Ministry of the Environment, Conservation and Parks

Responding to Reports of Harmful Algal Blooms

May 2023

Ontario

Ontario's Blue-Green Algae Action Plan

Communicate, engage and partner

Reduce nutrients

Protect

Science and innovation

Legislation and regulatory tools

Water quality standards and guidelines

Monitor

Public health

Contingency plans

Analytical laboratory services

Drinking water system courses

www.ontario.ca/page/blue-green-algae

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Canada-Ontario Lake Erie Action Plan (LEAP)

Canada-Ontario Lake Erie Action Plan

- The Canada-Ontario Lake Erie Action Plan (LEAP) is a partner-based initiative including provincial and federal ministries, agricultural organizations, First Nations and Métis communities, non-governmental organizations, and municipalities.
- LEAP implementation is a priority under the 2021 Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health (COA).
- The LEAP workplan includes commitments to over 120 actions that support achievement of binational phosphorus targets for Lake Erie as well as targets under Ontario's *Great Lakes Protection Act*.
- Significant progress was achieved under the LEAP including actions to better manage wastewater and stormwater discharges; keep phosphorus on farmland and out of waterways through best management practices; restore natural heritage features, such as wetlands; improve monitoring and science; and enhance communication and outreach.
- Canada and Ontario are currently assessing and reporting on progress and will publish a LEAP evaluation report in 2023 completing the first five-year LEAP implementation cycle.

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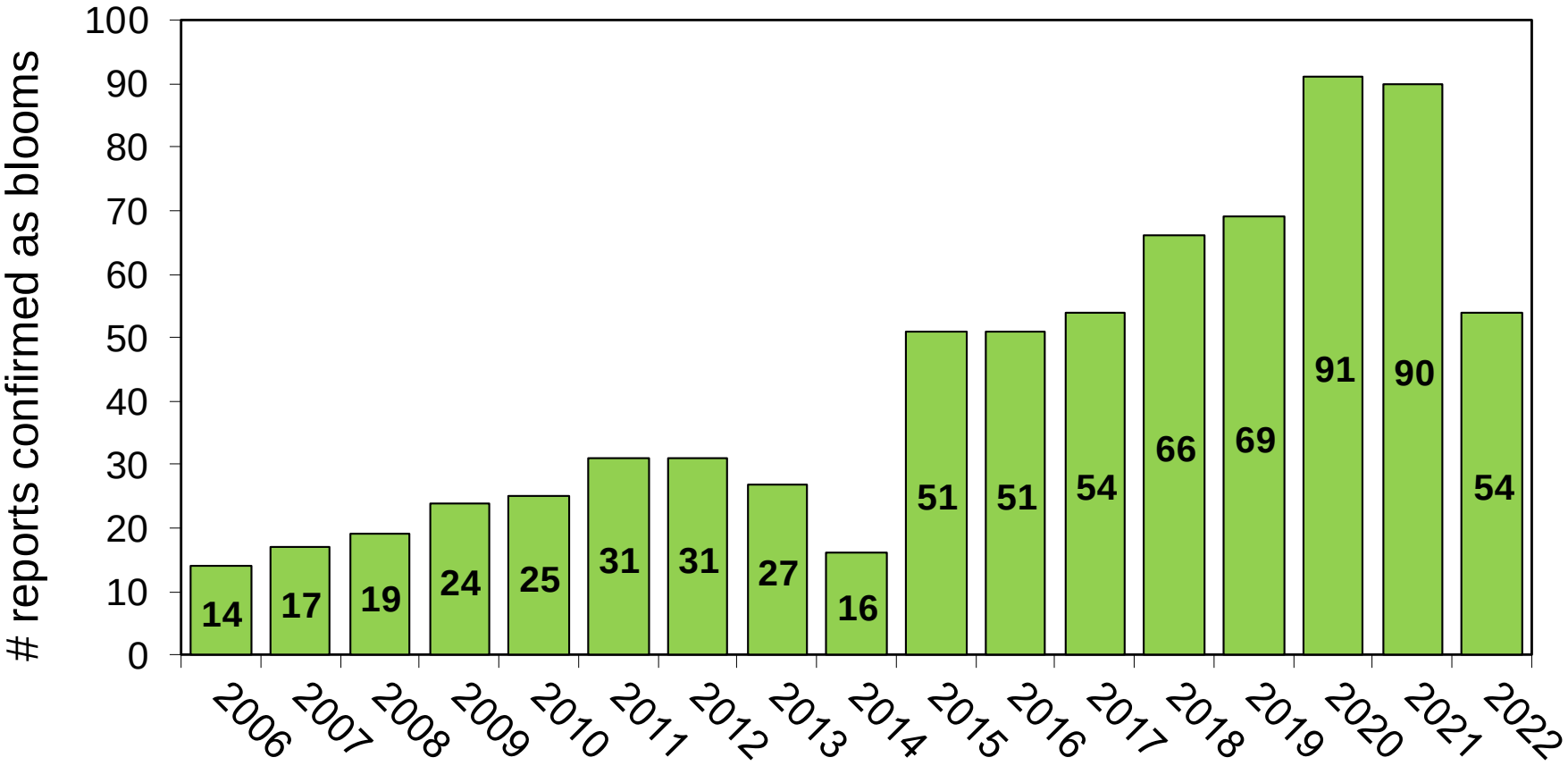
Blue-green algae (cyanobacteria) bloom reports



