Ashtabula River Area of Concern

Draft Final Delisting Report

Ohio Lake Erie Commission and
Ohio Environmental Protection Agency

Draft Final – April 2021

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Acknowledgements

The restoration of the Ashtabula River Area of Concern (AOC) has involved many individuals, organizations, and partnerships at the local, state, and federal level. The commitment of time and coordination made by the Ashtabula River AOC Advisory Council, the Ashtabula River Partnership, community citizens, and state and federal legislators throughout the past 30 years is greatly appreciated.

The partnerships and the environmental improvements shown in the Ashtabula River AOC exemplify the success of collaborative efforts being taken to accelerate the clean-up of AOCs across the Great Lakes basin. Over the years, staff from local, state, and federal agencies and organizations worked closely with local stakeholders to conduct the remediation and restoration necessary to achieve delisting of the Ashtabula River AOC. These entities include the City of Ashtabula; Ashtabula City Port Authority; Ashtabula River Area of Concern Advisory Council; Ashtabula River Partnership; Ohio Environmental Protection Agency; Ohio Department of Natural Resources; Ohio Lake Erie Commission; Ohio Sea Grant; U.S. Environmental Protection Agency; U.S. Army Corps of Engineers; U.S. Fish and Wildlife Service; and many others.

Disclaimer

The Great Lakes Water Quality Agreement is a non-regulatory agreement between the U.S. and Canada and the criteria developed for beneficial use impairment removal under the Agreement are non-regulatory. This document describes the remedial and restoration activities ("management actions") that were undertaken and the associated beneficial use impairments that were restored to delist the Ashtabula River AOC.

Ohio's AOC Program was programmatically transferred from the Ohio Environmental Protection Agency (Ohio EPA) to the Ohio Lake Erie Commission (OLEC) in 2018. Consequently, this document references both the Ohio EPA and OLEC.

This document should be cited as follows:

Ohio Lake Erie Commission and Ohio Environmental Protection Agency. [DATE TBD], Ashtabula River Area of Concern Draft Delisting Report

Cover photo reference: U.S. Department of Interior

Executive Summary

The Ashtabula River was formally designated as an Area of Concern (AOC) under the 1987 Great Lakes Water Quality Agreement between the U.S. and Canada. This designation as an AOC was primarily due to contaminated sediment and a lack of fish and wildlife habitat. Six of the 14 beneficial use impairments (BUIs) which can lead to a designation as an AOC were identified in the Ashtabula River. They include:

- *Restrictions on Fish and Wildlife Consumption;*
- *Degradation of Fish and Wildlife Populations;*
- *Fish Tumors and Other Deformities;*
- *Degradation of Benthos;*
- *Restrictions on Dredging Activities;* and
- *Loss of Fish and Wildlife Habitat.*

The Ohio AOC Program established initial BUI restoration targets in 2005. These targets have been updated several times over the years, most recently in 2020. It is these restoration targets that guide the management actions needed to restore the beneficial uses within Ohio's Areas of Concern, including the Ashtabula River AOC.

Through a collaboration of local, state, and federal stakeholders, a Remedial Action Plan (RAP) was created in 1991 for the Ashtabula River AOC. As a result of the RAP and the many partnerships established to implement it, specific management actions were completed throughout the AOC to address the identified BUIs, including the extensive remediation of contaminated sediment and habitat restoration projects. The last management action was completed in 2013.

All six BUIs identified in the AOC have met the applicable restoration targets and were removed between 2014 and 2020. With these impairments removed, OLEC and Ohio EPA jointly recommend that the Ashtabula River AOC be delisted.

This delisting document demonstrates that legacy conditions identified in the RAP have been addressed and that the Ashtabula River AOC has met the applicable BUI restoration targets. However, the delisting of the Ashtabula River AOC is not intended to be an end point in environmental improvement for the area contained within the AOC. Rather, the delisting process represents the end of the process intended to address the degraded environmental conditions that led to the identification of the lower Ashtabula River as an AOC. Any potential future restoration and regulatory activities that may be taken within the area now defined as the AOC will be based on the applicable authorities set forth in the federal Clean Water Act and other federal or state law or, if feasible, taken in accordance with the Lake Erie Lakewide Action and Management Plan (LAMP) developed pursuant to the Great Lakes Water Quality Agreement.

Introduction

The Ashtabula River lies in northeast Ohio, flowing into Lake Erie's central basin at the City of Ashtabula (Figure 1). The City of Ashtabula sits at the northern portion of the watershed where the river empties into Lake Erie and its associated harbor. Native American inhabitants referred to the river as the Hash-tah-buh-lah or "river of many fish."

The early industrialization of the city included a number of uses that, over time, resulted in sediment and groundwater contamination and degraded biological communities in the lower Ashtabula River and its tributary, Fields Brook. These environmental problems led to the International Joint Commission's (IJC) Water Quality Board identifying the Ashtabula River (specifically, the lower two miles of the Ashtabula River, the Ashtabula Harbor and adjacent shoreline) as an Area of Concern in the mid-1980s, and the designation was formalized under the 1987 Great Lakes Water Quality Agreement.

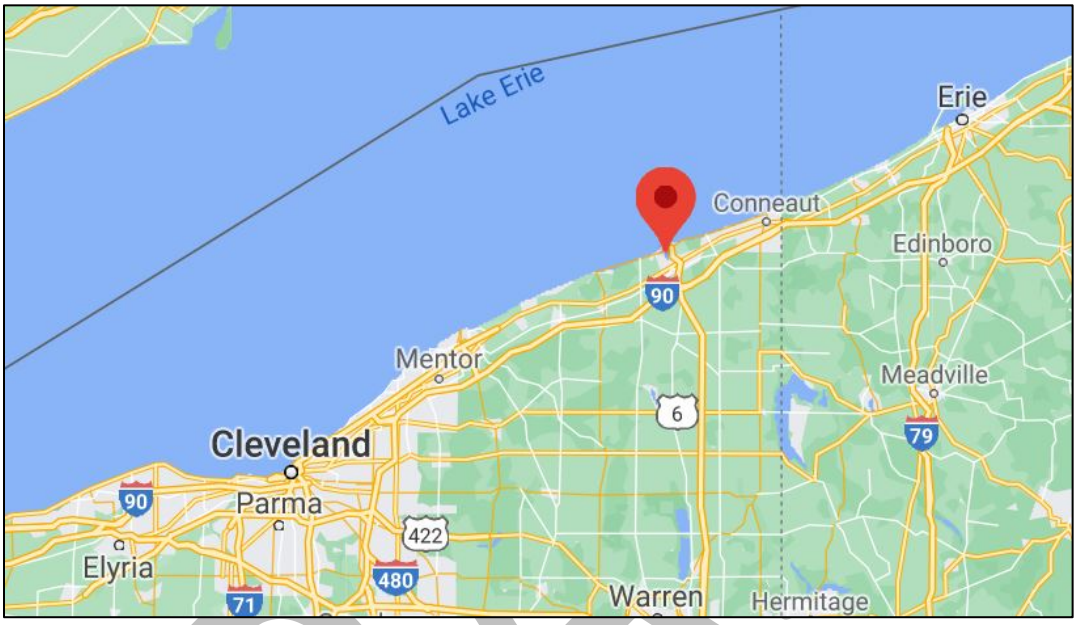
The Ohio EPA and local stakeholders convened a stakeholder group and established a local Ashtabula River AOC Advisory Council in 1988. In 1991, the Stage 1 RAP was developed by Ohio EPA in cooperation with the Advisory Council. To address the contaminated sediment in the AOC, a partnership approach was initiated. In 1994, the Ashtabula River Partnership (Partnership) was established with the purpose of "exploring how to effectively remediate the contaminated sediments in the Ashtabula River and Harbor." (Ashtabula River Partnership, 2001). The Partnership included nearly 50 state, local and federal agencies and jurisdictions, businesses and corporations, local citizens and the Ashtabula River AOC Advisory Council. Through the Partnership, a sediment remediation and funding plan was established to implement the projects necessary to restore the BUIs, particularly related to sediment contamination in the main stem of the Ashtabula River. In addition, it was determined that the Advisory Council would focus on habitat enhancement and restoration. Since then, significant remediation and restoration work has been conducted within the AOC to address the legacy sediment contamination and the degradation of biological conditions caused by historical uses. In addition to local, state and federal entities, this work involved multiple partners including business, legislators, community organizations and academic institutions. The work included data collection, studies, site-specific actions and monitoring to address the six BUIs that had been identified in the Ashtabula River AOC. As a result of these significant actions over the past thirty years by these multiple parties, all six BUIs were ultimately removed.

The Ohio AOC Program was responsible for developing restoration targets for each BUI to measure progress and evaluate the restoration of AOCs in Ohio. Through extensive coordination with the Ashtabula River AOC Advisory Council, U.S. Environmental Protection Agency (U.S. EPA) and multiple local, state and federal partners, the State of Ohio believes that all the management actions necessary to support the delisting of the Ashtabula River AOC have been implemented and completed.

This Ashtabula River AOC Preliminary Delisting Report provides the rationale to proceed with the delisting of the Ashtabula River AOC. The decision-making in 2014 to 2020 to remove the six BUIs included consultation with the Ashtabula River AOC Advisory Council and public review as part of each BUI removal process. This report provides a summary of the six BUIs identified within the Ashtabula River AOC and the management actions undertaken to achieve their removals. The six BUIs for the Ashtabula River AOC included: *Restrictions on Fish and Wildlife Consumption; Degradation of Fish and*

Wildlife Populations; Fish Tumors or Other Deformities; Degradation of Benthos; Restrictions on Dredging Activities; and *Loss of Fish and Wildlife Habitat*. Within each of the BUI summaries, references are provided to the full "BUI Removal Recommendation" documentation. Additional information is available on the Ohio AOC Program website.

