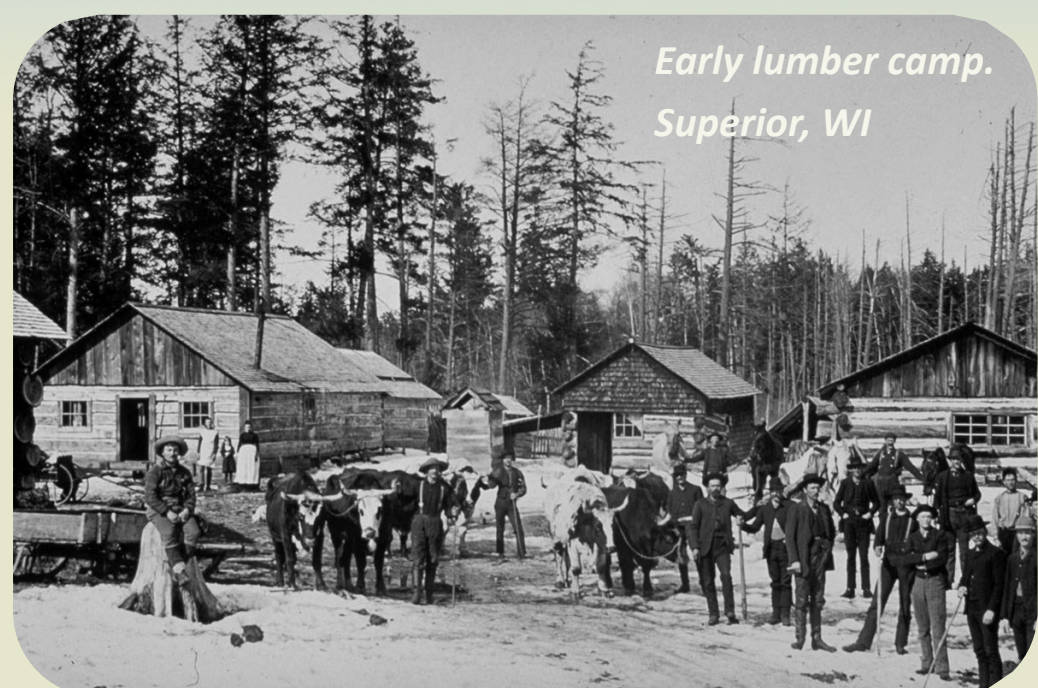
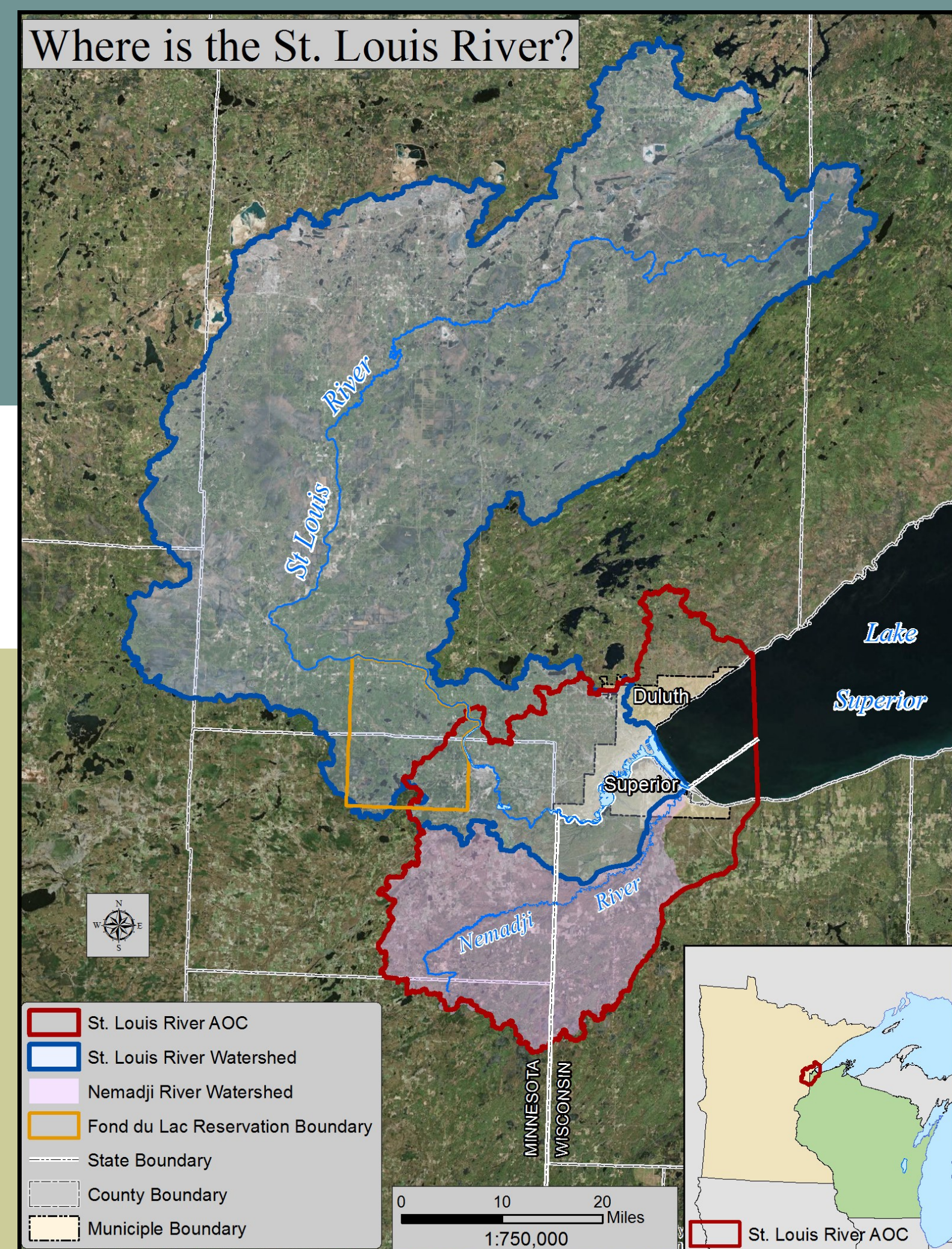