The number of reported blooms confirmed each year depends on a number of variables (e.g., weather, nutrient loading, public interest and awareness).

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Ministry of the Environment, Conservation and Parks (MECP) Algal Bloom Response

- The MECP has a comprehensive procedure in place for responding to complaints of algal blooms.
- The response to reports of blooms involves communication and collaboration among the various stakeholders.
- MECP's role is to gather, assess and provide basic scientific & technical information.
- The local health unit makes decisions as to whether notification of the public is required, and what actions should be taken.

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Public Reporting of Algal Blooms

If you suspect a blue-green algal bloom is present:

- Assume toxins are present.
- Avoid using, drinking, bathing or swimming in the water.
- Restrict pet and livestock access to the water.
- Contact your local health unit for information on health risks associated with blue-green algal blooms.

If you suspect a blue-green algal bloom, call the MECP's

- Spills Action Centre (SAC): 1-866-MOE-TIPS (663-8477)

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Municipal Drinking Water Facility Requirements

Municipal Drinking Water Licence (MDWL)

Since 2021, a formal requirement for a harmful algal bloom (HAB) monitoring plan was added to Municipal Drinking Water Licences. Prior to this, most large municipal systems were voluntarily monitoring for microcystins.

Municipal Residential Drinking Water Systems that use surface water are required to develop a comprehensive HAB sampling, monitoring and reporting plan, including:

- Visual monitoring of the intake or source water;
- Sampling plan, including the identification of sample location(s) and frequencies, and triggers for increased sampling; minimum weekly sampling is required when a bloom is suspected or is occurring;
- Reporting when a bloom is suspected or is occurring;
- Staff training on HAB monitoring, reporting, and sampling procedures.

Microcystin Analysis

- Licensed laboratories use the enzyme-linked immunosorbent assay (ELISA) screening method to analyse for Total Microcystin.
- The MECP laboratory conducts the time-of flight mass spectrometry (QToF/MS) method (E3450), as well as the ELISA method.
- For a treated or distribution water sample with a total microcystin result greater than or equal to (≥) **1.5 µg/L**, the Drinking Water Maximum Acceptable Concentration (MAC) for Microcystin-LR (Ontario Regulation 169/03), the laboratory is required to report it as an adverse water quality incident (provisional).
- Confirmatory samples are sent to the MECP lab for analysis with QToF/MS method; if these results exceed 1.5 ug/L, the adverse water quality incident is confirmed; if not, the adverse water quality incident is discarded.
- The MECP lab reports the final results to The Spills Action Centre, the referring laboratory, the Local Medical Officer of Health (LMOH) and the DWS owner/operating authority.

Algal Identification

Suspected bloom

Is it a bloom?

Which taxa?