Figure 1: Location of Ashtabula, Ohio



Areas of Concern and the Great Lakes Water Quality Agreement

The water quality of the Great Lakes has been guided by two agreements: 1) The Boundary Waters Treaty of 1909 between the United States and Canada; and 2) the Great Lakes Water Quality Agreement (GLWQA), which constitutes a more specific Agreement developed under the auspices of the Treaty. The Treaty and the Agreement set forth policies and priorities to address the water quality conditions for the Great Lakes. The 1987 GLWQA formally called for RAPs that would identify specific actions to restore and protect beneficial uses in AOCs. In 2012, the GLWQA was further updated and amended to reflect Great Lakes issues; in this updated agreement, the AOC commitments are found in Annex 1.

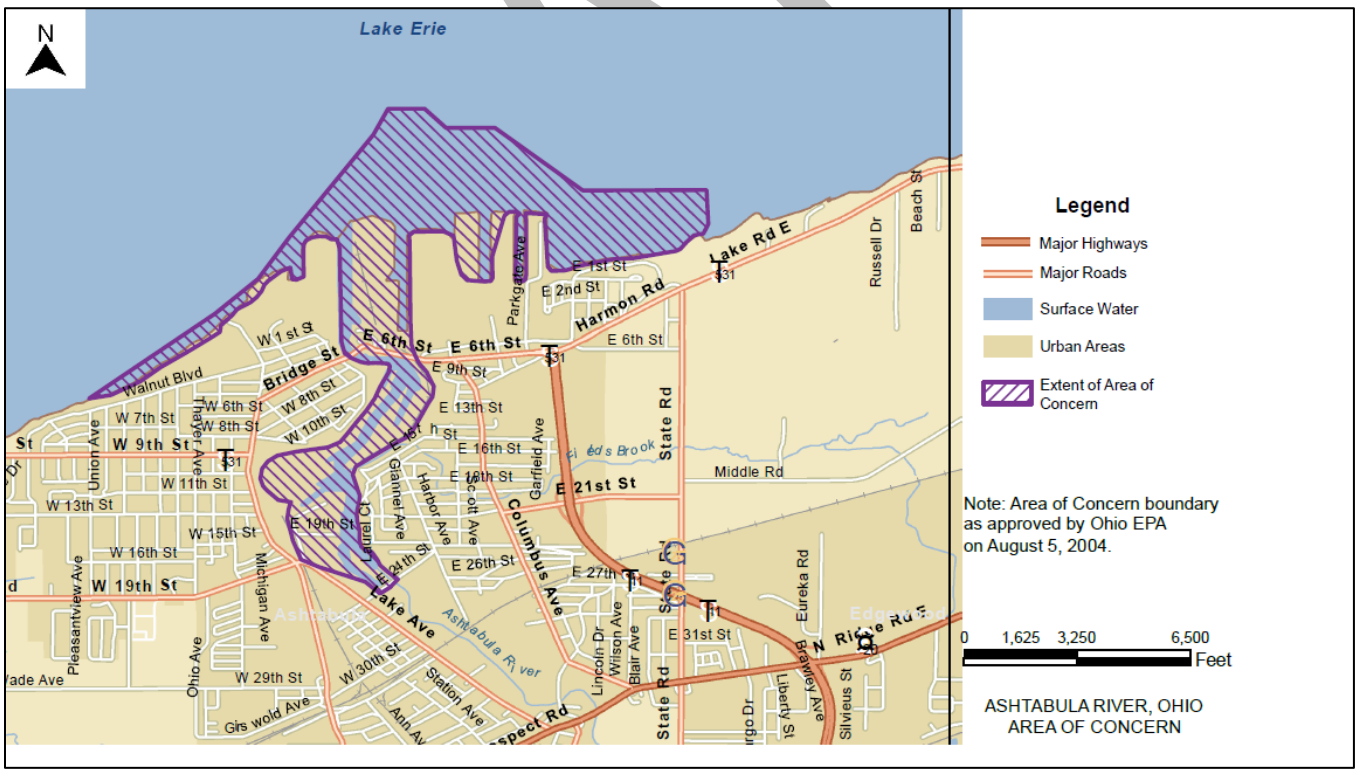
The GLWQA describes an AOC as "a geographic area that has caused or is likely to cause impairment of beneficial use or of the area's ability to support aquatic life." The 2012 Agreement describes BUIs as "a reduction in the chemical, physical or biological integrity of the Waters of the Great Lakes."

Ashtabula River Area of Concern

The Ashtabula River AOC encompasses the lower 2.32 miles of the Ashtabula River main stem, from the 24th Street Bridge in the City of Ashtabula to the mouth at Lake Erie; the Outer Harbor, within the east and west shore arms in Lake Erie; and the near Lake Erie shoreline from Walnut Beach, west of the river mouth, to Lakeshore Park Beach, east of the river mouth (Figure 2). The entire mainstem within the AOC is a lacustuary or freshwater estuary. In this area, river flow can be affected by adverse weather patterns and water levels of Lake Erie. The Ashtabula River has been designated by Ohio EPA as a warm-water habitat (WWH) stream.

The Ashtabula River AOC was identified as a Great Lakes AOC primarily due to sediment contaminants, particularly polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs), along with the limitations they imposed on the use of the river and their impact on the AOC's biological health. In 1991, a Stage 1 RAP was developed to identify: the primary pollutants; geographic areas of focus and scope of conditions; specific impairments; and appropriate goals. Areas within and adjacent to the AOC were identified including: Fields Brook; Strong Brook; and the main stem of the lower Ashtabula River. Remedial actions were identified within the AOC in the Stage 1 RAP (1991), the Ashtabula River Partnership Comprehensive Management Plan (2001) and Stage 2 RAP (2011).

Figure 2: Ashtabula River AOC Boundary



Restoration Targets for Removal of Beneficial Use Impairments

The State of Ohio established guidance and restoration targets for each BUI (Ohio EPA and OLEC, 2020a). The state based this guidance upon the U.S. Policy Committee's Delisting Principles and Guidelines (U.S. Policy Committee, 2001), the IJC's Delisting Guidelines (1991), and various Ohio water quality standards, guidance, and policies. The BUI restoration targets are utilized to evaluate the conditions of each AOC, and, if the restoration targets are met, the beneficial uses are considered restored by Ohio for that AOC. While the restoration targets were most recently updated in 2020, the targets were initially established in 2005. The State of Ohio and the Ashtabula River AOC Advisory Council recognize and support the BUI removals. The BUI removals and the restoration targets that have been met serve as a benchmark in environmental restoration and represents the end to the degraded environmental conditions that had triggered the identification of the lower Ashtabula River as an AOC.

Partners

Ohio Environmental Protection Agency (Ohio EPA) and Ohio Lake Erie Commission (OLEC)

Ohio EPA and OLEC are the lead state entities that administer the activities for AOCs in Ohio. In 2018, the administration of the Ohio AOC Program was transferred from Ohio EPA to OLEC, albeit with Ohio EPA retaining a role in the AOC partnership for coordination with the local AOCs.

Since 1987, Ohio EPA has been a primary partner with U.S. EPA, the Ashtabula River AOC Advisory Council and many local entities on the many activities that have been necessary to address the BUIs in the Ashtabula River AOC. The Ohio EPA's Division of Surface Water has played a leading role over the years to coordinate with the many entities involved in the clean-up of the Ashtabula River AOC. The Ohio EPA's Division of Environmental Response and Revitalization also served an important role - overseeing certain restoration and remediation activities that were conducted in the AOC over many years.

The Ohio AOC Program leads the work necessary for the development of BUI restoration targets, BUI assessments, removal documentation, and coordination of AOC activities associated with RAPs, funding, and management actions within the AOC with local, state and federal implementers, and local AOC Advisory Committees/Councils. Upon delisting of the Ashtabula AOC, any potential future restoration and regulatory activities that may be taken within the area now defined as the AOC will be based on the applicable authorities set forth in the federal Clean Water Act and other federal or state law administered by Ohio EPA and other state agencies. Potential future restoration will be guided by the goals set forth in the Lake Erie Lakewide Action and Management Plan developed pursuant to the Great Lakes Water Quality Agreement.

U.S. Government

The U.S. Government, through U.S. EPA's Great Lakes National Program Office (GLNPO), has been the primary entity responsible for reviewing and approving BUI removals in the AOC, and for funding the implementation of management actions. GLNPO has played a significant role partnering with the State

of Ohio and local AOC Advisory Council in the coordination and implementation of the management actions necessary for delisting. The U.S. Government has the ultimate responsibility for removing the designation of an AOC when environmental monitoring confirms that all BUI removal criteria have been met and BUI removal processes have been completed.

Other federal agencies have played a significant role in the restoration and remediation activities for the Ashtabula River AOC including the U.S. Army Corps of Engineers (U.S. ACE) and U.S. Fish and Wildlife Service (U.S. FWS). The U.S. ACE served as the primary project manager for the strategic navigation dredging activities. U.S. FWS led and coordinated the execution of a Natural Resource Damage Assessment (NRDA) settlement in the AOC that assisted in achieving the remediation and restoration goals for the AOC. These agencies provided technical support, project management, and funding to administer the necessary management actions.

Ashtabula River AOC Advisory Council

The Ashtabula River AOC Advisory Council was established in 1988 and has been involved in the clean-up of the AOC for the past 33 years. Over the years, the Advisory Council has included local jurisdictions, local businesses, academic institutions and local citizens of the Ashtabula River AOC. The Advisory Council played a leadership role in developing the Stage 1 and 2 RAPs; played a key role in establishing the Ashtabula River Partnership; coordinated with federal and state Agencies, the City of Ashtabula and the Ashtabula City Port Authority on the AOC restoration activities; and ensured community involvement in all of the activities associated with management action implementation and BUI removals.