St. Louis River

Area of Concern

What is an Area of Concern?

An Area of Concern (AOC) is a location in the Great Lakes that has experienced extensive environmental degradation. Historical pollution due to untreated sewage and unregulated industrial practices has resulted in contaminated sediments and degraded water quality. Additionally, waterfront development in these areas has reduced the quantity and quality of fish and wildlife habitat. The St. Louis River is one of 43 Great Lakes AOCs in the U.S. and Canada.



Early lumber camp.
Superior, WI



Kathryn Desforge

1800's– Early 1900's

European explorers and French fur traders arrive at the St. Louis River's pristine waters, long after they were first paddled and fished by the Ojibwe.



Scum on the
river, 1950's

MPCA

Late 1800's - Mid 1900's

Industry develops in the Duluth Superior Harbor. A lack of environmental regulations leads to discharge of sewage, toxic contaminants, grain dust, wood waste, and other industrial byproducts directly into the river.

1972

The Great Lakes Water Quality Agreement is signed by the US and Canada, establishing a commitment to resolve water quality issues in the Great Lakes Basin. The Clean Water Act is passed by Congress, which establishes goals to make the nation's waters fishable and swimmable.



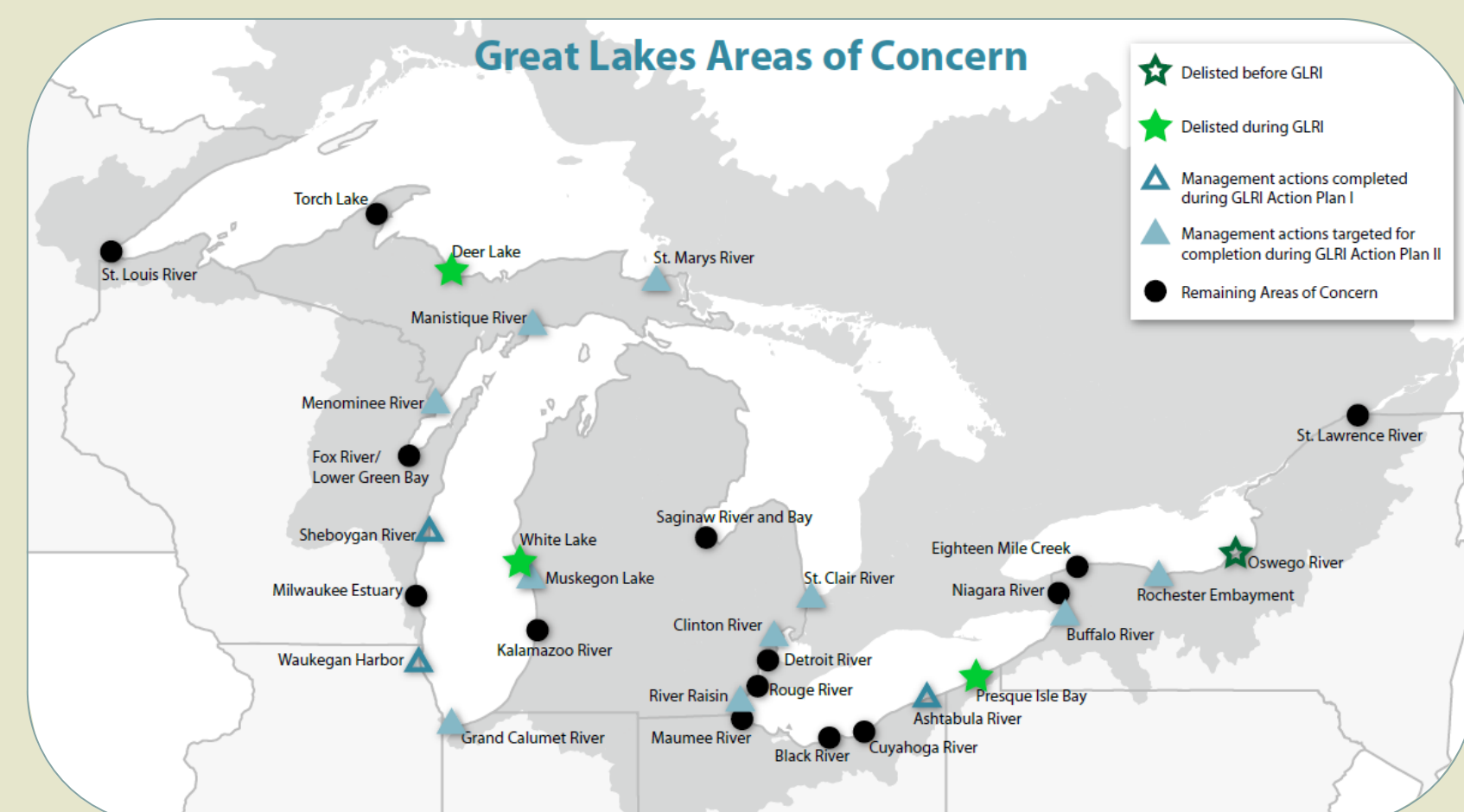
City of Superior

1978

Wastewater treatment facilities are established in Superior, Wisconsin and Duluth, Minnesota.

1987

Great Lakes Water Quality Agreement is amended to identify "Areas of Concern" that require special attention for cleanup and restoration.



1990's

A citizen advisory group was formed to develop a plan to address problems. This group later evolved into the St. Louis River Alliance.



WDNR



2010

The Great Lakes Restoration Initiative (GLRI) begins, providing significant federal funding to address impairments.

Important Moments in St. Louis River History

Why is the St. Louis River an Area of Concern?

Since the mid-1800’s, the St. Louis River has been re-shaped and degraded by manufacturing, logging, sawmilling, and shipping practices prior to modern environmental policies and regulations. These practices eventually led to the St. Louis River becoming one of the Great Lakes’ most polluted waterways.

Nine specific impairments are identified:

Fish Consumption Advisories

Contamination has resulted in fish consumption advisories based on Polychlorinated biphenyls (PCBs) and Mercury. The next steps to remove this impairment include cleanup of contaminated sediments and monitoring fish tissue for contaminants. The AOC goal is for consumption advisories for the St. Louis River to be no more conservative than the larger region.

Degraded Fish and Wildlife Populations

