Pathway to Delisting

Detroit River Canadian Area of Concern Delisting Strategy

DETROIT RIVER CANADIAN CLEANUP
detroitriver.ca

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Edited by members of the Detroit River Canadian Cleanup (DRCC) Technical Work Groups:

Jacqueline Serran	Detroit River Canadian Cleanup
Gina Pannunzio	Detroit River Canadian Cleanup
April White	Environment and Climate Change Canada
Ted Briggs	Ontario Ministry of Environment, Conservation, and Parks
Rich Drouin	Ontario Ministry of Natural Resources and Forestry
Stephen Marklevitz	Ontario Ministry of Natural Resources and Forestry
Katie Stammler	Essex Region Conservation Authority
Dan Lebedyk	Essex Region Conservation Authority
Jan Ciborowski	University of Windsor
Ken Drouillard	Great Lakes Institute for Environmental Research, University of Windsor
Kevin Webb	City of Windsor
Joe Fiorino	Canadian Wildlife Service
Susan Doka	Fisheries and Oceans Canada

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Introduction

The 51 km long Detroit River is a connecting channel that, along with the St. Clair River and Lake St. Clair, link Lake Huron to Lake Erie. The Detroit River has an extensive history and has been used intensively for international shipping, industrial and agricultural development, recreation (fishing/boating) and as a source of drinking water. This intensive use and urbanization resulted in a degraded environment and, as a result, the Detroit River was designated as one of 43 Great Lakes Areas of Concern (AOC) in the Great Lakes Water Quality Agreement (GLWQA) Protocol of 1987. Canada's commitment to the GLWQA is also demonstrated through the implementation of the Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health (COA). Recognizing that each AOC suffers from different environmental problems, a locally driven and defined Remedial Action Plan (RAP) was developed to guide restoration efforts in each location. The Detroit River Canadian AOC refers to the Canadian portion of the Detroit River proper (Fig. 1). The Canadian watershed is not part of the AOC itself but is identified as a potential source of impairment to the AOC and has been the focus of certain implementation actions (Green et al. 2010).

Although the Detroit River AOC is considered bi-national, separate Canadian and American RAP implementation processes currently exist. Work on the Detroit River began as early as 1987 but a Stage 1 RAP Report was not produced until 1991. Soon after, work on a Stage 2 RAP was started but the report was never accepted by all RAP participants and was instead released as a RAP Update report in 1996. Since 1998, the Detroit River Canadian Cleanup initiative implements the Delisting Strategy for the Canadian side of the Detroit River. A formal Stage 2 Report was completed by the DRCC in 2010 that updated and provided recommendations for achieving delisting (removal of the Detroit River Area of Concern from the list of Great Lakes AOCs). The report was integral for the Detroit River AOC to guide and coordinate restoration efforts by several stakeholders; however, since the completion of the RAP Stage 2 Report, many important activities (projects, meetings, workshops) were conducted in the AOC resulting in a need to re-focus the RAP Team on current needs. **The purpose of this document is to identify the remaining actions necessary to delist the Canadian side of the Detroit River.** Once all actions listed in this document under a specific BUI are completed, then an assessment of that BUI will be conducted to determine its status. If that BUI is found to still be impaired, then next steps for remediation will need to be identified. If the majority of evidence shows the BUI has met the delisting criteria (restoration target), then the BUI will be considered for re-designation and no further actions will be required. Appendix 1 provides information on delisting requirements and processes.

Progress in the AOC is measured through the re-designation of beneficial use impairments (BUIs). A BUI is a reduction in the chemical, physical, or biological integrity of the waters of the Great Lakes sufficient to cause any of the following beneficial uses (Table 1) to be impaired. **As of June 2022, the Detroit River Canadian AOC has 4 BUIs that are listed as impaired and 10 that are not impaired**. The current (2022) status of the Detroit River's Canadian BUIs is listed in Table 1. The table is updated as BUIs are re-designated.

Table 1. The status of BUIs for the Detroit River Canadian Area of Concern as of June 2022.

Beneficial Use Impairment	Status
1. Restrictions on Fish and Wildlife Consumption	Impaired for fish
2. Tainting of Fish and Wildlife Flavour	Not impaired (May 2014)
3. Degraded Fish and Wildlife Populations	Impaired
4. Fish Tumours and other Deformities	Not impaired (December 2020)
5. Bird or Animal Deformities or Other Reproductive Problems	Impaired
6. Degradation of Benthos	Not impaired (December 2020)
7. Restrictions on Dredging Activities	Not impaired (April 2019)
8. Eutrophication or Undesirable Algae	Not Impaired
9. Restrictions on Drinking Water Consumption or Taste and Odour Problems	Not impaired
10. Beach Closings	Not Impaired (January 2016)
11. Degradation of Aesthetics	Not Impaired (January 2016)
12. Added Costs to Agriculture or Industry	Not impaired
13. Degradation of Phytoplankton and Zooplankton Populations	Not impaired (September 2021)
14. Loss of Fish and Wildlife Habitat	Impaired

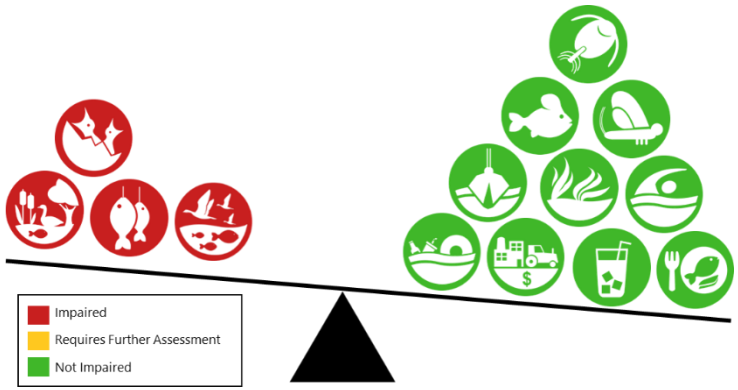


Figure 1. A map of the Detroit River AOC and its Canadian watersheds.