Ashtabula River Partnership

The Ashtabula River Partnership was established in 1994 to focus on the sediment contamination issues in the Ashtabula River AOC. The Partnership included numerous members of local, state and federal entities to establish a collaborative approach to address the contaminated sediment in the Ashtabula River AOC. Through the Partnership and its focused goals, a plan, coordination of funding, and a strategy for implementation were established for the sediment remediation activities. The Partnership was a critical organizing body to coordinate, fund and implement the Great Lakes Legacy Act (GLLA) and Water Resources Development Act (WRDA) projects in the Ashtabula River AOC. The Partnership served as a critical coordinating group between many parties that resulted in the successful outcomes that now allow for the delisting of the Ashtabula River as an AOC.

Local Governments

The City of Ashtabula and the Ashtabula City Port Authority have served in local leadership roles throughout the decades of restoration of the Ashtabula River AOC. The Ashtabula City Port Authority has played a key role as a primary public partner in the federal and state funding partnerships that were undertaken to achieve major remediation and restoration activities. Other local and regional jurisdictions including Ashtabula County and Ashtabula Township have also served as local partners to help achieve Ashtabula River AOC restoration goals.

Others

Many local businesses and large corporations also served as members of the Ashtabula River Partnership and worked with the primary local, state, and federal entities to help find collaborative solutions to achieve improvements in environmental conditions. This included the Ashtabula River Cooperation Group that was comprised of a consortium of 14 industry partners.

Ashtabula River AOC Potential Sources of Pollution

Industrialization of the area within the AOC in the late 1940s and early 1950s resulted in the establishment of a concentrated cluster of chemical companies in the Fields Brook area just east of the City of Ashtabula. Unregulated discharges and mismanagement of hazardous wastes left a legacy of toxic and hazardous sediments, contaminated groundwater, degraded biological communities, and fish with high tissue concentrations of contaminants. Discharge from Fields Brook, along with discharges from coal yards, diesel fuel facilities, scrapyards, railyards, combined sewer overflows, tanneries and abandoned hazardous wastes sites polluted the sediment of the Ashtabula River. The major pollutants of concern were mercury, chromium, lead, zinc, and chlorinated organic compounds, particularly PCBs. PCBs in some sections of the river sediment were high enough to be considered “toxic" under the regulations of the Toxic Substances Control Act (TSCA) and were therefore subject to special handling. All six BUIs were linked to contaminated sediment (Ohio EPA, 1991). These conditions led to the designation of the Ashtabula River as an AOC.

Although the lower Ashtabula River was listed as an AOC primarily due to its legacy of contaminated sediment, the riverbanks in the AOC were modified over many years to serve industrial and commercial uses, such as marinas. The riverbank modifications, such as the sheet pile walls constructed along long extensions of the riverbank, left few areas with natural conditions and therefore few areas of quality habitat for fish and wildlife. With the completion of the Fields Brook Superfund remediation and the removal of sediment in the Ashtabula River through the GLLA, the RAP focused on actions to restore habitat to make it possible to remove all of the BUIs (Ohio EPA, 2011).

Management Actions to Restore and Remediate the AOC

Management Actions were identified through the Stage 1 RAP and the Ashtabula River Partnership Comprehensive Management Plan to address the impairments that led to the designation of the Ashtabula River as an AOC. Five management actions were prioritized and implemented between 2006 and 2013 by local, state and federal partnerships. To accomplish these actions, the Ashtabula AOC partners assembled funding, identified implementers, and developed the strategies and sequencing of projects to address the remediation and restoration goals. The implementation of these actions has resulted in improved environmental conditions in the Ashtabula River AOC and the removal of its BUIs. The results include:

- Projects implemented and funded by U.S. EPA, U.S. ACE, Ohio EPA, Port Authority, and Ashtabula River Cooperation Group II as one of the first public-private partnerships under GLLA;
- 755,976 CY of contaminated sediment removed;

- Over 14,000 pounds of PCBs removed as part of the 2006-2007 GLLA project;
- 3,800 linear feet of shoreline restored;
- 2,900 linear feet of in-water habitat created;
- 3.6 acres of upland habitat restored;
- 30,000 emergent wetland plants installed; and
- 3,800 trees and shrubs planted.

*These results are general estimates based upon project reports and summaries.

Each Management Action is described in this section. General location of the major sediment and habitat management actions is shown in Figure 3.

Figure 3: General Location of Management Actions (Ohio EPA, 2014)

Strategic Navigation Dredging

Led by the U.S. ACE, the Strategic Navigation Dredging project was conducted from 2012-2013 to remove sediment that exceeded open-lake placement criteria within the federal navigation channel in both the lower and upper reaches of the River. This Great Lakes Restoration Initiative (GLRI)-funded project removed approximately 114,000 cubic yards of contaminated sediment to address the *Restrictions on Dredging Activities* BUI (Pickard).

Jack's Marine North Slip Sediment Cleanup

The Jack's Marine North Slip is situated adjacent to the Ashtabula River federal navigation channel at the mouth of Strong Brook. The slip is located along the western side of the river, approximately 1.5 miles from the river mouth. Sediment within North Slip required remediation due to elevated levels of PCBs and oil and grease. As part of the 2006-2007 GLLA project, the top three feet of sediment were dredged and then backfilled with six inches of clean sand cover.

Sampling in 2011 found average surface sediment concentrations for PCBs approximately five times higher than PCB concentrations observed downstream, which indicated that there may have been an ongoing source of PCBs to the slip. Residual contamination in storm sewers that discharge to Strong Brook may have contributed to the surface sediment contamination found in the North Slip in 2011.

In 2013, the Jack's Marine North Slip sediment remediation project was implemented by U.S. ACE and funded by U.S. EPA and Ohio EPA under the GLLA program. GLRI funding provided to Ohio EPA was utilized for the placement of a sand/gravel substrate after the GLLA portion of the project.

Specific remedial activities conducted as part of the North Slip project included:

- Dredging of 11,976 cubic yards of contaminated sediment;
- Processing, stabilizing, transporting and disposal of dredged sediment;
- Treating water discharged during the dredging and disposal processes; and
- Placing a sand cover over the dredged area to manage residual surface sediment contamination (U.S. ACE, 2015).

Post-remediation surveys and sampling were conducted in the project area in 2013, 2014 and 2018, and the results demonstrated project goals for remediation were met (LimnoTech, 2019).

Figure 4: Dredging at Jack's Marine North Slip

5-½ Slip Habitat Restoration

In 2007, Ohio EPA established a habitat restoration and enhancement plan for the Ashtabula River AOC. Located upstream of Fifth Street Bridge along the shoreline of the Ashtabula River, the 5-½ Slip Habitat Restoration project was identified in the plan as a priority for habitat enhancement within the AOC (Ohio EPA, 2014). The 5-½ Slip property is an 11-acre peninsula owned by Norfolk Southern Railway Company. Through a series of implementation phases between 2009 and 2012, project partners created 3,840 linear feet of in-water habitat shelves and restored 3.6 acres of upland habitat. The projects included several enhancements to provide a variety of habitat for fish species, mammals and birds.

The first phase of the project was conducted from 2009 to 2010 through a cost shared GLLA agreement between GLNPO, Ashtabula City Port Authority, Ohio EPA and the Ashtabula River Cooperation Group II. Habitat enhancements included the installation of coconut fiber rolls, live stakes, tree revetments, and habitat rock piles. Tiers of sand and gravel were placed over 800 linear feet of shoreline to create a fish habitat shelf. The changes in substrate created differing areas of habitat for fish populations to spawn and seek shelter. Vegetative plantings were installed to create habitat and to stabilize the shelf banks, which included aquatic submergent plant species, aquatic emergent plant species, and shrub and tree species, as well as an annual cover crop for bank stabilization (U.S. EPA, 2010).

The second phase of restoration on the site was implemented in 2011 and 2012 through GLRI funding and led by Ohio EPA. The project created an additional 1,740 feet of fish shelves in the river and connected with the GLLA fish shelf to have a greater cumulative impact on the biological communities. The project included the excavation of shoreline to below water level and the placement of in-stream habitat structures to create additional fish shelves in the river. The project also included debris removal, installation of live stakes and tree revetments, terrestrial plantings and seeding (Ohio EPA, 2014; ENVIRON, 2014).

The final phase was conducted in 2013 and 2014 through the NRDA program, which brings private entities and government together to resolve environmental issues on contaminated sites. Through a private contractor, and in coordination with U.S. FWS and Ohio EPA, Norfolk Southern Railway Company conducted remediation and restoration activities to: 1) eliminate potential exposure pathways to existing contamination and debris; and 2) create emergent wetland, riparian streambank, and upland forest habitat on the peninsula. Restoration activities included: 1) removing existing invasive species; 2) excavating a hydraulic connector and emergent wetlands through the center of the peninsula; 3) creating riparian streambank and upland habitat; 4) stabilizing the streambank along the southern end of the slip; and 5) planting native vegetation appropriate for each created habitat (ENVIRON, 2014).

Collectively, these projects created new habitat in the center of the AOC and restored 1/3 of the total length of the riverine shoreline within the AOC. Pre- and post-project monitoring were conducted to evaluate the results of the restoration activities. The monitoring showed improved biological and ecological conditions specific to the fish populations and fish habitat associated with Ohio's BUI restoration targets (Ohio EPA, 2014). The success of the habitat shelves and shoreline habitat improvements was instrumental in removing two BUIs in the Ashtabula River AOC: *Degradation of Fish & Wildlife Populations* and *Loss of Fish and Wildlife Habitat* (Ohio EPA, 2014).