Contamination, poor water quality, and loss of critical habitat have resulted in reduced abundances of fish and wildlife. The next steps to remove this impairment include monitoring bird and fish populations, completing a survey for semi-aquatic mammals, and restoring habitat for piping plover. The AOC goal is for monitoring to show that fish and wildlife populations are not limited by physical habitat, food sources, water quality, or contaminated sediments.

Fish Tumors and Deformities

Contamination may have resulted in increased rates of fish tumors and deformities. The next steps to remove this impairment include cleaning up contaminated sediments and monitoring fish tumor and deformity rates. The AOC goal is to have fish tumor and deformity rates which are not elevated compared to fish tumor rates in the larger region.

Degraded Sediment-Dwelling Organisms

Alteration and contamination of bottom sediments has resulted in degraded communities of benthic (sediment-dwelling) organisms. The next steps to remove this impairment include cleaning up contaminated sediments and restoring aquatic habitat. The AOC goal is for communities of benthic organisms within restored sites to be approximately the same as in comparable un-impacted sites.

Restrictions on Dredging Activities

Contamination has resulted in special handling requirements of dredge materials that may contain toxic pollutants. The next steps to remove this impairment include testing sediment for contamination throughout the AOC, cleaning up contaminated hotspots, and developing a bi-state approach to inform partners and public about restrictions on dredging. The AOC goal is to understand and communicate the extent of contamination and for contamination hotspots to be cleaned up.

Excessive Sediments and Nutrients

Lack of appropriate sewage treatment prior to the 1980’s resulted in elevated nutrients in the river. Extensive logging and removal of shoreline vegetation resulted in increased erosion in the Nemadji River and increased sediment in the St. Louis River. The next steps to remove this impairment include monitoring water quality improvements since upgrades to wastewater treatment facilities and assessing the sources and impacts of sediment in the Nemadji River. The AOC goal is for nutrient and sediment monitoring data to show that water quality does not restrict habitat or recreation.

Beach Closings and Body Contact Restrictions

Bacteria and toxic pollution in the river has resulted in the closure of beaches and body contact advisories. The next steps to remove this impairment include cleaning up contaminated sediments, identifying the source of bacterial contaminants, and addressing the source if it is due to human activities. The AOC goal is to remove no-swimming signs at contaminated areas and address beach closures due to wastewater pollution.