Our Pathway to Delisting:
Remaining Actions to Re-Designate BUIs

The following work plan was developed by the DRCC's technical expert work groups based on the recommendations given in the Detroit River Canadian Stage 2 RAP Report and the most recent scientific information. The purpose of the workplan is to identify the actions that are necessary to achieve the restoration goals established, and ultimately re-designate, the remaining BUIs to a 'not impaired' status. The actions listed in this section are to address the remaining 'impaired' BUIs as no further restorative actions are necessary for the BUIs designated as 'not impaired'. This workplan has been updated annually since 2013, providing guidance to stakeholders of remaining short-term actions to be completed (to achieve delisting) and long-term actions (beyond delisting) in the Detroit River Canadian RAP for each fiscal year (April 1 - March 31).

The following principles from the Detroit River Canadian Stage 2 RAP report (Green et al. 2010) are used by the DRCC to guide decision-making on AOC-related issues. For a full description please refer to the Stage 2 RAP Report.

The superscript letters next to an action refers to a particular dataset or existing monitoring program. Please see pages xx-xxi for a list of programs with the corresponding letter. Moreover, an 'X' under the year column indicates that the action needs to be completed while a '✓' indicates that it was done. The document will be updated annually.

- Delisting should be based on the river as a complete ecosystem. That is, a significant portion of the river must be affected and should not be dependent on the complete elimination of all hotspots or issues in very small areas (unless they are severe).
- There are region-wide issues that are beyond the scope of the AOC program; therefore, the causes of beneficial use impairments must originate within the Detroit River AOC. If an impairment is identified, then the source needs to be determined (e.g., active and anthropogenic, in-river vs. upstream/regional).
- Delisting/re-designating BUIs should be linked to the original reasons that the beneficial use was impaired in the first place (i.e., Stage 1 RAP).
- The RAP should deal with only those watershed issues that impact the river and are linked to specific BUIs.
- Once there is enough evidence to indicate that BUI is no longer impaired, the BUI should remain 'not impaired' unless monitoring shows a significant problem.
- The goal of the RAP is not to restore the River to a pristine, pre-settlement state. Rather, the achievement of delisting goals means the Detroit River is no longer the seriously polluted waterbody it once was—and no longer worse than other Great Lakes locations.
- When the AOC is delisted, monitoring and implementation of projects are expected to continue under the Lake Erie Lakewide Action and Management Plan (LAMP) and/or other existing programs.

This document is anticipated to be the last work plan for the Detroit River Canadian AOC. It is a dynamic document and will be updated continually as actions are added and completed and until the Detroit River is delisted as a Great Lakes AOC.

Impaired

Restrictions on Fish and Wildlife Consumption (BUI #1)

...will be considered not impaired when consumption advisories for indicator fish species (e.g., walleye, brown bullhead, and smallmouth bass) given for the sensitive population in the AOC are similar to upstream OR downstream non-AOC Great Lakes reference areas.

Action	2018-19	2019-20	2020-21	2021-22	2022-23	Beyond	Lead
Collect the following information through existing monitoring programs in order to use as **data input** for assessments:							
• Fish tissue legacy contaminants (PCBs, dioxins, mercury) in Detroit River sport & indicator fishes. [d, n]			✓	✓	X	X Lake Erie LAMP	ECCC (STB) OMECP/ MNRF
• Bioavailable water contaminants through caged mussel biomonitoring. [b]	✓	✓	✓	✓	X	X	GLIER City of Windsor
• Water contaminants in the Detroit River. Monitoring should be harmonized (spatially/temporally) with other programs (e.g., caged mussel and CSMI). [c, h]						X Lake Erie LAMP	ECCC (STB)
• Suspended and in-place sediment sampling. [h] *Suspended: annually to 2017-18. In-place: 1999, 2008/2009, 2013, 2015/2016, 2025)*	✓					X Lake Erie LAMP	ECCC (STB) GLIER
Data compilation and assessment of BUI as it relates to delisting criteria.							
• Amend delisting criteria	✓						DRCC
• Conduct shoreline angler survey		✓	✓	✓			DRCC
Review all relevant data and prepare a status report to **recommend** status of BUI		✓	✓	✓	X		DRCC *(M&R Work Group)*

Action	2018-19	2019-20	2020-21	2021-22	2022-23	Beyond	Lead
based on delisting criteria. If an “Impaired” status results, identify next steps required to delist (if necessary).							
Complete BUI engagement and submit re-designation report to COA Leads					X	X	DRCC

Impaired

Degradation of Fish and Wildlife Populations (BUI #3)

…will be considered not impaired when environmental conditions support self-sustaining and healthy communities of indicator fish (e.g., walleye, bass, lake sturgeon, brown bullhead) and wildlife (e.g., black-crowned night heron, Northern leopard frog) species.