Figure 5: 5-½ Slip Habitat Restoration

Ashtabula River Navigation Dredging

The Ashtabula River Navigation Dredging project was part of the phased work to remove contaminated sediment in the Ashtabula River AOC. The project was accomplished by U.S. ACE under its Operation and Maintenance General Authority and Section 312(a) of the WRDA. The dredging portion of the project was 100% federally funded and the disposal of the contaminated sediment was cost-shared with the Ashtabula City Port Authority as the non-federal partner. The project's focus was to remove the contaminated sediment in the navigation channel downstream of the Fifth Street Bridge and restore navigational use of the river. The project entailed the removal and disposal of 133,000 cubic yards of contaminated sediment, which included the removal of sediment from 1.5 feet below the authorized channel depth to establish a cleaner sediment surface layer. This project was completed in 2008 and worked in tandem with the GLLA Ashtabula River Sediment Cleanup project to address the conditions in the river that were causing sediment related BUIs (Pickard).

GLLA Ashtabula River Sediment Cleanup

From 2006 to 2007, a GLLA sediment remediation project was implemented in the Ashtabula River between the upper turning basin at the mouth of Fields Brook to Fifth Street Bridge. This project was the most significant management action undertaken in the AOC in terms of scope and cost and addressed multiple BUIs. The project was funded by U.S. EPA and a group of non-federal sponsors including the Ashtabula City Port Authority, Ohio EPA, and the Ashtabula River Cooperation Group II. This was the first GLLA project in the Great Lakes to be funded by a consortium of industries as cost-share partners (U.S. EPA, 2010, 2021).

The project goals were "to remove as much contaminant mass as feasible given constructability constraints, restore navigational use of the river, and create a depositional zone for newly deposited sediments in order to reduce surficial contaminant concentrations." (U.S. EPA, 2021).

The project process involved extensive planning and coordination to collect data, identify a preferred alternative, conduct engineering and design, obtain funding, establish associated project partner agreements, and implement the project.

Specific remedial activities included:

- Hydraulic dredging of over 497,000 cubic yards of contaminated sediment containing over 14,000 pounds of PCBs;
- Transport of dredge slurry 2.5 miles to the dewatering/containment facility via hydraulic pipeline;
- Sediment dewatering utilizing Geotubes;
- Treatment of water discharged during the dewatering process;
- Characterization of post-dredge sediment conditions by conducting a post-dredge bathymetric survey, measuring post-dredge sediment thicknesses, and collecting post-dredge surficial sediment samples for PCB analysis; and
- Placement of a six-inch clean sand cover over two areas at Jack's Marine (U.S. EPA, 2010; CH2M, 2008).

Sampling in 2018 concluded that the site surpassed the long-term goal of 0.25 mg/kg total PCBs after 10 years (U.S. EPA, 2021).

Table 1 provides an overview of the remediation and restoration projects that were conducted in the Ashtabula River AOC and the associated BUIs targeted for projects completed.

Figure 6: Ashtabula River Sediment Dredging

Table 1. Ashtabula River AOC Remediation and Restoration Projects

Project Title	Project Description	Date Completed	Targeted BUI(s)
Strategic Navigation Dredging	Under the Great Lakes Restoration Initiative, U.S. ACE dredged 114,000 cubic yards of contaminated sediment from the federal navigation channel in the upper and lower River.	2013	• *Fish Tumors or Other Deformities* • *Restrictions on Dredging Activities*
Jack's Marine North Slip Sediment Cleanup	Under the Great Lakes Legacy Act, Ohio EPA partnered with U.S. EPA to clean up nearly 12,000 cubic yards of contaminated sediment from the River bottom and install a 6-inch sand cover.	2013	• *Fish Tumors or Other Deformities* • *Degradation of Benthos* • *Degraded Fish & Wildlife Populations* • *Restriction on Fish & Wildlife Consumption* • *Restrictions on Dredging Activities*
5-½ Slip Habitat Restoration	3,840 linear feet of habitat shelves were installed in the River, and 3.6 acres of upland habitat were created on the peninsula at the mid-point of the AOC.	2012	• *Degraded Fish & Wildlife Populations* • *Loss of Fish and Wildlife Habitat*
Ashtabula River Navigation Dredging	U.S. ACE removed 133,000 cubic yards of contaminated sediment downstream of the 5th Street Bridge, including 1.5 feet below the authorized channel depth to create a cleaner sediment surface layer.	2008	• *Fish Tumors or Other Deformities* • *Restrictions on Fish & Wildlife Consumption* • *Degradation of Benthos* • *Degraded Fish & Wildlife Populations* • *Restrictions on Dredging Activities*
Ashtabula River Sediment Cleanup	Great Lakes Legacy Act sediment cleanup removed 497,000 cubic yards of sediment contaminated with PCBs and other contaminants.	2007	• *Fish Tumors or Other Deformities* • *Degradation of Benthos* • *Restrictions on Fish & Wildlife Consumption* • *Degraded Fish & Wildlife Populations* • *Restrictions on Dredging Activities*

Beneficial Use Impairments Removed – Markers of Restored Ecological Function

Early in the AOC Program, the Ashtabula River AOC was identified as having six of 14 possible BUIs. Those BUIs were chosen via a thorough examination of environmental conditions and with input from federal, state, and local agencies, Advisory Council members, non-governmental organizations, user groups, and community members. All six of the designated BUIs have been removed through the process outlined in the "State of Ohio Delisting Guidance and Restoration Targets for Ohio Areas of Concern" (Ohio EPA and OLEC, 2020a). The rationale for the removal of each BUI is presented here in an abbreviated fashion, excerpted and edited from the respective BUI removal documents, in the order in which the BUIs were removed. Appendices A through H in this document include letters of support from the Advisory Council and GLNPO's letters approving the removal request for each BUI. For additional details, including the proper citations for supporting documentation, please consult the final BUI removal documents themselves that are referenced at the end of each BUI summary.

Restrictions on Fish and Wildlife Consumption, ***BUI Removed May 2014***

Prior to being designated a Great Lakes AOC, an advisory was issued in 1983 by the Ohio Department of Health (ODH) and Ohio EPA that recommended that fish caught in the lower two miles of the Ashtabula River should not be eaten. That advisory was based on results of fish tissue sampling conducted between 1978 and 1981. At the time, 45 organic chemicals had been detected in fish tissue; many of the identified chemicals were classified as carcinogens. Because of the fish advisory of 1983-1997, the fish consumption beneficial use was recognized as impaired in the Stage 1 RAP (1991).

Although ambient concentrations of the organic contaminants in the water column were very low or below detectable limits, the chemicals were detected in fish tissue and in the sediment of the lower Ashtabula River and Fields Brook. The contaminated sediment in the AOC was identified as a concentrated source of pollutants causing contamination of fish tissue, particularly since the highest tissue contaminant levels had been found in bottom-feeding fish species. Sediment sampling subsequent to the posting of the 1983 consumption advisory found surficial sediment to contain much lower levels of contamination than deeper sediment, and fish tissue sampling at the time indicated that contaminant tissue levels had declined due to surficial sediment being covered over time with newer, cleaner sediment.

Mass removal of contaminated sediment was necessary to prevent future exposure from routine navigation dredging and to address other BUIs. Dredging is known to be disruptive to the ecosystem, so a precautionary "do not eat any fish" advisory was put in place immediately after the 2007 completion of the GLLA remediation project and would remain in effect until new fish tissue results showed that the advisory could be revised.

In 2011, tissue samples were collected from sport fish caught from the Ashtabula River and Lake Erie, according to the State of Ohio's Sport Fish Tissue Monitoring Program. The tissue concentrations in the Ashtabula River AOC fish were lower than what was detected in the Lake Erie fish tissue samples for the same species. Based on the fish tissue results from this assessment, the "do not eat any fish" advisory was revised in 2013 for the Ashtabula River AOC to: 1) apply only to common carp and freshwater drum

and to allow consumption of these fish species at a rate of one meal per month; and 2) update the advisories for Lake Erie fish. The Ashtabula River advisories for these two fish species were equal to or less stringent than the same fish found in Lake Erie.

The State of Ohio's Delisting Guidance and Restoration Target for the *Restrictions on Fish Consumption* BUI in 2014 was as follows:

> "No fish consumption advisories of one meal per month (or more stringent) have been issued by the Ohio Department of Health that can be attributed to sources within the AOC." (Ohio EPA, 2008).

It was difficult to determine if elevated fish tissue concentrations were a result of a contaminant source within the Ashtabula River AOC given that fish moved freely between the River and Lake Erie. Ultimately, the restoration target for this BUI was revised in 2014 to be more reflective of current science and to provide more specificity. Ohio EPA and the Advisory Council believed that there was a large amount of data available to demonstrate that this BUI could be removed and validated an alternative approach to address the local source requirement. The concentrations of contaminants in the AOC, as compared to the background levels of Lake Erie and its tributaries adequately showed that there was no difference in concentration or advice between similar species and size of fish in the AOC and the background locations.

This BUI was removed in 2014. Additional information and supporting documentation are available in the BUI Removal Recommendation.

Degradation of Fish and Wildlife Populations, ***BUI Removed May 2014***

The Ashtabula River was called Hash-tah-buh-lah, or river of many fish, by Native Americans, but commercial port development, industrial operations, and infrastructure improvements degraded fish populations in the AOC. Modifications made over the years to the river to facilitate port operations, such as channel dredging and sheet-piling of riverbanks, severely modified or removed critical aquatic habitat and limited fish populations. The Stage 1 RAP identified biological indices of a poor-fair fish community; hence its impairment at the time.