Rapid screening for risk of algal toxins

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Roles & Responsibilities

Drinking Water Systems:

- Notify the MECP and Health Unit when HAB observed.
- If sample results show microcystin detection in **treated water** greater than or equal to 1.5 ug/L, the laboratory is required to report it.
- Samples sent to the MECP lab for confirmation with QToF/MS method; if results exceed 1.5 ug/L, corrective actions must be followed.
- Corrective Actions: Resample and test at MECP lab; take such steps as directed by the Medical Officer of Health.

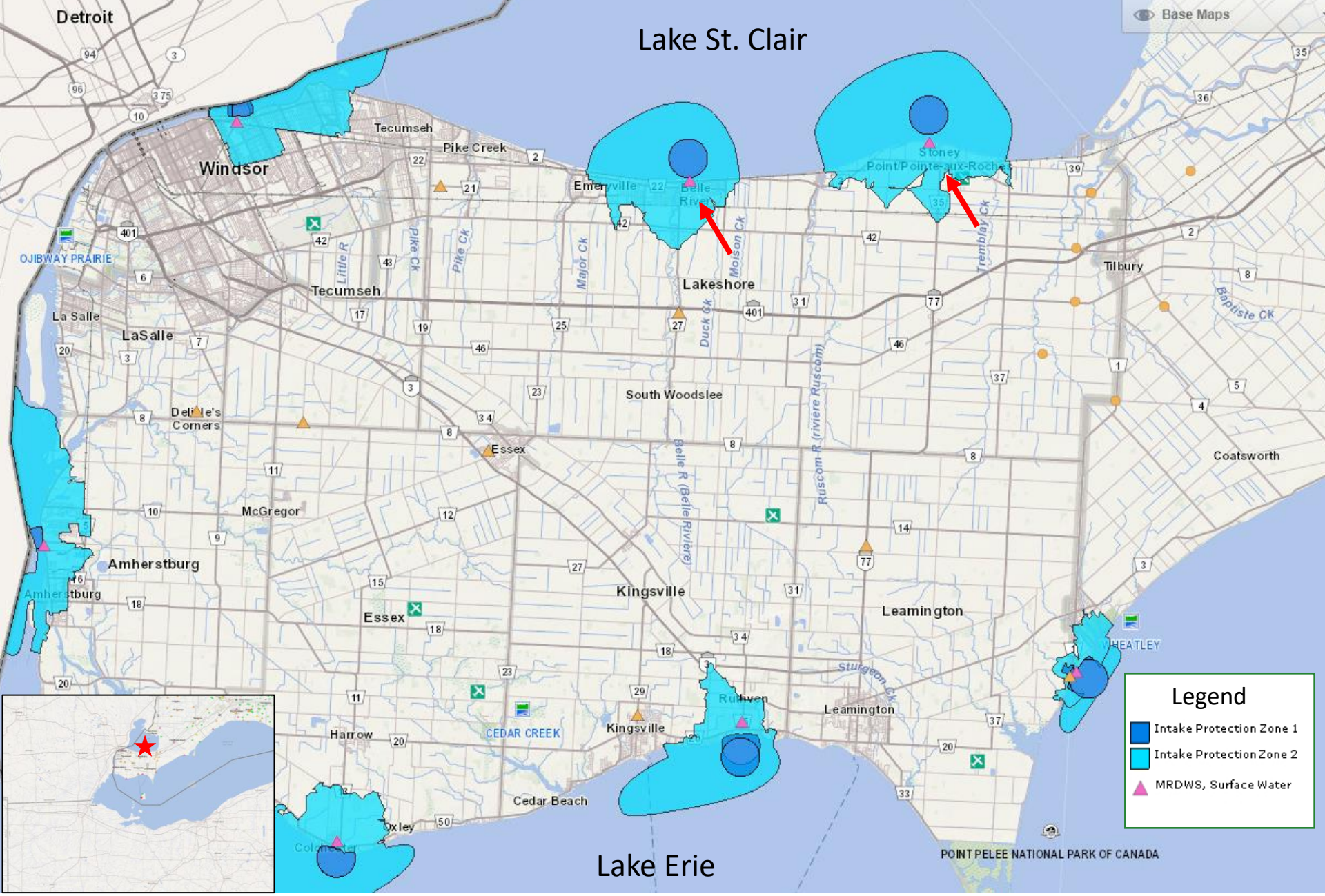
MECP:

- Work with drinking water facility to ensure they follow their HAB plan; sampling and notifications, as required.
- Collect and analyze surface water samples when requested to help determine if a blue-green algal bloom is occurring.
- Communicate to all stakeholders, including the municipality and downstream drinking water systems.