Action	2018-19	2019-20	2020-21	2021-22	2022-23	Beyond	Lead
FISH: Recommend to the MNRF that fishery/fish surveys for HEC and western Lake Erie continue at least every 5 years.						X	DRCC *(M&R Work Group)*
FISH: **Review** previously published fish populations report and **recommend** status of BUI based on delisting criteria. If an "Impaired" status results, identify next steps required to delist (if necessary).							
• Develop lines of evidence and sub-criteria to support the fish populations delisting criteria and include a critical review of approaches being used such as the IBI	✓	✓	✓	✓			DRCC *(M&R Work Group)*
• Write assessment report for fish populations based on sub-criteria					X		ECCC, MECP
WILDLIFE: Develop an assessment process to be used when sufficient data is compiled to re-assess the status of the wildlife component of this BUI.							
• Identify new indicator species - Explore raptor monitoring feasibility	✓	✓	✓	✓			DRCC *(M&R and Habitat Work Groups)* ECCC (WTH)

Action	2018-19	2019-20	2020-21	2021-22	2022-23	Beyond	Lead
• Work to review research and develop sub-criteria to support the assessment of wildlife populations			✓	✓			ECCC (CWS)
WILDLIFE: Collect the following information through existing monitoring programs in order to use as **data input** for assessments:							
• Continue monitoring at coastal wetland sites in the Detroit River AOC to evaluate coastal wetland marsh bird populations	✓	✓		✓	X		ECCC (CWS)
• Monitor additional coastal wetlands (Turkey Island, Crystal Bay, Fighting Island, and M.M.M. Hunt Club) to determine their ability to provide habitat and support marsh bird populations.		✓		✓			ECCC (CWS)
• Explore factors for low marsh bird IBI. - Determine if the size of wetlands is a factor limiting marsh bird community - Conduct in-depth analysis to determine how the landscape influences marsh birds - Apply findings to establish		✓		✓	X	X	ECCC (CWS)

Action	2018-19	2019-20	2020-21	2021-22	2022-23	Beyond	Lead
management targets.							
• Improve wetland quality for marsh birds through restoration, enhancements, and management.			✓	✓	X	X	DRCC
• Conduct pre/post restoration surveys of the Collavino wetland.		✓		✓			ECCC (CWS)
• Conduct ELC mapping at Collavino wetland for management plan.				✓			ERCA
Review all relevant data and prepare a status report to **recommend** status of BUI based on delisting criteria. If an "Impaired" status results, identify next steps required to delist (if necessary).						X	DRCC
Complete BUI engagement and submit re-designation report to COA Leads						X	DRCC

Impaired

Bird/Animal Deformities or Other Reproductive Problems (BUI #5)

...will be considered not impaired when incidence rates of bird and animal reproductive problems in sentinel wildlife species do not exceed background levels at suitable reference sites elsewhere in the Great Lakes basin or suitable inland control populations for a minimum of three years; AND ...when scientifically defensible wildlife bioassays of indicator species confirm that there are no reproductive problem and no significant toxicity from the water column or sediment contaminants or bioaccumulation.

Action	2018-19	2019-20	2020-21	2021-22	2022-23	Beyond	Lead
Collect the following information through existing monitoring programs in order to use as **data input** for assessments:							
• Repeat frog deformities study to re-assess status of local amphibian condition.	✓						ECCC (STB)
• If/when gull nesting locations are found, sample for productivity, contaminants, and examine deformities (note: none were found in DR so western Lake Erie basin nests were used).	✓	✓					ECCC (STB)
• Prepare a report on the colonial water bird monitoring results.			✓				ECCC (STB)
• Conduct cormorant studies at Mud and Shag Island	✓	✓					ECCC (STB)
• Conduct a Tree Swallow study at ~4 locations along the DR to compare tissue concentrations to known effect levels and measure population-level effects.	✓	✓					ECCC (STB)
• Prepare report on tree swallow monitoring				✓			
Review all relevant data and prepare a status report to **recommend** status of BUI based on delisting criteria.					X		DRCC
Complete BUI engagement and submit BUI re-designation report to COA leads					X	X	DRCC

Impaired

Loss of Fish and Wildlife Habitat (BUI #14)

…will be considered not impaired when
Coastal wetlands: Protect existing coastal wetland habitat and restore wetland function in priority areas of the AOC and its watershed (as identified in the 2007 Detroit River AOC Canadian Priority Habitat Sites and the 2013 Essex Region Natural Heritage System Strategy).

Aquatic & riparian habitat: Protect existing fish and aquatic wildlife habitat (deep water, coastal, nearshore) and restore ecosystem function of these priority areas in, and hydrologically connected to, the Detroit River.

Shoreline softening: Develop and begin to implement a shoreline management strategy to soften and naturalize Detroit River Canadian shoreline, whenever opportunities arise.

Terrestrial habitat: Protect existing natural terrestrial corridors and restore ecosystem function between the Detroit River and the Ojibway Prairie Complex, the LaSalle Candidate Natural Heritage sites, and other major identified habitat sites (as identified in the 2007 Detroit River AOC Canadian Priority Habitat Sites, the 2013 Essex Region Natural Heritage System Strategy, and other fish and wildlife habitat assessments).