The cleanup of contaminated sediment in the Ashtabula River took place between 2006 and 2013. As part of the 5-½ Slip restoration project, in-water and shoreline habitat improvements were conducted along the shoreline of nearly 1/3 of the total length of the river within the designated AOC. As a result of these restoration and remediation activities, conditions in the Ashtabula River were improved and enhanced for fish populations.

Biological information collected by Ohio EPA within the AOC and compared to Ohio's Index of Biotic Integrity (IBI) and Modified Index of Well-being (Mlwb) provide numeric measures of the current condition of fish populations and are often used to demonstrate progress in ecological restoration. These indices are based on species richness, trophic composition, diversity, presence of pollution-tolerant individuals or species, abundance of biomass, and the presence of diseased or abnormal organisms. In addition, a lacustuary index, referred to as L-IBI, is utilized for the biological BUI restoration targets.

The State of Ohio's Delisting Guidance and Restoration Target for the *Degradation of Fish and Wildlife Populations* BUI in 2014 was as follows:

> "For lacustuaries and nearshore areas, IBI and Mlwb values do not significantly diverge from guidelines based on Thoma 1999." (Ohio EPA, 2008).

The state water quality attainment criteria were 42 for L-IBI and 8.7 for MIwb. The Ohio AOC non-significant departure value was 4 for L-IBI and 0.5 for MIwb; therefore, the Ohio AOC restoration targets were 38 for L-IBI and 8.2 for MIwb.

Data was utilized from fish population assessments conducted in the Ashtabula River AOC from 1989 to 2011 with most assessment sites centrally located in the AOC, near river miles 1.1 and 1.3 in the vicinity of constructed in-water and riparian habitat improvements. Both fish community indices showed a remarkable and consistent improvement in the Ashtabula River AOC. The fish communities exceeded the Mlwb restoration target in six of seven assessments between 2002 and 2013 with values that ranged from 8.33 to 11.55. For the L-IBI assessments, the fish communities exceeded the restoration target in five of six assessments between 2003 and 2013 with values that ranged from 36.8 to 50.

Fish populations in the Ashtabula River AOC not only met the BUI restoration target but exceeded the State of Ohio's water quality criteria.

This BUI was removed in 2014. Additional information and supporting documentation are available in the BUI Removal Recommendation.

Loss of Fish and Wildlife Habitat, ***BUI Removed May 2014***

The Stage 1 RAP identified fish habitat as impaired due to the presence of sheet pile walls in the lower River that impacted and limited habitat for fish within the river. The habitat restoration activities described in the Management Actions section were implemented to improve fish habitat, where feasible, within the AOC.

The State of Ohio's AOC restoration targets for the *Loss of Fish and Wildlife Habitat* BUI in 2014 were as follows:

> "1. For mainstem and tributaries, habitat quality shall average a Qualitative Habitat Evaluation Index (QHEI) score of 60 or better throughout the free-flowing stream stretches of the AOC;
>
> 2. For nearshore, harbor or lacustuary areas, Lake Erie QHEI (L-QHEI) results do not indicate an Impairment; and
>
> 3. Ohio Aquatic Life Water Quality Standards are met. **OR**
>
> 1. Fish and Wildlife officials do not identify loss of or poor quality habitat as cause for non-attainment with fishery goals." (Ohio EPA, 2008)

The Ashtabula River AOC is wholly within the lacustuary so restoration targets #2 and #3, above, were the applicable BUI restoration targets. Appendix B of the 2008 Ohio delisting guidance document stated that an L-QHEI score greater than 55 is an acceptable target.

Qualitative habitat evaluations conducted by Ohio EPA focused on identifying conditions such as substrate type, instream cover, channel morphology, and bank erosion to assess the quality of fish habitat. Assessment sites were mostly located in the center of the AOC, within the vicinity of constructed in-water and riparian habitat improvements. Fish habitat assessments conducted between 1989 and 2013 showed that the yearly average L-QHEI increased from 43.8 to 57.3, exceeding the BUI restoration target of 55.

The attainment status of aquatic life use in rivers is determined by the use of the MIwb and IBI indices. The average Ashtabula River AOC Mlwb and IBI scores met or exceeded aquatic life use targets and showed consistent improvement from 1989 and 2013. During that time period, the MIwb average by year index value improved from 5.53 to 11.55 and the IBI average by year index value improved from 31.6 to 50.0, which exceeded the restoration targets of 8.7 and 42, respectively.

With the completion of Management Actions, particularly the 5-½ Slip project, the Ashtabula River AOC BUI restoration targets were met and approached or exceeded Ohio water quality standards as evidenced by attainment of biological criteria.

This BUI was removed in 2014. Additional information and supporting documentation are available in the BUI Removal Recommendation.

Figure 7: 5-½ Slip Habitat Restoration Project Area

Degradation of Benthos, ***BUI Removed January 2018***

The Advisory Council listed the *Degradation of Benthos* beneficial use as impaired in the Stage 1 RAP due primarily to contaminated sediment, but also because of organic enrichment of river sediment and habitat destruction. Benthic assessments found that pollution tolerant species were dominant, and bioassays classified bottom sediment in the River, from the Outer Harbor to the upper turning basin, as heavily polluted or toxic.

Ohio EPA uses the Invertebrate Community Index (ICI) to evaluate benthic community structure and health. This assessment tool measures the attributes of species composition, diversity and functional organization and yields a narrative or numeric value. None of the sites assessed in the AOC in the late 1980s and early 1990s met the ICI score that should have been reasonably attainable at that time. In 1994, Ohio EPA updated the ICI assessment to be more representative of conditions that exist specifically in lacustuaries and nearshore Lake Erie sites. The modified assessment method is called a Lacustuary ICI (L-ICI). The L-ICI value for warmwater habitat sites is based on an Ohio EPA study in 1994 that identified 34 as a value considered an attainable goal for the Lake Erie lacustuaries.

Benthic community assessments were conducted by Ohio EPA as a part of a larger water quality assessment of rivers throughout northeast Ohio. Between 1995 and 2003, the yearly average L-ICI increased from 29.5 to 35.6 due to natural recovery. The 2003 L-ICI average value met the BUI restoration target, but a removal recommendation was not offered at that time as benthic communities and habitat would be decimated by the scheduled GLLA dredging operation that occurred between 2006 and 2007 (as described above in the Management Actions section). As expected, the benthic community assessments did not meet the numeric restoration target following the multiple dredge events. The AOC average for L-ICI was 30.7 in 2011, 28.0 in 2014 and 23.4 in 2015.
The State of Ohio recognized that after implementation of remedial actions for contaminated sediment, the primary cause of the impairment had been remediated but the full recovery of the benthic communities, to the L-ICI numeric target, may take decades. Ohio EPA's 2017 delisting guidance acknowledged that extended recovery time should not preclude the removal of the *Degradation of Benthos* BUI.

The 2017 Delisting Guidance and Restoration Target stated that the *Degradation of Benthos* BUI could be removed in a lacustuary when either of the following targets were met:

> "In lake affected waters (lacustuary or freshwater estuary), the average of the combined quantitative L-ICI values and the numerically converted qualitative values do not significantly diverge from the State of Ohio's BUI Restoration Targets for macroinvertebrate community.
> OR
> In waters where benthic degradation has been attributed to the contaminated sediments, this BUI can be considered restored in these areas when the remedial action(s) to address the contaminated sediments have been implemented to the extent practicable and the associated short-term remediation goals have been achieved." (Ohio EPA, 2017)

What is reasonably possible (i.e., contaminated sediment remediation and aquatic habitat restoration) has been done to improve aquatic habitat in the maintained navigation channel of the AOC where the channel has been unnaturally deepened and widened and where most of the riverbanks must remain sheet-piled for use by numerous marinas operating in this area. It is likely that benthic community recovery in the AOC following the past dredging operations will occur, but recovery has been impeded, beyond expectations, due to the lacustrine nature of the AOC coupled with seasonal low river flows, habitat disruption, excessive siltation exacerbated by a high level of recreational boat traffic that continually resuspends bottom sediments, and low dissolved oxygen. These factors are either natural to the Ashtabula River or unfeasible for remediation or restoration due to local economic reasons.

In 2017, Ohio EPA and the Advisory Council agreed that the length of time for benthic recovery should not delay the removal of this BUI and that the restoration target pertaining to benthic degradation being attributed to contaminated sediment had been met based on the fact that: 1) sediment contamination in the AOC was remediated to the extent practicable; and 2) short-term remediation goals were achieved. More details on the L-ICI target, assessment results, and the natural and anthropogenic factors impacting benthic community recovery can be found in the removal report.

This BUI was removed in 2018. Additional information and supporting documentation are available in the BUI Removal Recommendation.

Fish Tumors or Other Deformities, ***BUI Removed September 2019***

The *Fish Tumors or Other Deformities* beneficial use was listed as impaired by the Ashtabula River AOC Advisory Council in the 1991 Stage 1 RAP. The Advisory Council noted that:

- A community of brown bullhead catfish had "a high incidence of lip and skin tumors and precancerous conditions," and
- At the time, preliminary results of a U.S. Fish and Wildlife Service study “found skin cancers and external anomalies on 40 to 50 percent of the fish in the harbor and river."

The Stage 1 RAP presumed the impairment was likely due to PAHs from coal dust coming from a coal handling facility on the west bank of the river at the mouth. However, it was determined that industrial discharges from chemical industries and waste disposal sites had contaminated Fields Brook and was the main source of contamination to the Ashtabula River AOC.

Remediation activities at the Fields Brook Superfund Site were substantially completed by 2003. Remediation of contaminated sediment in the Ashtabula River mainstem occurred between 2006 and 2013 as described in the Management Actions section. Operation and Maintenance dredging by U.S. ACE has occurred every other year from 2009 to 2019, from the outer harbor, lake approach channel and/or river mouth.

