for new sheet pile and the placement site for any armor/toe stone is currently Lake Michigan bottom and is directly adjacent to the existing breakwater bounding Algoma Harbor. It is anticipated that the recommended plan would have no adverse direct or indirect, long-term effects to geologic resources since all stone placements would be surficial.

4.1 Compliance with Environmental Statutes

The proposed breakwater repair and maintenance project at Algoma Harbor has been reviewed pursuant to the following Acts and Executive Orders: Fish and Wildlife Coordination Act of 1958; National Historic Preservation Act of 1966; National Environmental Policy Act of 1969; Clean Air Act of 1970; Farmland Protection Policy Act (Subtitle I of Title XV of the Agriculture and Food Act of 1981); Executive Order 11593, Protection and Enhancement of the Cultural Environment, May 1971; Coastal Zone Management Act of 1972; Endangered Species Act of 1973; Clean Water Act of 1977; Executive Order 11988, *Floodplain Management*, May 1977; Executive Order 11990, *Wetland Protection*, May 1977; Executive Order 12898, *Environmental Justice*, February 1994. The proposed action has been found to be in compliance with these Acts and Executive Orders as described below.

- Fish and Wildlife Coordination Act of 1958: Coordination was commenced with USFWS and WDNR with the provision of a scoping letter sent May 13, 2022. Coordination under the Fish and Wildlife Coordination Act will be completed once the USFWS and WDNR have reviewed the Draft EA during the 30-day public review period.
- Executive Order 13186 – *Responsibilities of Federal Agencies to Protect Migratory Birds* – Federal agencies shall restore or enhance the habitat of migratory birds and prevent or abate pollution or detrimental alteration of the environment for migratory birds. This project lies within a significant portion of the Mississippi Flyway along the western shoreline of Lake Michigan that particularly favors both ecological and economically valuable species including neo-tropic migrants and waterfowl. The short duration of the project work would have no long-term detrimental impacts to migratory birds
- National Historic Preservation Act of 1966: Section 106 of the National Historic Preservation Act (16 USC 470) requires federal agencies to consider the effects of proposed federal undertakings on historic properties included or eligible for the National Register of Historic Places. The implementing regulations for Section 106 (36 CFR § 800) requires Federal agencies to consult with various parties, including the Advisory Council on Historic Preservation, the SHPO, and Indian tribes, to identify and evaluate historic properties, and to assess and resolve effects to historic properties. The USACE has consulted with the Wisconsin SHPO, the Citizen Potawatomi of Oklahoma, the Forest County Potawatomi Community of Wisconsin, the Fort Belknap Indian Community of the Belknap Reservation of Montana, the Hannahville Indian Community of Michigan, the Lac du Flambeau Band of Lake Superior Chippewa Indians of the Lac du Flambeau Reservation of Wisconsin, the Little Traverse Bay Bands of Odawa Indians of

Michigan, the Menominee Indian Tribe of Wisconsin, the Miami Tribe of Oklahoma, and the Prairie Band Potawatomi Nation to assist in identifying properties which may be of religious and cultural significance. The Miami Tribe of Oklahoma responded on June 28, 2022 with no objections to the proposed project. A finding of No Adverse Effect to Historic Properties was submitted to the Wisconsin SHPO on 24 January, 2023. Consultation with the Wisconsin SHPO is ongoing; concurrence with the No Adverse Effect determination is anticipated.