Action	2018-19	2019-20	2020-21	2021-22	2022-23	Beyond	Lead
Develop an AOC Habitat Delisting Plan to guide restoration efforts in the AOC *using the specific actions listed below* to create the plan. *Plan should include list of projects to achieve delisting and list of actions to continue to implement after delisting.*							
1. Develop a Habitat Strategy that identifies and prioritizes projects to support habitat delisting targets.	✓						DRCC *(Habitat WG)*
2. Apply HEAT model to previous restoration projects to determine habitat 'gain/loss'.	✓			✓	X		DFO
3. Apply Habitat Suitability Model to assess what aquatic habitat exists and what,			✓	✓	X		DFO

Action	2018-19	2019-20	2020-21	2021-22	2022-23	Beyond	Lead
if any, habitat limitations there are (e.g., SAV extent, which types of habitat are needed for guilds/life stages)							
4. Conduct in-depth analysis of landscape factors on wetland habitat (see BUI 3) Explore factors for low marsh bird IBI scores.				✓	X	X	ECCC (CWS)
5. Develop and complete Fish and Wildlife Habitat Management Plan						X	DRCC *(Habitat WG)*
Data compilation and assessment of BUI as it relates to delisting criteria:							
6. Conduct macrophyte study in wetlands.	✓						GLIER
7. Conduct wetland monitoring at coastal wetland sites in the Detroit River AOC to evaluate wetland quality.	✓	✓		✓	X		ECCC (CWS)
8. Monitor additional coastal wetlands (Turkey Island, Crystal Bay, Fighting Island, and M.M.M. Hunt Club) to observe for presence of marsh birds (IBI).		✓		✓			ECCC (CWS)
9. Update Natural Heritage system (NHS) data on terrestrial			✓				ERCA

Action	2018-19	2019-20	2020-21	2021-22	2022-23	Beyond	Lead
coverage and corridors to key habitats as identified in the delisting criteria and identify gaps, if any.							
10. As part of the NHS update, include a summary of habitat restoration projects completed to support fish and wildlife habitat BUI and tally of hectares.			✓	✓			ERCA
Implement the AOC Habitat Delisting Plan to guide restoration efforts in the AOC *using the specific actions listed below* to create the plan. **contingent upon available funding and interested stakeholders.*							
11. Develop partnerships with local partners/ municipalities to advance habitat restoration as per 2007/2018 DR AOC Habitat Strategy	✓	✓	✓	✓	X	X	DRCC *(Habitat WG)*
Peche Island							
12. Begin and complete planning and permitting for a fish habitat project at Peche Island.	✓	✓	✓				ERCA
13. Apply HEAT model to determine potential gains in aquatic habitat		✓			X		DFO

Action	2018-19	2019-20	2020-21	2021-22	2022-23	Beyond	Lead
14. Construct Peche Island fish habitat improvement project.			✓	✓	X		ERCA
15. Post construction monitoring of Peche Island project (year 1 and 3).				✓		X	DFO
Collavino wetland							
16. Start Collavino wetland restoration to create and improve fish and wildlife habitat.	✓	✓					ERCA
17. Develop a management plan for the Collavino wetland.		✓					ERCA
18. Implement Collavino wetland management plan (e.g., water level draw down, prescribed burns, revegetation of native species).			✓	✓	X		ERCA
Fighting Island							
19. BASF discussions re: Site 6 Option 3 (in 2016 Aquatic Habitat Feasibility assessment) project - Engineering design - Discussion re: feasibility of project(s)			✓	✓	X		DRCC
20. Apply HEAT model to Fighting Island project determine potential gains in aquatic habitat		✓			X		DFO
21. Explore options for funding					X		DRCC

Action	2018-19	2019-20	2020-21	2021-22	2022-23	Beyond	Lead
project and submit initial permitting documentation to DFO							
M.M.M. Hunt Club (formerly Ruwe) Marsh (Protection via Finger Dyke)							
22. Explore options to restore finger dyke that has been eroded away due to high water levels.			✓	✓			Landowners
23. Explore options for funding finger dyke restoration and determine requirements for permitting					X		DRCC/ Landowners
24. Improve wetland quality for marsh birds through restoration, enhancements, and management.				✓	X	X	DRCC
25. Implement Clean Water ~ Green Spaces program (or similar program) to protect, restore and improve habitat quality & quantity in priority areas of the AOC watersheds (identified in ERNHSS) via tree plantings, wetland restoration, buffer strips, and other agricultural BMP activities.	✓	✓	✓	✓	✓	X	ERCA
Review all relevant habitat data (related to fish/wildlife populations) and prepare a status report to **recommend**						X	DRCC

Action	2018-19	2019-20	2020-21	2021-22	2022-23	Beyond	Lead
status of BUI based on delisting criteria. If an "Impaired" status results, identify next steps required to delist (if necessary).							
Complete BUI engagement and submit BUI re-designation report to COA Leads.						X	DRCC

General RAP Goals

This section includes items that are important to the RAP because they are linked to achieving delisting the AOC through administration, outreach, stewardship, and public involvement. All the actions below are ongoing on an annual basis since 2018. They are all very important but are not necessarily required to re-designate one particular BUI. Due to the COVID-19 pandemic, not all outreach and education events were able to occur in 2020-21 and 2021-22. However, the DRCC did host several events virtually over this period.