The 2017 Delisting Guidance and Restoration Target stated that the *Fish Tumors or Other Deformities* BUI could be removed when the following targets were met:

"The average Deformities, Eroded Fins, Lesions and Tumors (DELT) values within the assessment unit do not exceed either:

- DELT values of 3% (lacustuary and boat sites), or
- DELT values 1.3% (wading and headwater sites);

AND

Where brown bullheads are present, the liver tumor prevalence rate in fish 3 years or older (i.e., neoplastic or preneoplastic liver tumors) should not exceed 5%." (Ohio EPA, 2017).

Ohio EPA conducted fish community surveys at 5 sites in the Ashtabula River AOC in 2011 and at 2 sites in 2018. Out of 3,022 individuals assessed, DELTs were observed in only 33 fish and only one of the seven assessments yielded a DELT frequency above the restoration target for a lacustuary site. The DELT seasonal average was below 3% at all seven sampling locations.

To determine the prevalence of brown bullhead neoplastic liver tumors, fish were collected from the Ashtabula River AOC in 2011. Fish were also collected in 2011 and 2013 from Conneaut Creek, a non-AOC reference site, to evaluate whether or not the impairment was limited to the AOC. The overall tumor prevalence rate in the Ashtabula River AOC was 7.5% and 2.5% in Conneaut Creek. It was suggested that the overall mean age of 7.2 years for fish from the Ashtabula River in 2011, as compared to the mean age of 5.9 years of fish from Conneaut Creek in 2011 and 2013, might be why the overall liver tumor rates in the Ashtabula River AOC were higher. Also, because the average age of the fish in the Ashtabula River was 7.2 years, many of the fish would have been exposed to contaminated sediment that was resuspended during the 2006 – 2008 dredging events. Thus, additional sampling was conducted in 2016 with a larger sample size. The liver tumor prevalence rate for bullhead in the Ashtabula River and Conneaut Creek was 7.3% and 4.7%, respectively, and the mean age was six at both locations.

Bioequivalence testing, a statistical analysis to compare how similar two sets of sample results are, was used to evaluate whether neoplastic liver tumor prevalence rates in the Ashtabula River AOC were equal to those in Conneaut Creek for each age class. Bioequivalence results indicated that the 2016 liver tumor prevalence rates were consistently estimated to be nearly equivalent between Ashtabula River AOC and Conneaut Creek among all age classes. This demonstrates that the impairment was not limited to the local geographic extent of the AOC.

Ohio EPA demonstrated that fish in the Ashtabula River met the restoration target of a DELT value less than or equal to 3% and that prevalence of liver tumors in brown bullhead were typical of lake-wide, region-wide, or area-wide conditions.

This BUI was removed in 2019. Additional information and supporting documentation are available in the BUI Removal Recommendation.

Restrictions on Dredging Activities, ***BUI Removed September 2020***

Sediment samples collected in the mainstem of the Ashtabula River AOC in the late 1980s and early 1990s had extremely elevated PCB concentrations that were considered toxic. Those conditions limited the disposal and use of dredged material from the federal navigation channel causing its impairment.

The tributary considered to be the primary source of contamination to the AOC, Fields Brook, was listed as a Superfund site in 1983 and clean-up activities were substantially completed by 2003. Remediation of contaminated sediment in the Ashtabula River AOC occurred between 2006 and 2013 as described in the Management Actions section. Operation and Maintenance dredging of the navigation channel by U.S. ACE occurred every other year from 2009 to 2019, from the outer harbor, lake approach channel and/or river mouth.

Previously, Ohio relied on suitability of dredged sediment for open lake disposal as the BUI restoration target. Since this target was originally drafted and implemented in 2005, Ohio has developed alternative options for Lake Erie dredged sediment beneficial use. In 2015, Ohio prohibited the practice of open lake disposal (effective July 1, 2020) with a few limited exceptions. The BUI restoration target was updated in 2020 to coordinate with state beneficial use rules established in 2017 to authorize upland beneficial use of Lake Erie dredge sediment.

The 2020 Delisting Guidance and Restoration Target stated that the *Restrictions on Dredging Activities* BUI could be removed when the following target was met:

> "There are no restrictions on navigational dredging or disposal activities due to contaminants in sediment, such that there are suitable options available for reuse or disposal of the material." (Ohio EPA and OLEC, 2020a).

To evaluate this BUI, Ohio compared sediment data from within the federal navigation channel to a number of standards and screening levels, including: 1) the residential and/or industrial soil U.S. EPA Regional Screening Levels (RSLs) (U.S. EPA, 2019), and 2) information regarding ambient background conditions for the upland beneficial use of dredged sediment. If the material is found to be suitable for upland beneficial use of the dredged sediment based on the two above evaluation methods, then the restoration target for this BUI will be met.

An alternate method for evaluating this BUI is related to the aquatic beneficial use of dredged sediment such as in-water habitat restoration projects. Placement of material into 'waters of the state' requires a Federal Water Pollution Control Act certification under section 401 from the state of Ohio. To evaluate this BUI, Ohio evaluated applicable chemical and biological data in accordance with the 401-certification process, such that the dredged sediment is suitable for in-water use. If the material is permittable for aquatic beneficial use for dredge sediment based on the 401-certification process, then the restoration target for this BUI will be met.

All dredge material from the Ashtabula Harbor Federal Navigation Channel has the potential to be beneficially used upland based on the results of the evaluation of the material against the residential and/or industrial soil U.S. EPA RSLs and information regarding ambient background conditions for the upland beneficial use of dredged sediment. The majority of dredge material may also be used for aquatic beneficial uses in accordance with the 401-water quality certification process.

This BUI was removed in 2020. Additional information and supporting documentation are available in the BUI Removal Recommendation.

Figure 8: Dredging in the Lower Ashtabula River

Public Involvement in the Delisting Process

Over the past 30 years, the local AOC Advisory Council, the Ohio EPA, and the Ohio Lake Erie Commission have worked together with local stakeholders to inform and provide opportunities for public input regarding specific management actions, BUI removal procedures and other AOC-related activities.

[The agencies will complete this section when preparing its Final Report. The anticipated public involvement activities include consultation with Ashtabula River AOC Advisory Council, tribal consultation, a public meeting, and a public comment period. The response summary of comments will be included as an appendix in the Final Report. Public involvement will be coordinated by U.S.EPA, OLEC and Ohio EPA.]

Post-Delisting Responsibilities and Monitoring

While AOC-based restoration and remediation work is complete and all six BUIs have been removed from the Ashtabula River AOC, monitoring of natural system recovery will continue. Ohio EPA will continue to monitor the health of the Ashtabula River watershed using chemical and biological parameters used consistently by Ohio EPA's Water Quality Monitoring Program across the state. These ongoing assessments will cover the health of the fish, benthos and habitat within the river. Changes in conditions should be reflected in the populations and species diversity. The time scale at which this will occur may be variable.

Annual advisories for how often fish from Lake Erie and its tributaries can be safely eaten will continue to be issued by the ODH in cooperation with the ODNR and the Ohio EPA. ODH produces and distributes educational materials on fish consumption advisories in local communities. For current advisory information, see the Ohio Sport Fish Consumption Advisory.

As it does for all state water resources, Ohio EPA's Dredge Material Program will continue to evaluate dredged material from the federal navigation channel and outer harbor for beneficial use and/or proper disposal.

Nonpoint source reduction, habitat restoration, dredge material management, and watershed policies will continue through state programs administered through Ohio EPA, OLEC and ODNR in collaboration with local partners and jurisdictions.

The Lake Erie LAMP outlines actions and measures to restore the Lake Erie ecosystem. The Ohio Lake Erie Commission participates in the Lake Erie Partnership Working Group, which is involved in the Lake Erie LAMP strategy development. OLEC, Ohio EPA and ODNR will continue to connect funding and technical resources and identify locally based priorities in applicable lakewide planning in coordination with local partner engagement.

Recommendation to Delist

Restoration and Removal of the Beneficial Use Impairments

The Ashtabula River AOC had six of the 14 BUIs which can be associated with Areas of Concern. For the past 30 years, time, resources and significant investments of money have been dedicated towards addressing the sources of impairment and their recovery. The investment of nearly $70 million in public and private funding was utilized to remediate and restore the lower Ashtabula River to meet the restoration targets for the BUIs associated with the AOC. The work resulted in the removal of 700,000 cubic yards of contaminated sediment, including over 14,000 pounds of PCBs and other contaminants, and creation of 3,840 feet of new aquatic habitat in the lower Ashtabula River. The completion of all management actions and associated projects occurred in 2013. The most significant environmental conditions that identified the lower Ashtabula River as an AOC have now been addressed, which has already resulted in economic revitalization and increased recreational uses of the Ashtabula River.

Delisting Recommendation

The restoration of the Ashtabula River AOC exemplifies how partnerships, collaboration and cooperative investments between local, state and federal efforts can result in significant improvements to local environmental conditions. The Ashtabula River was long recognized for its contamination and environmental degradation but is now being recognized for its commercial and community development improvements. These successful cleanup and restoration efforts have resulted in improved riverine habitat for fish, reduced levels of contaminants in sediment, and the recovery of ecological conditions. These investments, partnerships and restoration efforts have been key for a successful removal of all BUIs, and the Ashtabula River AOC is now ready for delisting.

The six BUIs identified for the Ashtabula AOC have been removed and environmental conditions in the Ashtabula River AOC are now comparable to non-AOC locations in and around Lake Erie. All sources of impairments have been addressed to the extent possible and all BUI restoration targets have been met. OLEC and Ohio EPA, with the concurrence of the Ashtabula River AOC Advisory Council, recommend that the Ashtabula River AOC now be delisted.