Health Unit:

- Primary lead for health-related matters:
  - Public beach postings for blue-green algal blooms.
  - Notices to local residents on drinking water concerns for non-regulated drinking water systems.

Harmful Algal Bloom in Lake St. Clair: July 2021


Lake St. Clair
Detroit
Windsor
Tecumseh
Pike Creek
Emeryville
Belle River
Stoney Point/Pointe-aux-Roches
Lakeshore
Tilbury
OJIBWAY PRAIRIE
La Salle
LaSalle
Delisle's Corners
South Woodslee
Essex
McGregor
Amherstburg
Kingsville
Leamington
Coatsworth
HEATLEY
Harrow
CEDAR CREEK
Cedar Beach
Oxley
POINT PELEE NATIONAL PARK OF CANADA
Lake Erie
Little R
Pike Ck
Major Ck
Duck Ck
Moison Ck
Belle R (Belle River)
Ruscom R (rivière Ruscom)
Trembley Ck
Baptiste Ck
Sturgeon Ck
Base Maps
Legend
Intake Protection Zone 1
Intake Protection Zone 2
MRDWS, Surface Water

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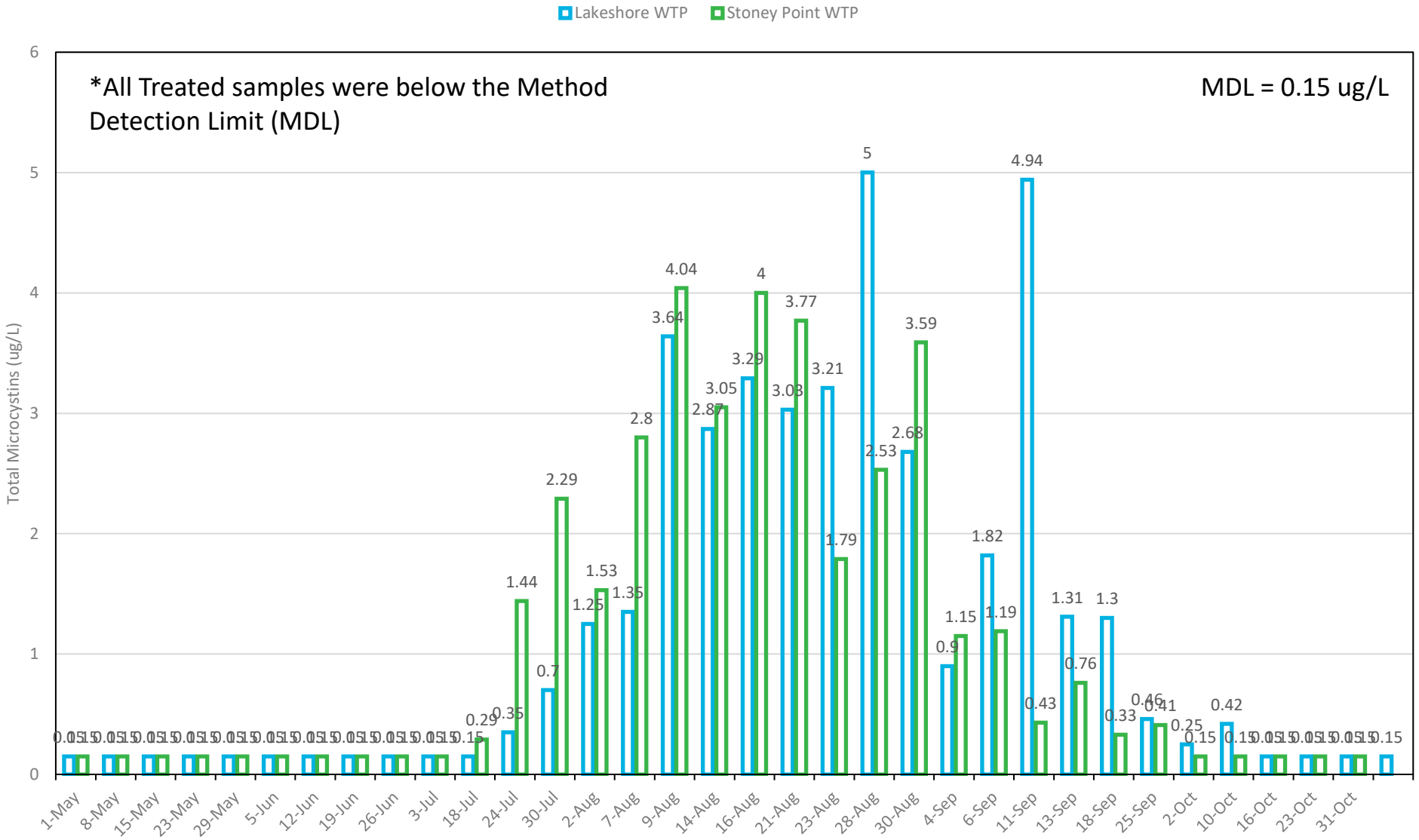
Report of Microcystin in Raw Water Samples