Degradation of Aesthetics



*Impairment
Removed!*

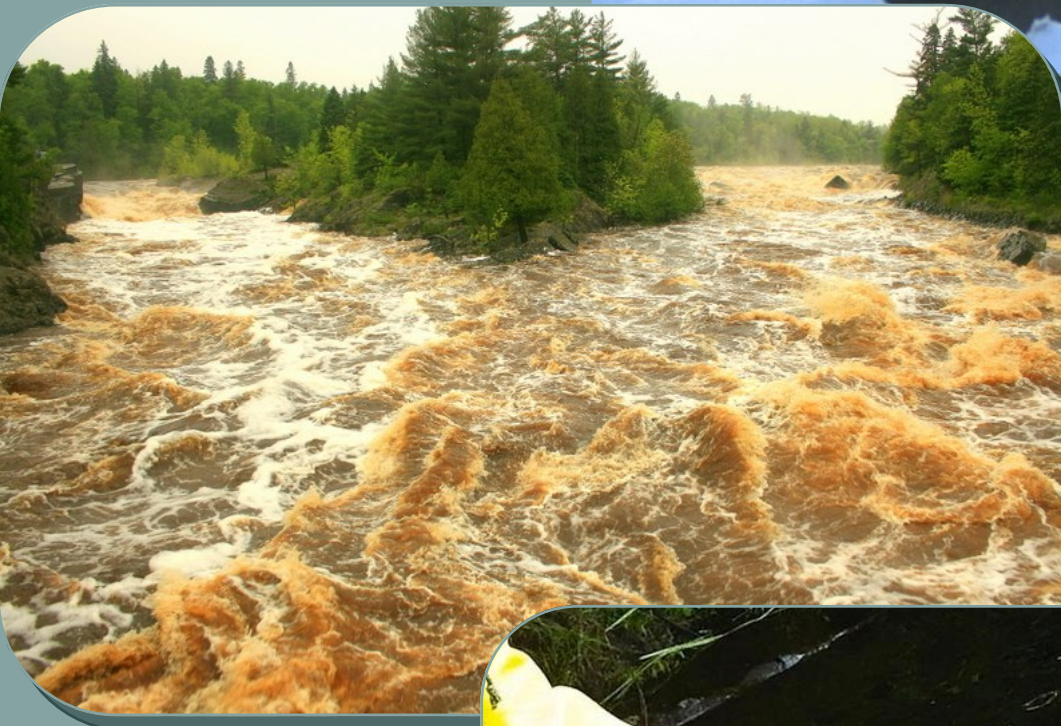
A history of unregulated pollution in the industrial port caused the aesthetics qualities of the river to be degraded. The Clean Water Act and other environmental regulatory programs resulted in improvements in aesthetics and the removal of this impairment. The AOC goal of no persistent occurrences of oils, films, chemical residues, scums, discoloration, or obnoxious odors in the river has been met.

Loss of Fish and Wildlife Habitat

Development and contamination has reduced the quantity and quality of habitat in the AOC. The next steps to remove the impairment include restoring aquatic, wetland, dune, tributary, and upland habitat and addressing invasive species. The AOC goal is to restore 1,700 acres of aquatic habitat, clean up contamination, and restore and protect additional shoreline and upland habitat.