Figure 9: Ashtabula River

Acronyms

AOC – Area of Concern
BUI – Beneficial Use Impairment
DELT – Deformities, Eroded Fins, Lesions and Tumors
GLLA — Great Lakes Legacy Act
GLNPO – Great Lakes National Program Office
GLRI – Great Lakes Restoration Initiative
GLWQA – Great Lakes Water Quality Agreement
IBI – Index of Biological Integrity
ICI – Invertebrate Community Index
IJC – International Joint Commission
L-IBI – Lacustuary Index of Biological Integrity
L-ICI – Lacustuary Invertebrate Community Index
L-QHEI – Lacustuary Qualitative Habitat Evaluation Index
LAMP – Lakewide Action and Management Plan
MIwb – Modified Index of Well-being
NRDA – Natural Resource Damage Assessment
ODH – Ohio Department of Health
ODNR – Ohio Department of Natural Resources
Ohio EPA – Ohio Environmental Protection Agency
OLEC – Ohio Lake Erie Commission
PAH – Polycyclic Aromatic Hydrocarbon
PCB – Polychlorinated Biphenyl
QHEI – Qualitative Habitat Evaluation Index
RAP – Remedial Action Plan
RSL – Regional Screening Level
TSCA - Toxic Substances Control Act
U.S. ACE – United States Army Corps of Engineers
U.S. EPA – United States Environmental Protection Agency
U.S. FWS – United States Fish and Wildlife Service
WRDA – Water Resource Development Act
WWH – Warmwater Habitat

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Appendices

A. Advisory Council Letter of Support for Removal of *Restrictions on Fish and Wildlife Consumption*, *Degradation of Fish and Wildlife Populations*, and *Loss of Fish and Wildlife Habitat* BUIs

July 17, 2013

Mr. Scott Nally, Director
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, OH 43216-1049

Dear Director Nally:

The Ashtabula River RAP Advisory Council has reviewed available data, materials and documents for the final removal, in the Ashtabula River Area of Concern, of the following beneficial use impairments (BUIs):

- BUI #1: Restrictions on Fish and Wildlife Consumption
- BUI #3: Degradation of Fish and Wildlife Populations
- BUI#14: Loss of Fish and Wildlife Habitat

The Advisory Council has determined that all applicable data meets or exceeds the State of Ohio removal criteria for each BUI and unanimously voted to support the removal of these BUIs during our July 2, 2013 meeting.

If Ohio EPA concurs that the removal of these beneficial use impairments is warranted, the RAP Advisory Council requests the agency to proceed with the Public Notice and Public Meeting process required by US EPA/GLNPO to begin the process of removing these BUIs for the Ashtabula River Area of Concern.

With the removal of these BUIs, the following impairments will remain in the Ashtabula River AOC:

- BUI #4: Fish Tumors and Other Deformities
- BUI #6: Degradation of Benthos
- BUI #7: Restrictions on Dredging Activities

The Ashtabula River RAP Advisory Council will continue its efforts to remove the remaining impairments leading to the delisting and the complete restoration of the Ashtabula River Area of Concern.

Sincerely,

Fred Leitert, Co-Chair
Ashtabula River RAP Advisory Council
Ashtabula River Area of Concern

Matthew Smith, Co-Chair
Ashtabula River RAP Advisory Council
Ashtabula River Area of Concern

B. U.S. EPA Letter of Concurrence for Removal of *Restrictions on Fish and Wildlife Consumption*, *Degradation of Fish and Wildlife Populations*, and *Loss of Fish and Wildlife Habitat* BUIs

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

5 MAY 2014

REPLY TO THE ATTENTION OF:

Mr. Brian Hall
Assistant Chief, Division of Surface Water
Ohio Environmental Protection Agency
50 West Town Street, Suite 700
P.O. Box 1049
Columbus, Ohio 43216-1049

Dear Brian:

Thank you for your April 4, 2014, request to remove the "Degradation of Fish and Wildlife Populations," "Loss of Fish and Wildlife Habitat," and "Restrictions on Fish and Wildlife Consumption" Beneficial Use Impairments (BUIs) from the Ashtabula River Area of Concern (AOC) in Ohio. As you know, EPA's Great Lakes National Program Office is urging states to focus on and accelerate work in Great Lakes AOCs, and we were delighted to receive Ohio EPA's first request to formally remove BUIs from an Ohio AOC.

Based upon a review of your submittal and the supporting data, the U.S. Environmental Protection Agency hereby approves your BUI removal requests for the Ashtabula River AOC. In addition, EPA will notify the International Joint Commission of this significant positive environmental change at this AOC.

We congratulate you and your staff, as well as the many federal, state, and local partners who have worked so hard and been instrumental in achieving this important environmental improvement. Removal of these BUIs will benefit not only the people who live and work in the Ashtabula River AOC, but all Ohio and Great Lakes basin residents who share an interest in restoring the Great Lakes.

We look forward to the continuing and improving the productive relationship we have with Ohio EPA as we work together to fully restore all of Ohio's AOCs. If you have any further questions, please contact me at (312) 353-4891, or your staff may contact John Perrecone, at (312) 353-1149.

Sincerely,

Chris Korleski, Director
Great Lakes National Program Office

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C. Advisory Council Letter of Support for Removal of *Degradation of Benthos* BUI

December 19, 2017

Mr. Craig W. Butler, Director
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, OH 43216-1049

Dear Director Butler:

The Ashtabula River Area of Concern (AOC) Advisory Council has reviewed available data, materials and documents for the Degradation of Benthos beneficial use impairment (BUI) in the Ashtabula River AOC. The Advisory Council has determined that all applicable data meets or exceeds the State of Ohio removal criteria for this BUI and unanimously voted to support its removal at our November 9, 2017 meeting.

If Ohio EPA concurs that the removal of this beneficial use impairment is warranted, the AOC Advisory Council requests the agency to proceed with the process of submitting this removal recommendation.

With this BUI removal, the following impairments will remain in the Ashtabula River AOC:

- BUI #4: Fish Tumors and Other Deformities
- BUI #7: Restrictions on Dredging Activities

The Ashtabula River AOC Advisory Council will continue its efforts to restore conditions for the remaining impairments leading to their removal and ultimately, the complete restoration of the Ashtabula River Area of Concern.

Sincerely,

Fred Leitert, Co-Chair
Ashtabula River AOC Advisory Council
Ashtabula River Area of Concern

Matthew Smith, Co-Chair
Ashtabula River AOC Advisory Council
Ashtabula River Area of Concern

D. U.S. EPA Letter of Concurrence for Removal of *Degradation of Benthos* BUI

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

JAN 25 2018

Mr. Craig Butler
Director
Ohio Environmental Protection Agency
50 West Town Street, Suite 700
P.O. Box 1049
Columbus, OH 43216-1049

Dear Mr. Butler:

Thank you for your January 3, 2018, request to remove the "Degradation of Benthos" Beneficial Use Impairment (BUI) from the Ashtabula River Area of Concern (AOC), Ashtabula, Ohio. As you know, we share your desire to restore all of the Great Lakes AOCs and to formally delist them.

Based upon a review of your submittal and the supporting data, the U.S. Environmental Protection Agency hereby approves your BUI removal request for the Ashtabula River AOC. In addition, EPA will notify the International Joint Commission of this significant positive environmental change at this AOC.

We congratulate you and your staff, as well as the many federal, state, and local partners who have worked so hard and been instrumental in achieving this important environmental improvement. Removal of this BUI will benefit not only the people who live and work in the Ashtabula River AOC, but all the residents of Ohio and the Great Lakes basin as well.

We look forward to the continuation of this important and productive relationship with your agency and the local advisory committee as we work together to fully restore all of Ohio's AOCs. If you have any further questions, please contact me at (312) 886-4040, or your staff may contact John Perrecone, at (312) 353-1149.

Sincerely,

Tinka G. Hyde

Tinka G. Hyde, Director
Great Lakes National Program Office

E. Advisory Council Letter of Support for Removal of *Fish Tumors or Other Deformities* BUI

September 3, 2019

Ms. Laurie Stevenson, Director
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, OH 43216-1049

Dear Director Stevenson:

The Ashtabula River Area of Concern (AOC) Advisory Council has reviewed available data, materials and documents for the Fish Tumors and Other Deformities beneficial use impairment (BUI) in the Ashtabula River AOC. The Advisory Council has determined that all applicable data meets or exceeds the State of Ohio removal criteria for this BUI and has voted to support its removal.

If Ohio EPA concurs that the removal of this beneficial use impairment is warranted, the AOC Advisory Council requests the agency to proceed with the process of submitting this removal recommendation.

With this BUI removal, the following impairments will remain in the Ashtabula River AOC:

- BUI #7: Restrictions on Dredging Activities

The Ashtabula River AOC Advisory Council will continue its efforts to restore conditions for the remaining impairments leading to their removal and ultimately, the complete restoration of the Ashtabula River Area of Concern.

Sincerely,

Fred Laitert, Co-Chair
Ashtabula River AOC Advisory Council
Ashtabula River Area of Concern

Matthew Smith, Co-Chair
Ashtabula River AOC Advisory Council
Ashtabula River Area of Concern

F. U.S. EPA Letter of Concurrence for Removal of *Fish Tumors or Other Deformities* BUI

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
GREAT LAKES NATIONAL PROGRAM OFFICE
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

OCT 16 2019

Laurie A. Stevenson, Director
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, Ohio 43216-1049

Dear Ms. Stevenson:

Thank you for your September 16, 2019 request to remove the "Fish Tumors or Other Deformities" Beneficial Use Impairment (BUI) at the Ashtabula River Area of Concern (AOC) located in the City of Ashtabula, OH. As you know, we share your desire to restore all the Great Lakes AOCs and to formally delist them.