- Support the coordination / governance of the Detroit River Canadian RAP including office administration, work plan support, liaison, communications and outreach. Lead agency(s): ECCC, OMECP, ERCA
- Update and maintain DRCC's new database and GLIER Geonetwork, which is a critical aspect of the DRCC's corporate memory and decision-making process. Lead agency(s): ECCC, OMECP, U Windsor
- Encourage public involvement and Detroit River stewardship through public events, seminars, community plantings and cleanups. Lead agency(s): DRCC
- Public review and report on Detroit River Canadian RAP progress. Lead agency(s): PAC
- Advocate for the protection and enhancement of the Detroit River and implementation of the RAP (as needed). Lead agency(s): PAC
- Encourage the reduction of urban and rural non-point sources entering the Detroit River through various restoration/BMP and outreach techniques. Lead agency(s): ERCA, DRCC, Municipalities

Long-Term Goals & Recommendations

This section includes items that are important to RAP because they are linked to achieving delisting the AOC long-term planning and general water quality or habitat improvements. The actions benefit the entire region (not just delisting the AOC) and should be implemented at regional level by various stakeholders. These actions are recognized as important but are not necessarily required to re-designate a BUI or delist the AOC. **Many of the projects or programs below are expected to be implemented after the AOC is delisted.**

Action	2018-19	2019-20	2020-21	2021-22	2022-23	Beyond	Lead
Develop a 'Post-Delisting' Monitoring Plan for the AOC.						X	DRCC *(Habitat and M&R Work Groups)*
Develop and implement the Integrated Watershed Management Plan (based on above framework) to guide municipalities and private landowners and achieve ongoing protection/restoration of local natural heritage features.						X	ERCA
Encourage the continued reduction of industrial/municipal point sources entering the Detroit River. Examples:							

- Continue to replace 'over-under' and combined sewer systems, as needed.	✓	✓	✓	✓	X	X	Municipalities
- Continue to replace deteriorated separated sewer systems, as needed.	✓	✓	✓	✓	X	X	Municipalities
- Continue to ensure compliance of Environmental Compliance Approvals as they pertain to discharge to the Detroit River.	✓	✓	✓	✓	X	X	OMECP
- Implement an "illegal connections eliminations" program in the AOC municipalities.						X	Municipalities

Existing Monitoring Programs

A number of existing, ongoing Canadian monitoring programs are implemented in the Detroit River Canadian AOC by various agencies. These programs, funded outside of the RAP, are very important for the DRCC as they provide key information/data required to assess and monitor the status of several BUIs. There is a strong need for long-term monitoring of fish, wildlife, and water/sediment conditions in the Detroit River AOC to show improvements or deterioration of the ecosystem over time. Therefore, it is recommended (and expected) that these programs continue in the region even after the AOC is delisted. Below is a brief overview of each program implemented in the Detroit River (and other Great Lakes locations) including the timing and lead agency. For more information about a program, contact the lead agency.

a) Angler Creel Survey Program – MNRF
Angler creel surveys provide information on angler harvest, effort, catch characteristics, harvest rate, target species effort and distribution. Occurs periodically.

b) Caged Mussel Biomonitoring – GLIER & City of Windsor
Mussels are deployed along most of the Windsor shoreline of the Detroit River (as well as in some locations in Little River and Turkey Creek) to measure the amounts of bioavailable chemicals in water. Occurs annually (since 1996).

c) Detroit River Head and Mouth Water Quality Monitoring – ECCC (STB)
Water monitoring program operated on a surveillance schedule to address key threats to water quality. This monitoring has occurred in the past, but there is no longer ongoing head and mouth water quality monitoring in the Detroit River.

d) Great Lakes Fish Contaminants Monitoring Program – ECCC (STB)
One of the flagship monitoring programs in the Great Lakes which currently operates yearly in the four Canadian Great Lakes. Whole fish (lake trout or walleye) samples are analyzed for contaminants and provide key status and trend data sets over time.

e) Great Lakes Fish Population Assessment – MNRF/DFO/University of Windsor
Fish population assessments directly address the health of fish communities in the corridor. A number of programs have operated through the years: MNRF fish assessment (1980s), COA (DFO-MNRF) fish assessment (2002, 2003, and 2004), and MNRF angler diary program (1980s-2018), MNRF connecting channel fish community assessment (2019 – present). Occurs periodically.

f) Herring Gull Egg Contaminant Monitoring Program – ECCC
Program implemented since 1970 to understand the temporal and spatial trends of environmental contaminant levels in herring gulls. Sampling of gull eggs is done annually in a number of locations and results are compared with those from previous years. In recent years, the herring gull colonies in the Canadian side of the Detroit River have decreased in number. So, instead of monitoring herring gulls, ECCC now monitors cormorants.

g) Great Lakes Marsh Monitoring Program – BSC/ECCC/U.S. EPA/Volunteers
A binational monitoring program conducted in the Great Lakes basin, including AOCs, with volunteers to assess wetland status and identify long-term trends in wetland bird and amphibian populations. Ongoing annually since 1995.

h) Great Lakes Surveillance Program – ECCC (STB)