- Samples collected by the two drinking water plants with intakes in Lake St. Clair on July 16 and July 18, 2021 had low detections of total microcystin (0.35 ug/L and 0.29 ug/L).
- The plants notified the MECP and Health Unit of the sampling results. Plant staff advised that there was no visual algal bloom on the lake.
- July 29, 2021, MECP was informed that the subsequent samples also had microcystin detections and a bloom was now visible on the lake.
- Proactive operational changes were implemented at the drinking water facilities.
- MECP requested the Drinking Water System to increase visual monitoring to daily and to increase their raw/treated microcystin sampling to twice per week.
- MECP communicated with stakeholders and provided updates.

Total Microcystins (ug/L) in Raw Water (DW Intake), Lake St. Clair - 2021



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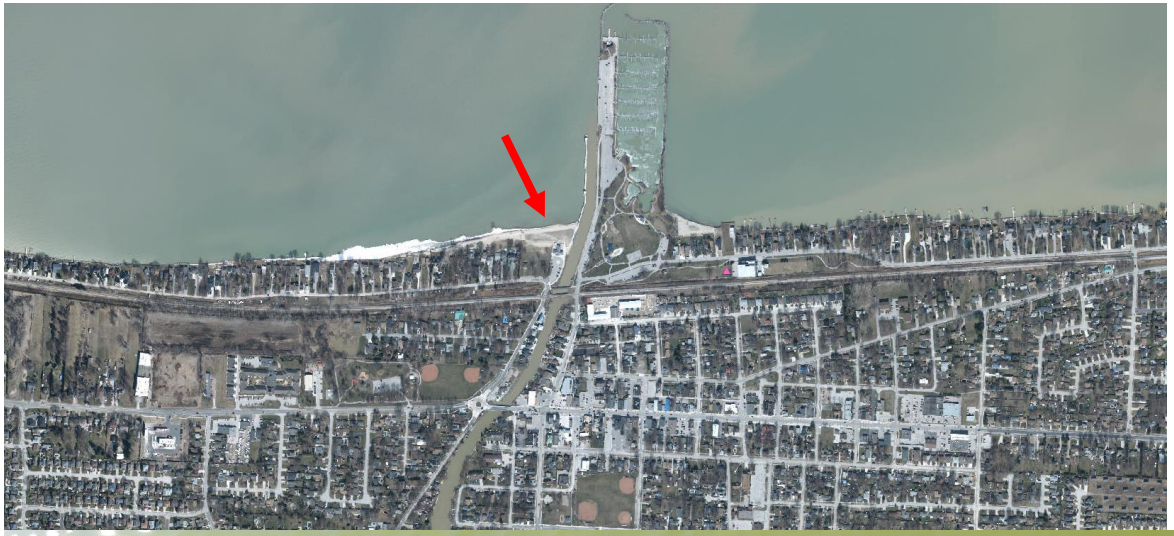
Belle River Beach