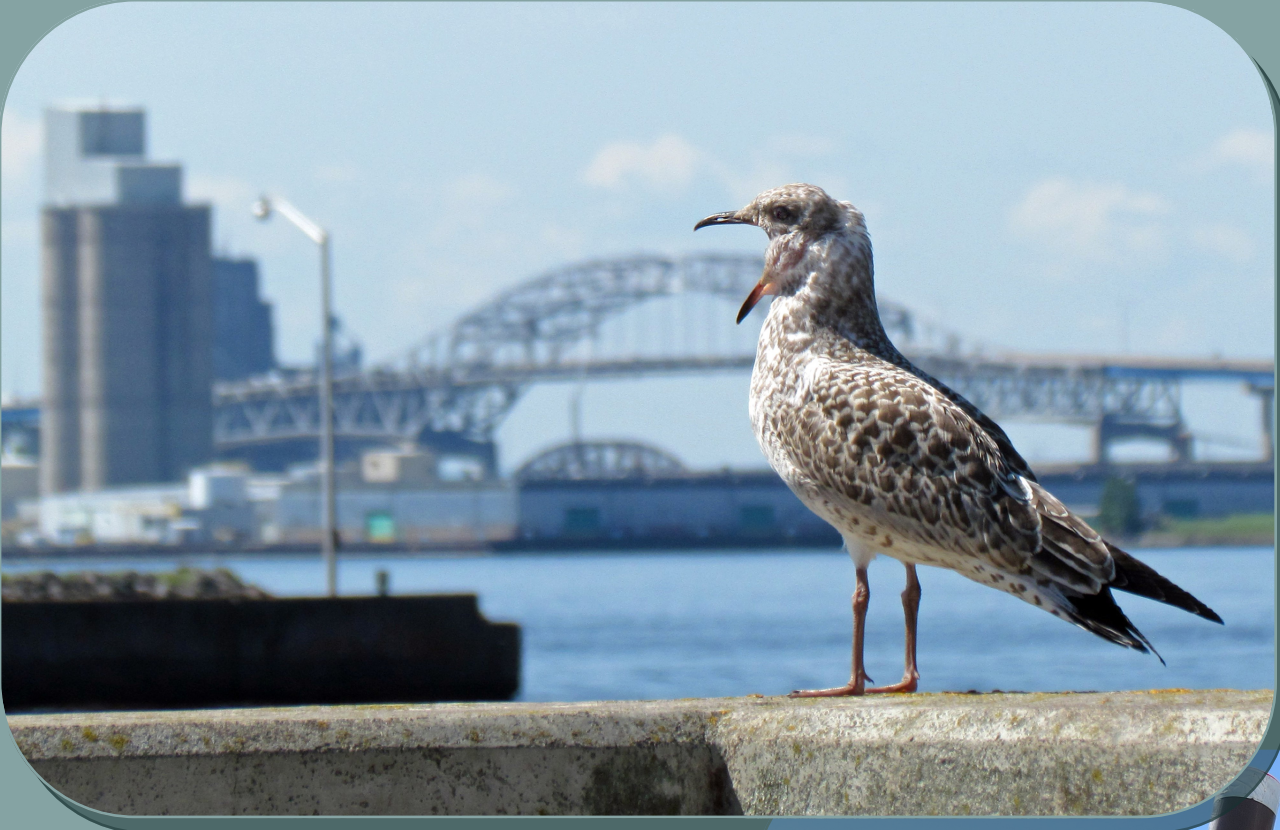
From top: Trail cameras document small mammals such as these mink; Storm events which cause erosion and sewer overflows contribute to excess sediments and nutrients; Juvenile lake sturgeon naturally reproduced in the estuary is a sign of fish population improvement.



Barb Aler



Minnesota DNR



Carole Lent

From top: Industrialization has led to habitat loss; Sediments in Howard’s Bay are sampled for hazardous chemicals; Benthic invertebrates are assessed for population health.



WDNR



Frank Koshore

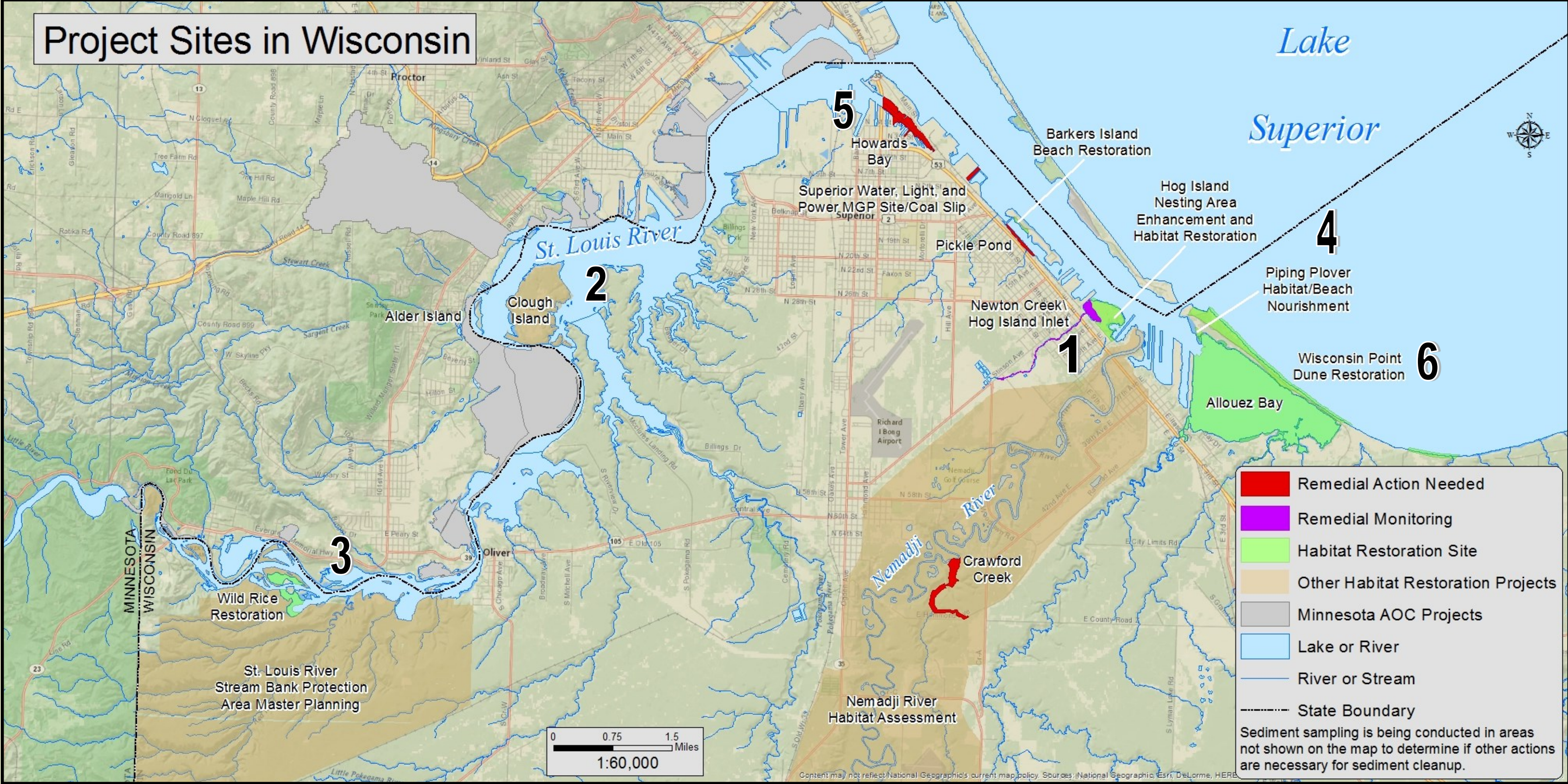
Celebrating Success!

