



# LAKE SUPERIOR LAKEWIDE ACTION AND MANAGEMENT PLAN

## Annual Report 2013

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### What is the LAMP?

Under the Great Lakes Water Quality Agreement, the governments of Canada and the United States are obligated to protect the physical, biological and chemical integrity of the waters of the Great Lakes.

The Lakewide Action and Management Plan (LAMP) is the binational mechanism to establish shared goals, identify threats, take coordinated action and monitor results. The Lake Superior Binational Program includes the LAMP and the Zero Discharge Demonstration Program, unique to Lake Superior, with the goal to virtually eliminate the input of nine chemical pollutants. Many actions are implemented through the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem and the United States Great Lakes Restoration Initiative.

The Lake Superior Binational Forum is a volunteer stakeholder group representing industrial, Tribal/First Nation, business, environmental, recreational, tourism, health, labour, and academic interests. The Forum and the LAMP share a common vision for the protection of Lake Superior.

### Overview

Lake Superior is one of the most beautiful lakes in North America. Containing nearly nine percent of the world's surface freshwater, Lake Superior is, by most measures, the cleanest of the Great Lakes. Lake Superior has the most undeveloped coastline in the Great Lakes system and is home to an amazing diversity of plant and animal species. Found only in Lake Superior, a robust, deepwater form of lake trout, siscowet, dominates the waters. Stranded populations of arctic plant species introduced during the last ice age remain sheltered among the cold-waters and shaded cliffs.

Overall, the Lake Superior ecosystem is in good condition:

- The lower food web is healthy;
- Fisheries are in good to excellent condition;
- Toxic, legacy contaminants are decreasing or remaining stable, with a few exceptions;
- Progress is being made toward remediation and restoration of priority Areas of Concern (AOCs); and
- Many pristine wilderness areas are located on its shores.

In 2013, the LAMP organizations will focus on invasive species, land use change, biodiversity, chemicals of concern and potential effects of climate change. The agencies will also consider the findings and recommendations included in the International Joint Commission's March 2012 [summary of findings and recommendations](#) on regulation of water levels in Lake Superior.

### Great Lakes Water Quality Agreement of 2012

On February 12, 2013, the Governments of Canada and the United States ratified the Great Lakes Water Quality Agreement of 2012. The Agreement facilitates binational action on threats to water quality and ecosystem health. More information on the Agreement can be found on the following website: [www.binational.net](http://www.binational.net).

### Accomplishments

#### Habitat Restoration and Protection

Many excellent habitat restoration projects are being implemented around the Lake Superior basin. The restoration of 4,100 feet of shoreland in Ashland, WI will transform past industrial lands into a more ecologically- protective area, provide green infrastructure and resilience to climate change, and provide more opportunities for recreation and tourism. In another project, the streambed of Bass Creek in Ontario was altered to reduce silt and restore suitable spawning habitat for walleye in a former key spawning area of the Nipigon River system. On Michigan's Keweenaw Peninsula, the Houghton Keweenaw Conservation District and partners acquired an additional 1,493 acres of high quality wetlands as part of the Bete Grise wetland acquisition project. Along the St. Louis River in Minnesota, work is underway to simultaneously clean up contaminated sediment and restore habitat in five different locations.



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The LAMP organizations are finalizing a basin-wide strategy to guide the work that is necessary to restore and protect Lake Superior's biodiversity.



Water lilies in the Bete Grise Preserve, MI.  
Photo Credit: Gina Nicholas

### Reducing Chemical Pollutants

The Lake Superior Zero Discharge Demonstration Program calls for the virtual elimination of nine critical pollutants. The program has been extremely successful, with all reduction targets being met to date. For example, between 1990 and 2010, in-basin mercury emissions were reduced by 80% and dioxin emissions by 86%. The LAMP organizations have contributed to this success by funding local initiatives such as collections of old pesticides, paints, PCB transformers and mercury products, and through public education campaigns to stop open burning of garbage. These collection efforts and decreases in chemical releases have led to declining concentrations of the nine pollutants in the Lake Superior basin. One notable exception is mercury -- after a 10-year decline, concentrations appear to be on the rise in Lake Superior lake trout.