Monitoring of nutrients and priority legacy contaminants (PCBs, dioxins, mercury) in Great Lakes water (various locations) to examine trends over time for the AOC. Data are typically provided within one year of the completion of sampling and samples are collected from the upper and lower Great Lakes in alternating years.

i) Great Lakes Sediment Monitoring Program – ECCC (STB)

Monitoring of contaminants in Great Lakes sediment. One Canadian Great Lakes is done on the cycle of the Cooperative Science and Monitoring Initiative (CSMI). Data are typically provided within one year of the completion of sampling

j) Great Lakes Coastal Wetland Monitoring – U.S. EPA

The Coastal Wetland Monitoring Program is a collaboration between EPA's Great Lakes National Program Office and academic partners located in both the United States and Canada. The CWMP uses a comprehensive approach to sample and assess all major coastal wetlands throughout the Great Lakes Basin using standardized procedures. Monitoring of birds, amphibians, fish, macroinvertebrates and plant communities, and water quality occurs at a subset of the Great Lakes coastal wetland sites annually, and the data collected at these sites are used to assess the status and trends of Great Lakes coastal wetland conditions. Since the program began sampling in 2011, over 1,000 wetland sites have been visited.

k) Environmental Compliance Approvals – OMECP/Detroit River Dischargers

As of July 1, 2021, the nine sector-specific industrial wastewater Effluent Monitoring and Effluent Limits regulations, also known as the Municipal Industrial Strategy for Abatement (MISA) regulations, under the *Environmental Protection Act* (EPA), which currently apply to 111 industrial facilities in the province, including the Canadian Salt Company on the Detroit River was revoked and transferred into Environmental Compliance Approvals (ECA) program.

Other direct dischargers (e.g., Ford Motor Company of Canada Ltd. (Windsor Engine Plant)) already fell under the ECA program This change reduces regulatory burden on these industries while still maintaining a strong current level of oversight of the release of wastewater from facilities to the Detroit River.

l) Provincial Water Quality Monitoring Network – OMECP/ERCA

There are 23 hydrologically distinct watersheds in the Essex region. ERCA monitors 8 of these as part of the PWQMN. Three are in the Detroit River watershed (Little River, Turkey Creek and River Canard) and an additional 10 watersheds are monitored as part of an "in house" surface water monitoring program. The Canard River watershed has stations included in both programs. These sites are sampled once a month from April to November. Each site has decades worth of data which are available through the OMECP

m) Essex Region Surface Water Monitoring Program – ERCA/OMECP

In addition to the 8 PWQMN stations (above), ERCA monitors surface water quality at 11 other sites across the region. One site is located in the Detroit River watershed in River Canard's Long Marsh Drain. There are five additional sampling locations in watersheds draining to Lake St. Clair, upstream of the Detroit River. These sites are sampled once a month year round, analysed for nutrients, TSS and E. coli. Many of these sites have up to 20 years of data which are available through ERCA. OMECP provides laboratory support to analyse these samples.

n) Sport Fish Contaminant Monitoring Program – OMECP/ MNRF

Monitoring of contaminants (mercury, PCBs, dioxins, mirex, and DDT) in the dorsal muscle tissue of various sport fish in the Detroit River (and other province-wide lakes). Results from this work are

published biennially in the *Guide to Eating Ontario Fish*.

o) Connecting Channel Fish Community Assessment – MNRF

Began in 2022 and the plan is to conduct monitoring on a 5 year rotational basis moving forward. This assessment also takes place in the St. Clair and Niagara Rivers, so will be able to provide cross connecting channel AOC comparisons.

Acronyms

AIR	Area in Recovery (also sometimes AOCir)
AOC	Area of Concern
BSC	Bird Studies Canada
BUI	Beneficial Use Impairment
COA	Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health
CSMI	Cooperative Science and Monitoring Initiative
CWS	Canadian Wildlife Service (Environment and Climate Change Canada)
DDT	Dichlorodiphenyltrichloroethane
DFO	Department of Fisheries and Oceans Canada
DRCC	Detroit River Canadian Cleanup
ECCC	Environment and Climate Change Canada
EGLE	Environment, Great Lakes, and Energy
ERCA	Essex Region Conservation Authority
ERNHSS	Essex Region Natural Heritage System Strategy
GLIER	Great Lakes Institute for Environmental Research
GLWQA	Great Lakes Water Quality Agreement
HEC	Huron to Erie Corridor (also called St. Clair-Detroit River System (SCDRS))
IBI	Index of Biotic Integrity
LAMP	Lakewide Action and Management Plan
MISA	Municipal Industrial Strategy for Abatement
OMECP	Ontario Ministry of the Environment, Conservation, and Parks
MNRF	Ministry of Natural Resources and Forestry
PAC	Public Advisory Council
PCB	Polychlorinated biphenyl
PWQMN	Provincial Water Quality Monitoring Network
RAP	Remedial Action Plan
SAV	Submerged Aquatic Vegetation
SCDRS	St. Clair-Detroit River System
STB	Science and Technology Branch (Environment and Climate Change Canada)
USEPA	United States Environmental Protection Agency

Definitions

Area of Concern

A degraded area in the Great Lakes that fails to meet the General or Specific Objectives of the Canada-United States Great Lakes Water Quality Agreement, where such failure has caused or is likely to cause impairment of beneficial use or of the area's ability to support aquatic life.