In August of 2014, the St. Louis River AOC reached a major milestone when the Degradation of Aesthetics impairment was officially removed. The other impairments will be removed over the next 10 years. The intent of AOC partners is to remove the St. Louis River from the list of Great Lakes AOCs by 2025.

What's happening in the AOC?

Wisconsin Project Highlights

Today, the St. Louis River continues to be an important resource for commerce and industry as well as a place for recreation and public enjoyment. The Wisconsin DNR has been working with Minnesota and our local and federal partners for more than 20 years to address pollution and habitat loss in this area.



1

Newton Creek and Hog Island Inlet

Since the early 1920's, the Newton Creek and Hog Island Inlet area was used to dispose of dredge spoils and industrial petroleum byproducts. Soils were contaminated with petroleum compounds and lead. From 1997 – 2005, over 67,920 tons of contaminated sediment was removed. Following sediment remediation, Douglas County and the University of Wisconsin Superior Lake Superior Research Institute (LSRI) partnered to implement habitat restoration. Invasive species were removed and native trees, shrubs, grasses, wildflowers, and wetland species were planted in and around Hog Island Inlet, Newton Creek, and Allouez Bay. Large woody crib structures were also built to provide fish and wildlife habitat. Waterfowl, turtles, and muskrat have been spotted using the logs as resting spots, while fish use the cribs for nursery habitat.



Frank Koshore

4

Piping Plover

Piping Plover are a shorebird species that are listed as state and federally endangered. In the early 20th century, the St. Louis River supported at least 12 breeding pairs, but as of 2016 no pairs were found in the St. Louis River. Piping plover have specific habitat requirements for nesting: wide, barren beaches. Biologists consider the WI Point Bird Sanctuary and the east end of MN Point to have the greatest potential to restore nesting habitat for piping plover in the St. Louis River estuary area. Efforts are underway by AOC partners to attract plover to breed in this area. Restoration activities at this site include eradicating invasive species, re-sloping the beaches, and clearing driftwood and debris. A beach nourishment project is currently being evaluated at the WI Point Bird Sanctuary to make the site more appealing to nesting piping plover by creating a wide sandy beach that would connect the sand spit to the existing island.



Summer Matteson

2

Clough Island

At 346-acres, Clough Island is the largest island in the St. Louis River. Bordered by steep clay bluffs, it contains a patchwork of extensive marshes, sedge meadows, wetlands, and boreal forest. The natural communities on the island were highly impacted by historic logging and farming and invasive buckthorn and honeysuckle are also present. The island was purchased from developers in 2010 by the Nature Conservancy, who later transferred the property to WDNR for management as part of the St. Louis and Red River Streambank Protection Area. WDNR has been conducting habitat restoration by planting conifer seedlings and removing invasive plant species. Approximately 10,000 seedlings have been planted and 186 acres have been preliminarily treated for buckthorn and honeysuckle. Restoration will continue with maintenance of plantings and continued invasive species management.