The LAMP organizations also support efforts to educate people about chemicals of emerging concern, such as pharmaceuticals, personal care products and flame retardants, since higher concentrations could potentially affect wildlife and human health. For example, a recent University of Minnesota study found the common antibacterial soap agent, triclosan, in the Duluth, MN harbour and in a sample location 9 miles (14 kilometres) offshore. As a precaution, the LAMP organizations are supporting events like those hosted by EcoSuperior in Thunder Bay, ON, to trade-in household cleaning products for non-toxic cleaning kits and to teach pre-teens to make informed decisions when buying personal care products.

### Progress in Areas of Concern

While not a LAMP activity, restoring Lake Superior's seven designated Areas of Concern (AOCs) is key to lake restoration, and therefore a complementary initiative to the LAMP. AOCs are locations of historical contamination where some beneficial uses (e.g. drinking water, fish consumption, fish and wildlife habitat) are impaired.

- **St. Louis River, MN/WI:** The Remedial Action Plan Update (2013) will provide a list of management actions required to remove Beneficial Use Impairments (BUIs) and delist the AOC by 2025. Current projects include engineering designs for habitat restoration, fish tumor analysis, bioavailability assessment and biological response monitoring for aquatic vegetation and invertebrates.
- **Thunder Bay, ON:** Additional assessment is underway to help identify suitable options for cleaning up contaminated sediment adjacent to a former paper mill in Thunder Bay's harbour.
- **Nipigon Bay, ON:** Monitoring indicates that walleye populations in Nipigon Bay are recovering. Kama Creek, located east of Nipigon, has been restored to its natural channel, improving water quality and habitat for fish, such as brook trout.
- **Jackfish Bay, ON:** Long-term monitoring of this AOC in recovery is underway and indicates that fish populations are improving; conditions in Blackbird Creek remain impaired.
- **Peninsula Harbour, ON:** The last remedial action was completed in 2012. Environment Canada, with financial support from the Ontario Ministry of the Environment and a former mill owner, capped contaminated sediment with a layer of clean sand in 2012. The remediated area will create clean habitat for plants and animals, accelerate natural recovery and reduce health risks to people and wildlife.
- **Deer Lake, MI:** With federal funding, the City of Ishpeming is installing new water and sewer mains, structurally stabilizing culverts, and improving segments of Partridge Creek using natural channel design to reduce/eliminate sources of mercury. Only one BUI remains: restrictions on fish and wildlife consumption.
- **Torch Lake, MI:** Federal, state, and local partners continue to explore options for restoring degraded benthos and alleviating fish consumption restrictions due to PCBs. Michigan Technological University has received a grant from Michigan Sea Grant to develop an integrated assessment of strategies to address remaining contamination.





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### **Adapting to Climate Change**

The Lake Superior ecosystem is especially vulnerable to a rapidly changing climate. Cold water species such as lake and brook trout are being affected by warming water. The Grand Portage Band of Lake Superior Chippewa is already adapting accordingly. The brook trout population of Trout Lake, in Minnesota, has been an important source of food for the Band, but fish populations have declined alongside increases in water temperature. In recent years, the Band has changed its stocking from cold-water brook trout to cool-water walleye and perch. In addition, rapidly declining moose populations, due directly to climate change effects, have prompted the Band to diversify its food sources.

Climate change adaptation planning and implementation continues to be a top priority for the LAMP organizations. The LAMP organizations are compiling Lake Superior climate change science and identifying adaptation opportunities to help all stakeholders address the effects and impacts of a changing climate.