Based upon a review of your submittal and the supporting data, the U.S. Environmental Protection Agency (EPA) approves your request to remove this BUI from the Ashtabula River AOC. EPA will notify the International Joint Commission (IJC) of this significant positive environmental change at this AOC.

We congratulate you and your staff as well as the many federal, state and local partners who have been instrumental in achieving this environmental improvement. Removal of this BUI will benefit not only the people who live and work in the Ashtabula River AOC, but all residents of Ohio and the Great Lakes Basin as well.

We look forward to the continuation of this important and productive relationship with your agency and the Ohio Lake Erie Commission as we work together to delist this AOC in the years to come. If you have any further questions, please contact me at (312) 353-8320, or your staff can contact Leah Medley at (312) 886-1307.

Sincerely,

Chris Korleski, Director
Great Lakes National Program Office

cc: Lynn Garrity, Ohio Lake Erie Commission
Raj Bejankiwar, IJC

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G. Advisory Council Letter of Support for Removal of *Restrictions on Dredging Activities* BUI

ASHTABULA RIVER

August 26,2020

Ms. Laurie Stevenson, Director
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, OH 43216-1049

Ms. Joy Mulinex, Executive Director
Ohio Lake Erie Commission
P.O. Box 1049
Columbus, OH 43216-1049

Dear Directors Stevenson and Mulinex:

The Ashtabula River AOC Advisory Committee has reviewed available data, materials and documents for the final removal, in the Ashtabula River Area of Concern, of Restrictions on Navigational Dredging Activities BUI.

The Advisory Council has determined that all applicable data meets or exceeds the State of Ohio removal criteria for this BUI and have unanimously voted to support its removal.

If Ohio EPA and the Ohio Lake Erie Commission concurs that the removal of this beneficial use impairment is warranted, the AOC Advisory Council requests the agency to proceed with the Public Notice and Public Meeting process required by US EPA/GLNPO to begin the process of removing these BUIs for the Ashtabula River Area of Concern.

With the removal of this final BUI, the AOC will have no remaining impaired BUI's and will begin the Area of Concern delisting process.

The Ashtabula River AOC Advisory Council will continue its efforts to delisting the Ashtabula River Area of Concern.

Respectfully,

Fred Leitert, Co-Chair
Ashtabula River AOC Advisory Committee
Ashtabula River Area of Concern

Matthew Smith, Co-Chair
Ashtabula River AOC Advisory Council
Ashtabula River Area of Concern

H. U.S. EPA Letter of Concurrence for Removal of *Restrictions on Dredging Activities* BUI

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
GREAT LAKES NATIONAL PROGRAM OFFICE
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

Ms. Joy Mulinex
Executive Director
Ohio Lake Erie Commission
P. O. Box 1049
Columbus, Ohio 43216

Dear Ms. Mulinex:

Thank you for your August 27, 2020 request to remove the *"Restrictions on Dredging Activities"* Beneficial Use Impairment (BUI) at the Ashtabula River Area of Concern (AOC). As you know, we share your desire to restore all the Great Lakes AOCs and to formally delist them. Based upon a review of your submittal and supporting data, the U.S. Environmental Protection Agency (EPA) hereby approves your request to remove this BUI from the Ashtabula River AOC. EPA will notify the International Joint Commission of this significant positive environmental change at this AOC.

We congratulate you and your staff as well as the many federal, state, and local partners who have been instrumental in achieving this significant environmental improvement. Removal of the final BUI at this AOC will benefit not only the people who live and work in the AOC, but all the residents of Ohio and the Great Lakes basin as well.

We look forward to the continuation of this productive relationship with your agency, the Ohio Environmental Protection Agency, and the Ashtabula AOC Advisory Council as we work together to delist this AOC in the year to come. If you have any further questions, please contact me at (312) 353-8320 or your staff can contact Leah Medley at (312) 886-1307.

Sincerely,
CHRISTOPHER KORLESKI

Chris Korleski, Director
Great Lakes National Program Office

cc: Tiffani Kavalec, OEPA
Lynn Garrity, OLEC
Raj Bejankiwar, IJC

I. Advisory Council Letter of Support for the Delisting of the Ashtabula River Area of Concern

April 16, 2021

Ms. Laurie Stevenson, Director
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, OH 43216-1049

Ms. Joy Mulinex, Executive Director
Ohio Lake Erie Commission
P.O. Box 1049
Columbus, OH 43216-1049

Dear Director Stevenson and Director Mulinex,

The Ashtabula River Area of Concern (AOC) Advisory Council endorses and supports the Ashtabula River AOC Delisting Report and the recommendation to delist the Ashtabula River as an Area of Concern under the Great Lakes Water Quality Agreement.

The report provides the information pertaining to the remedial action plan process, remediation and restoration actions completed, and the removal of all beneficial use impairments identified in the Ashtabula AOC.

The Ashtabula AOC Advisory Council have been active members of the process since the inception of the AOC designation over 30 years. The Advisory Council was key to establishing the Ashtabula River Partnership and coordination of the many partners necessary to accomplish the goals set forth in the AOC. The work by many has resulted in the Ashtabula River reaching this milestone and the assembly of the Delisting report.

The Ashtabula AOC Advisory Council appreciates the longstanding coordination with Ohio EPA and Ohio Lake Erie Commission, federal agencies and the many local partners including local industries and citizens to remediate and restore the Ashtabula River AOC.

We encourage the acceptance of the Ashtabula River AOC Delisting report. Thank you for the many years of partnership in reaching this accomplishment.

Fred Leitert Co-Chair
Ashtabula River AOC Advisory Council
Ashtabula River Area of Concern

Matthew Smith Co-Chair
Ashtabula AOC Advisory Council
Ashtabula River Area of Concern

J. Tribal Correspondence and Consultation Summary *(to be included in draft final report)*

The United States Environmental Protection Agency (EPA), Great Lakes National Program Office (GLNPO) invited four Tribes with potential interests in Ashtabula County, Ohio, to consult on the proposed delisting of the Ashtabula River Area of Concern. A letter from GLNPO Director Chris Korleski was e-mailed to the following Tribes on February 28, 2021, requesting a response by March 26, 2021:

Seneca Nation of Indians
Seneca-Cayuga Nation
Eastern Shawnee Tribe of Oklahoma
Miami Tribe of Oklahoma

GLNPO received a response from the Miami Tribe of Oklahoma on March 17, 2021, which stated, "Ashtabula, Ohio is outside the area of interest of the Miami Tribe of Oklahoma. We do not need to consult on this project."

GLNPO received a response from the Seneca Nation of Indians on March 23, 2021, which stated, "Seneca Nation has no concerns at this time."

GLNPO did not receive a response from Seneca-Cayuga Nation or Eastern Shawnee Tribe of Oklahoma.

On April 7, 2021, GLNPO closed out Tribal consultation for the proposed delisting of the Ashtabula River Area of Concern. A summary of the consultation is documented in EPA's Tribal Consultation Opportunities Tracking System.

K. International Joint Commission Correspondence

International Joint Commission
Canada and United States

Commission mixte internationale
Canada et États-Unis

Mr. Chris Korleski
Director, Great Lakes National Program Office
U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard (G-17J)
Chicago, IL 60604-3507
U.S.A.

April 6, 2021

Dear Mr. Korleski,

We are writing in reply to your letter dated February 26, 2021, formally requesting the Commission's review of the Preliminary Draft Delisting Report for the Ashtabula River Area of Concern (AOC), in accordance with Annex 1 of the Great Lakes Water Quality Agreement.

Commission staff has reviewed the Preliminary delisting report as well as available Remedial Action Plan (RAP) reports and finds that there is adequate justification to remove the six impaired beneficial uses, including restrictions on dredging, degradation of benthos, restrictions on fish and wildlife consumption, degradation of fish and wildlife populations and loss of fish and wildlife habitat. The draft report is well written and has an excellent connection with the associated Beneficial Use Impairment (BUI) Removal reports. Beyond this delisting, the Commission strongly supports current efforts by the EPA to solicit comments from the Tribes.

Your letter indicated that the preliminary report will be revised by Ohio Lake Erie Commission (OLEC) and Ohio Environmental Protection Agency (OEPA) based on the comments received from the public via both online input and a public meeting to be held by EPA and the state. The Commission appreciates your invitation for IJC staff to attend the public meeting, and we will submit our formal comments on the revised delisting report following that meeting. We appreciate this engagement and the responsiveness of U.S. EPA, OLEC and OEPA in this regard.

BUI removals and achieving restoration targets are signs of the great progress being made under the GLRI and GLWQA. They can also serve as benchmarks for environmental restoration and represent achievement of the objective of addressing the degraded environmental conditions that had triggered the identification of the lower Ashtabula River and other sites as AOC's.

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The Commission would appreciate receiving information regarding strategies and plans for the ongoing monitoring and assessment to ensure the implemented restoration measures continue to be effective. The availability of ongoing tracking and monitoring information would help confirm if the restoration approaches are permanent or if any maintenance activities might be necessary. Ongoing monitoring would also promote the importance of this work to achieving fishable, drinkable and swimmable waters as we see these sites move from an Area of Concern to an Area of ongoing Care.

We congratulate U.S. EPA, OLEC, OEPA, Ashtabula River Area of Concern Advisory Council, and all RAP partners on the forthcoming delisting of Ashtabula River Area of Concern.

Sincerely,

Susan E. Daniel

Susan E. Daniel
Acting U.S. Section Secretary

Pierre Yves Caux
Acting Canadian Section Secretary

CC:
Michael Goffin, Environment and Climate Change Canada
Mary Beth Giancarlo, U.S. Environmental Protection Agency

L. Response Summary to Public Comments *(to be included in Final Report)*