Area in Recovery (AIR)

An area, originally identified as an Area of Concern, where, based on community and government consensus, all scientifically feasible and economically reasonable actions have been implemented and additional time is required for the environment to recover.

Beneficial Use Impairment (BUI)

A reduction in the chemical, physical or biological integrity of the Waters of the Great Lakes sufficient to cause any of the following:

- Restrictions on fish and wildlife consumption
- Tainting of fish and wildlife flavour
- Degradation of fish and wildlife populations
- Fish tumours or other deformities
- Bird or animal deformities or reproduction problems
- Degradation of benthos
- Restrictions on dredging activities
- Eutrophication or undesirable algae
- Restrictions on drinking water consumption, or taste and odour problems
- Beach closings
- Degradation of aesthetics
- Added costs to agriculture or industry
- Degradation of phytoplankton and zooplankton populations
- Loss of fish and wildlife habitat

Delisting

Removal of an AOC from the list of Great Lakes Areas of Concern by meeting the criteria for the restoration of beneficial uses as defined by the RAP and agreed upon by the agencies and community.

Re-designation of a BUI

Meeting locally defined delisting criteria designed to be specific, measurable, achievable, and scientifically defensible. Sometimes this process is also called delisting a BUI.

Remedial Action Plan

A plan describing environmental problems, their causes and remedial actions required to restore beneficial water uses in the Area of Concern.

APPENDIX 1:
Delisting: What does it mean?

The term 'delisting' refers to the process whereby the designation of an AOC or AOC in Recovery (AOCir) is removed and the implicated waterbody is taken off of the GLWQA's list of Great Lakes AOCs. A decision-making approach for delisting is shown in Figure 1.

There are subtle—yet important—differences between the being listed as an AOC, AOCir, or a delisted area. According to the GLQWA (2012), the Governments of Canada and the United States "may elect to identify an AOC as an AOC in Recovery when all remedial actions identified in the RAP have been implemented and monitoring confirms that recovery is progressing in accordance with the RAP". In other words, an AOC can be changed to "in recovery" even if there are still impaired BUIs—the AOC is not delisted *per se* but monitoring shows that it's well on its way. Monitoring and existing programs are expected to restore remaining BUIs within the AOC (or AOCir). Furthermore, the designation of AOC or AOCir shall be removed "when environmental monitoring confirms that beneficial uses have been restored in accordance with the criteria established in the RAP" (GLWQA, 2012). A brief summary is provided below.

AOC	AOC in Recovery	Delisted
• Impaired BUIs according to local criteria; • RAP actions not completed; • Monitoring shows remediation still required.	• Impaired BUIs according to local criteria; • All RAP actions are completed; • Monitoring confirms recovery is progressing.	• No impaired BUIs; • All RAP actions are completed; • Monitoring confirms recovery is complete.

Principles for Delisting a Bi-national Area of Concern

Although the DRCC only implements a RAP for the Canadian side of the AOC, careful consideration needs to be taken for the bi-national aspect of the AOC. The Compendium of Position Papers offers guidance on delisting bi-national AOCs as part of the Four Agency (ECCC, USEPA, Michigan EGLE, Ontario MECP) Letter of Commitment.

Delisting should be pursued on a case-by-case basis, domestic or bi-nationally, and in consideration of the following (Compendium, 2020):

- all beneficial use impairments have been re-designated or removed as unimpaired, e.g., re-designation or removal criteria have been met;
- the Agencies have solicited review and comment from stakeholders and Indigenous communities and have appropriately addressed any concerns of the local community relative to delisting;
- environmental conditions based on sound science confirm restoration of beneficial uses with no trans-boundary concerns

Proposed Delisting Process for the Canadian Detroit River AOC

Using the 2020 Compendium of Position Papers as guidance, below is a detailed, proposed process for delisting the Canadian side of the Detroit River AOC.

Once there is evidence that the "principles for delisting" (above) have been met:

- The DRCC's Steering and Implementation Committee shall prepare a recommendation to delist the AOC and form a writing team to prepare a draft Delisting Report to substantiate the recommendation. The Writing Team, led by the RAP Coordinator, should include one representative from any interested Member Organization (refer to DRCC Framework and Terms of Reference) and members of the Canadian Public Advisory Council.
- The Delisting Report must be presented to, and endorsed (by consensus) by the Steering and Implementation Committee and Public Advisory Council.
- The report will be released for public review (through an open house or public meeting presentations to Municipal Councils, online). Comments will be reviewed by the Writing Team and the report will be revised, as necessary.
- The recommendation to delist along with the final report is to be submitted to the Four Agency Working Group and U.S. Public Advisory for review (bi-national consultation) and comment.
- The report is sent to the Canada Ontario Agreement (COA) Annex Leads for technical review and comment. Final revisions incorporated, as needed.
- A Final Draft Delisting Report will be forwarded to the COA Management Committee to coordinate approvals and official submission to the International Joint Commission.
- The Canadian federal government will officially remove the Canadian portion of the Detroit River from the list of AOCs.
- The Canadian federal governments will officially inform the U.S. and Canadian Co-chairs of the IJC that AOC delisting has occurred; the Final RAP report is transmitted along with the official notification.