- National Environmental Policy Act of 1969: This EA has been prepared in accordance with NEPA; the CEQ *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR Parts 1500-1508); and the Corps of Engineers Policy and Procedure for Implementing NEPA (33 CFR Part 230).
- Clean Air Act of 1970: The proposed Algoma Harbor breakwater repair location is within an air quality attainment area. Due to the small scale, short duration and nature of the breakwater repair project, emissions will be limited to temporary vehicle/equipment emissions. Temporary vehicle emission impacts would meet current federal regulations. Greenhouse gas emissions are expected to be negligible. Overall, the project is *de minimis* in terms of emissions.
- Farmland Protection Policy Act: Project exempt as it is located entirely within Lake Michigan.
- Coastal Zone Management Act of 1972: The project site is within the Wisconsin Coastal Zone which is defined as all counties bordering the Great Lakes. The project will protect the public interest by helping to preserve harbor safety and access. The USACE has determined that the proposed activities would be “consistent to the maximum extent practicable” (as defined in 16 USC 1456, Coastal Zone Management Act, approved 1978) with the enforceable policies of the Wisconsin Coastal Management Program (WCPM). A determination of consistency with the Wisconsin Coastal Zone Management Program pursuant to the Coastal Zone Management Act of 1972 has been sought from the State of Wisconsin Department of Administration in a letter dated [REDACTED]. The 60-day statutory review window is currently ongoing, but it is anticipated that concurrence will be granted. The U.S. Army Corps of Engineers believes that the Recommended Plan is consistent with state Coastal Zone Management plans and shall be implemented to minimize adverse impacts to the coastal zone.
- Endangered Species Act of 1973: The USACE determined that the recommended plan would have ‘no effect’ on Northern Long-eared Bat, Hine’s Emerald Dragonfly, Monarch Butterfly, and Dwarf Lake Iris. Documentation of the analysis for the ‘no effect’ determination is included in the threatened and endangered species section of chapter 3 of the EA.
- Clean Water Act of 1977: Pursuant to the Clean Water Act (CWA), a Section 404(b)(1) evaluation of the environmental effects of the fill material into the waters of the United States has been prepared and is an appendix to this document. The Section 404(b)(1) Evaluation concludes that the proposed action is in compliance with Section 404 of the Clean Water Act. Pursuant to Section 404, compliance with State water quality standards is being completed through an application for a 401 Water Quality Certification from the state. The Water Quality Certification must be obtained prior to construction commencing.
- Executive Order 11988, *Floodplain Management*, May 1977: The project site is within Lake Michigan and does not impact floodplains.
- Executive Order 11990, *Wetland Protection*, May 1977: The project does not impact coastal or terrestrial wetlands as there are none present within the project area. The proposed breakwater

repair results in disturbance of an area of Lake Michigan bottom that is already disturbed by the current structure. No additional disturbance of Lake Michigan bottom is intended by this project. This project is not expected to have a more than minimal impact on existing ecosystem functions.

- Executive Order 12898, *Environmental Justice*, February 1994: The project does not disproportionately impact low-income or minority communities.
- Executive Order 13653, *Preparing the United States for the Impacts of Climate Change*, November 2013: The project does not affect the 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.

This EA concludes that the proposed Algoma Harbor breakwater maintenance and repair project: 1) would not have significant cumulative or long-term adverse environmental impacts; 2) would have benefits that outweigh the minor and mostly temporary impacts that may result; and 3) does not constitute a major federal action significantly affecting the quality of the human environment.

4.3 Issues of Known or Expected Controversy

The primary issue of known controversy is the inadvertent collection of algae, along with other detritus and floating materials in the southwest corner of the harbor where the breakwater meets the shore. Under certain conditions, the wind will push any floating materials into this corner on both the lake and harbor sides of the breakwater. Any organic material will then decompose and produce a noxious odor that residents have described as being at minimum unpleasant. Residents have asked that this condition be examined and a determination be made if the presence of noxious odor causing materials can be reduced or eliminated. An example of material collection along the breakwater is shown in Photo 3 below and in the water quality section of this report.



Photo 3: Evidence of collection of detritus as the point where the south breakwater meets the shore. Left - Lakeward side. Right - Harbor side. Photos taken July 2022.

The Chicago District has requested research and development support from the ERDC WOTS Program. This program offers support for environmental and water quality operational studies to address a wide range of resource management problems. The Chicago District has also submitted a separate statement of need request to ERDC. Statements of need are intended to specifically address issues presenting an impediment to efficient and effective mission execution and inform the necessary research, practice,

policy, and guidance development needed for resolution. The WOTS program and statement of need are separate processes from both each other and any potential solution(s) derived from those programs would be independent of the breakwater repair work outlined in this EA.

4.4 Finding of No Significant Impact (FONSI)

This EA, which describes and discusses the Algoma Harbor breakwater repair and maintenance project, has found that there would be no direct or indirect, long term, significant adverse impacts resulting from implementation of any of the proposed activities. An initial 30-day Agency and Public Scoping period was held from May 13, 2022, to June 13, 2022. A 30-day Agency and Public Review period of the EA and accompanying materials was held from _____ to _____. All pertinent comments received were considered and incorporated into the document, as appropriate. The announcement for public review of the EA and the accompanying materials was sent to parties that have expressed interest, is open to the public, and is posted to the Chicago District's civil works webpage at <https://www.lrc.usace.army.mil/Missions/Civil-Works-Projects/>. The DRAFT FONSI has been posted at the front of this EA and the 404(b)(1) analysis is located in Appendix 1.

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