### **Challenges**

#### **Ongoing Stressors**

Vigilance and continued actions are necessary to protect this important and beautiful resource. While the ecosystem remains in generally good condition, there are ongoing and emerging stressors, including:

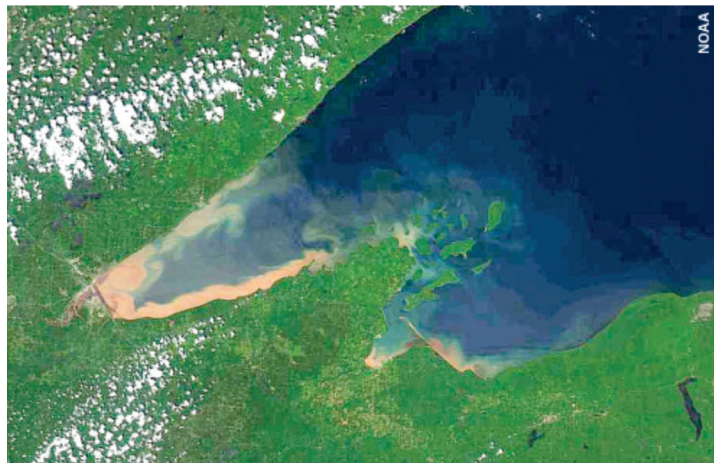
- Contaminants such as mercury and PCBs continue to cause fish advisories and exceed water quality guidelines;
- Further reductions in mercury emissions will become increasingly difficult due to ongoing mining operations in the basin;
- Chemicals of emerging concern (e.g. pharmaceuticals, personal care products and flame retardants) are being detected in the lake; improved understanding of the sources and ecological impacts is necessary;
- Impacts from climate change, the spread of invasive species, and some land use practices, such as lakeshore development, are stressing the ecosystem;
- Monitoring is necessary to assess the potential impacts of expected increases in mining activity and hydropower development.

#### **A Changing Lake Superior Ecosystem**

Surface water temperatures have increased over the past 35-40 years (approximately 3.5 °C or 6.3 °F). Average annual ice-cover is much reduced (by 79% compared to the 1970s). Water levels remain low, and there are more frequent extreme weather events. A small algal bloom off the coast of Wisconsin in July 2012 is believed to be the first documented bloom in Lake Superior history. This bloom may be linked to warmer water temperatures and an extreme rain event in Duluth in June 2012.



Thunder Bay, ON was declared a disaster in June 2012 after a record-breaking rainfall event washed out area roads, and flooded homes, businesses and the municipal wastewater treatment facility. (Photo Credit: Chronicle Journal).



Duluth-Superior experienced a once-in-500 year storm event in June 2012, resulting in tremendous storm-water runoff to Lake Superior (Photo Credit: NOAA).



Wawa, ON, experienced a once-in-100 year storm event in September 2012, washing out part of the Trans-Canada highway (Photo Credit: CBC).



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### Next Steps

Future priority actions for the LAMP organizations include:

- Implementing projects to further reduce critical pollutants and prevent releases of emerging chemicals;
- Preventing new introductions and the spread of aquatic invasive species;
- Working with the mining and water power sectors to ensure protection of the Lake Superior ecosystem;
- Implementing measures to adapt to climate change;
- Protecting and restoring key fish and wildlife habitat, and completing a comprehensive habitat and species conservation strategy (i.e., Lake Superior Biodiversity Strategy); and
- Reporting results of the 2011 Cooperative Science and Monitoring Initiative (CSMI), and improving ways to share Lake Superior science and monitoring information.

### Special Events



#### Get Ready for Lake Superior Day

Sunday July 20, 2014 is a day to celebrate the world's largest lake. Food, music and fun activities are organized in many communities. To see what celebrations are planned in your area, visit the Lake Superior Binational Forum's website or follow them on Facebook or Twitter.

### Lake Superior Watershed



### Contact Information:

Web sites: [www.binational.net](http://www.binational.net) or [www.epa.gov/glnpo](http://www.epa.gov/glnpo) or [www.ec.gc.ca/greatlakes](http://www.ec.gc.ca/greatlakes).

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