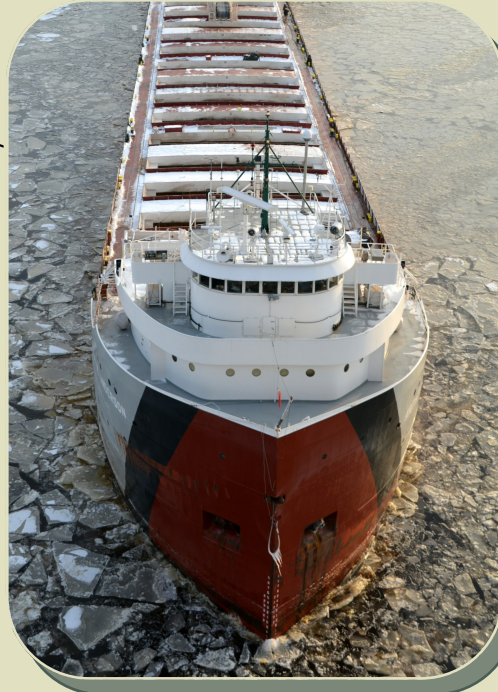


WDNR

5

Howards Bay

Howards Bay is an industrial embayment which is an important shipyard for Lake Superior commerce. A history of industrial use has polluted sediments in the bay. Dredging is needed to remove contamination and to provide a deep enough channel for vessels entering the shipyard. To reduce costs, the Wisconsin DNR, EPA, and Fraser Shipyards, Inc. are collaborating in order to address environmental problems and meet maritime needs with a single project. The US Army Corps of Engineers and City of Superior are also participating in project design and planning. Once cleaned up, the bay can continue to serve as home to Frasier Shipyards while providing important habitat for fish like musky and northern pike as well as migratory waterfowl.



Terry White

3

Wild Rice Restoration

Wild rice is a resource that was once abundant in the St. Louis River, but has been reduced to few remnant stands over the past 50 years. In 2014, a Wild Rice Restoration Implementation Plan was completed for the AOC. Restoration work includes seeding, vegetation management, and protection against predation by Canada geese and common carp. In Wisconsin, Douglas County and other AOC partners are seeding approximately 30 acres in Allouez Bay and 170 additional acres in the upper St. Louis River estuary through a partnership with Minnesota Department of Natural Resources, Minnesota Land Trust, and WDNR. Seeds purchased from the Fond du Lac Band will be used to plant multiple sites in back bays in the upper estuary. This is part of an effort to restore 250 acres of wild rice in the estuary by 2020.



Frank Koshore

6

Wisconsin Point Dunes

In the past years, extensive human use has taken a toll on the sensitive dune and forest ecosystems on Wisconsin Point. The degradation of the dunes, introduction of invasive species, and presence of sensitive historical sites highlight the need for appropriate infrastructure to reduce human impacts on the Point. The National Oceanic and Atmospheric Administration has partnered with the City of Superior and the state of Wisconsin to pursue a dune restoration project on Wisconsin Point. The project includes development of appropriate infrastructure to allow public access and protect the sensitive dunes as well as the historical sites on the Point. Boardwalks will be installed for beach access across the sensitive dune ecosystem and invasive species will be treated and removed. Plans include stabilizing the shoreline along Allouez Bay and reconstructing the parking lots using low impact development techniques.