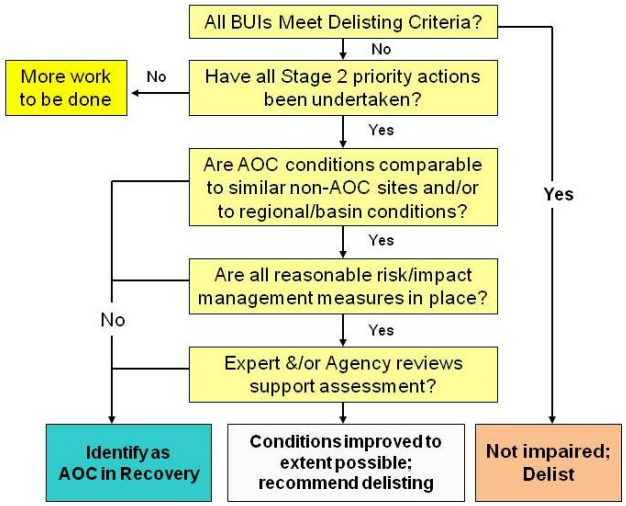
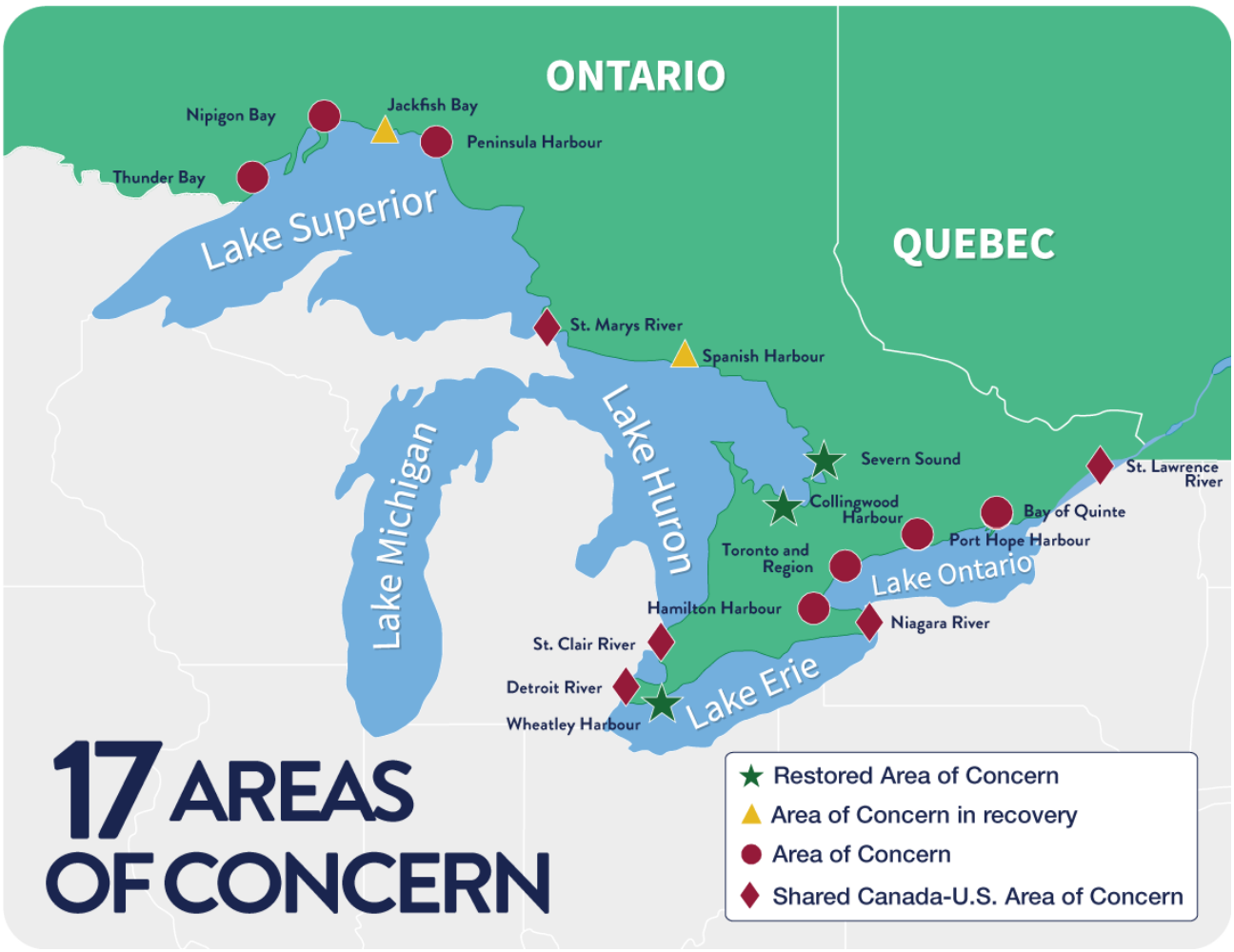


Figure 1. The decision-making approach for delisting provided by COA.



Canadian Areas of Concern status as of 2021.

An Area of Concern, is a location in the Great-Lakes – St. Lawrence River Basin that has been identified as severely polluted or degraded. For more information about Great Lakes AOCs, visit **https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/restoring-great-lakes-areas-concern.html**

DETROIT RIVER
CANADIAN
CLEANUP
detroitriver.ca

311-360 Fairview Avenue West, Essex, Ontario N8M 1Y6
519-776-5209 ext. 356
postmaster@detroitriver.ca ~ www.detroitriver.ca