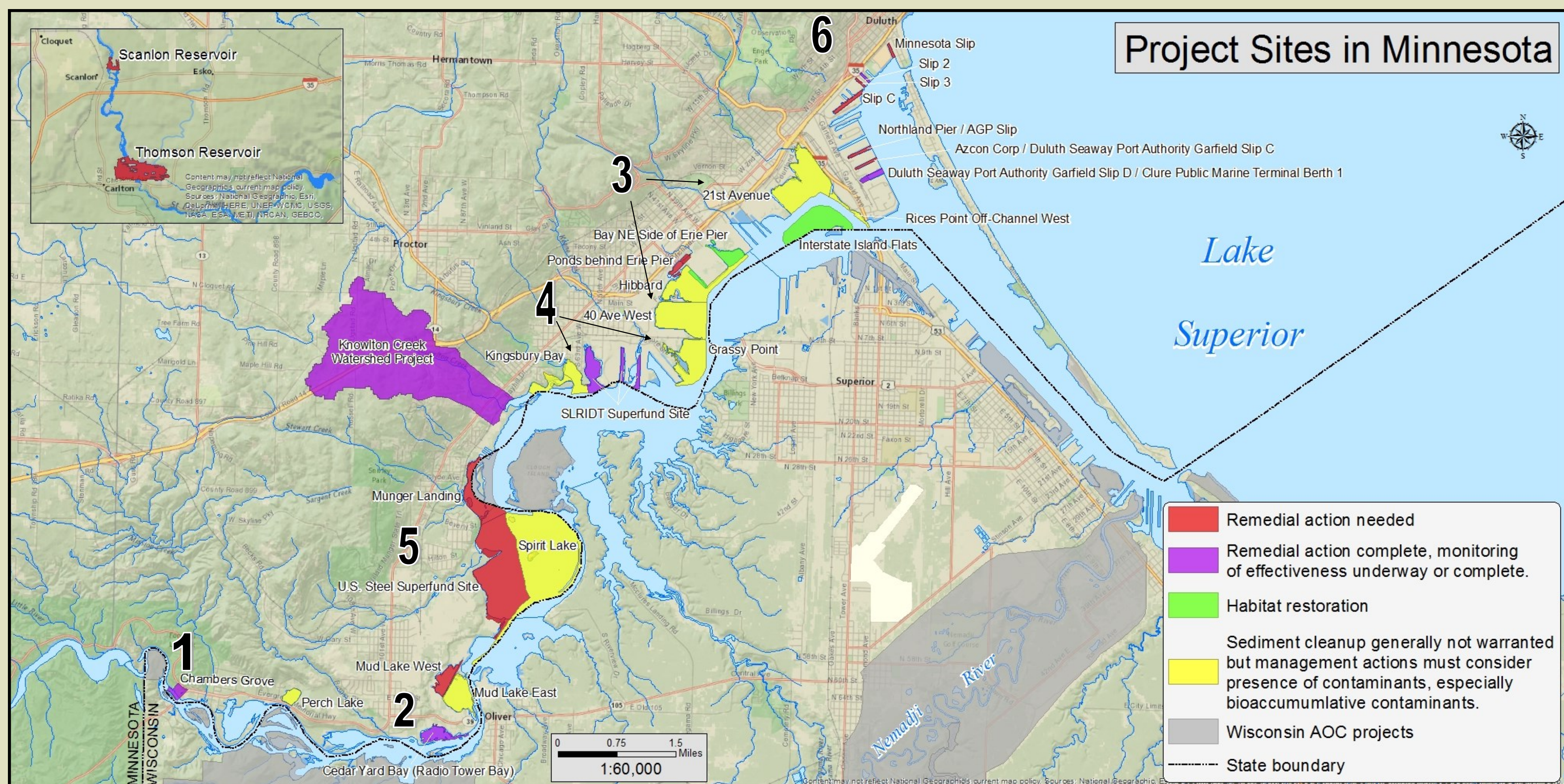
Pamela Bloy



What's happening in the AOC?

Minnesota Project Highlights

Today, the St. Louis River continues to be an important resource for business and industry as well as a place for recreation and public enjoyment. The Minnesota Pollution Control Agency and Minnesota DNR have been working with Wisconsin and our local and federal partners for more than 20 years to address pollution and habitat loss in this area.



1 Chambers Grove Park

A partnership with the City of Duluth has resulted in an upgraded park with new facilities and landscaping and improved river accessibility. This site provides improved fish habitat using natural channel design techniques that include riffle features ideal for migratory fish spawning (e.g., lake sturgeon, walleye). The 1,000 foot retaining wall constructed of steel pile has been removed and the shoreline has been stabilized with natural materials and native vegetation. Now that construction is complete, visitors can experience a natural shoreline for fishing and easier access for canoes and kayaks.



4 Kingsbury Bay/Grassy Point

The goal at Kingsbury Bay is to restore open water habitat by removing the large sediment deposits that resulted from expedited erosion and sedimentation over the last century of development. This material is rich in organics and will be placed as a nutrient rich seed source at 21st Ave W, 40th Ave W, and Grassy Point. Grassy Point's aquatic habitat restoration design and construction implemented at the same time. Here, woodwaste is the primary culprit, and therefore, some areas will be made deeper through removal and other areas will be made into shoals and an expanded island to provide a sheltered bay habitat, while reducing costs by keeping materials on-site.



2 Radio Tower Bay

Over half of this 75-acre bay contained wood waste ranging from sawdust and chips to large slabs from past milling operations in the late 1800s. The objective of this habitat restoration was to remove the wood waste to help restore the underlying substrate which will in turn provide better habitat for aquatic vegetation and macroinvertebrates. The restoration covered 29 acres (approximately 114,300 cubic yards). The wood has been excavated, ground up, and pumped to a temporary storage basin where it was dried and sampled with the ultimate goal of re-using the wood chips in upland landscaping.



5 U.S. Steel Sediment Clean-Up

U.S. Steel is partnering with EPA's Great Lakes National Program Office (GLNPO) to conduct the sediment clean-up adjacent to the former U.S. Steel Duluth Works site. This voluntary partnership will help expedite sediment cleanup and provide for habitat restoration opportunities. U.S. Steel and GLNPO presented their proposed cleanup plan in August 2016, and will coordinate with local resource managers to incorporate desired habitat restoration components into the cleanup design. The cleanup activities are anticipated to begin in 2018.



3 21st Ave W & 40th Ave W

Restoration at these sites is providing for approximately 667 acres of improved aquatic habitat. Construction at 21st Ave W is near complete. Construction at 40th Ave W begins in 2017. The sites have been designed and permitted to strategically place new features (i.e., shoals, islands) in order to provide for a variety of depths to support aquatic plants, bugs, and fish. Monitoring for vegetation and bugs before and after construction will help us document and better understand how these changes improved the habitat.



6 MN Slip Clean-Up

The home of Duluth's retired ore carrier William A. Irvin is one step closer to being cleaned up. The Minnesota Pollution Control Agency (MPCA) has selected a cost-effective and environmentally supportive solution with an estimated cost of \$1.6 million. The remedy moves 2,500 cubic yards of contaminated sediments to the slip's deeper areas, caps it with three feet of clean material and requires no offsite disposal. The MPCA, in partnership with EPA GLNPO and U.S. Corps of Engineers, has begun the design process. Barring unforeseen design or funding delays, construction could begin in 2018.