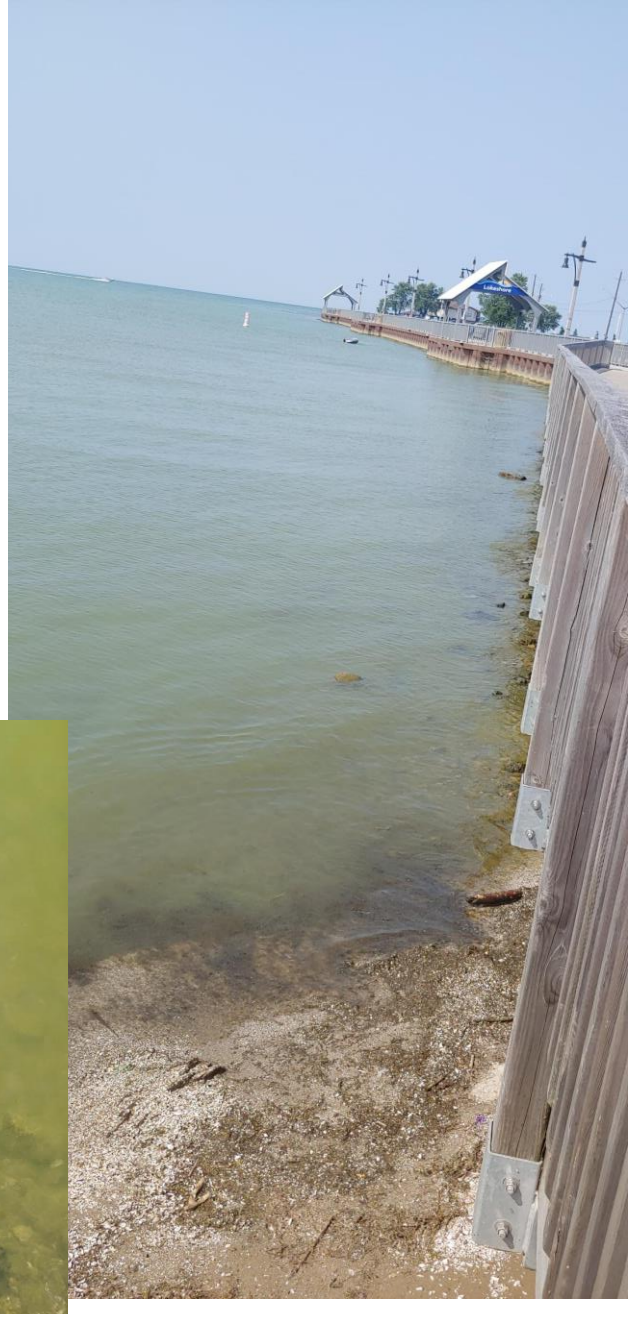


Photo Credit: Katie Stammler, ERCA; August 5, 2021

Belle River Beach Sampling

- MECP staff took a shore water sample from the Belle River Beach on August 3, 2021, at the request of the Windsor-Essex County Health Unit.
- The sample was analyzed at the MECP lab for Total Microcystin using the ELISA method (E3469) as well as the time-of flight mass spectrometry (QToF/MS) method (E3450), which quantifies 12 of the known microcystin variants.

Method	Parameter	Result (ug/L)
ELISA	Total Microcystin	11.02
QToF/MS	Microcystin-LR	0.58
	Microcystin-LA	0.51
	Microcystin-RR	0.084

Notifications to the Public (Health Unit)

- The Belle River beach was already posted due to elevated *E.coli.* Signs were also posted notifying the public not to swim due to potentially toxic blue-green algae in the water.

- The recreational guideline for Microcystins is 10 ug/L (Health Canada, 2022).
- The Health Unit posts signs for swimming recommendations:
  - Advisory (1.5-10ug/L)
  - Warning (10ug/L +)
  - Closing (20ug/L +)

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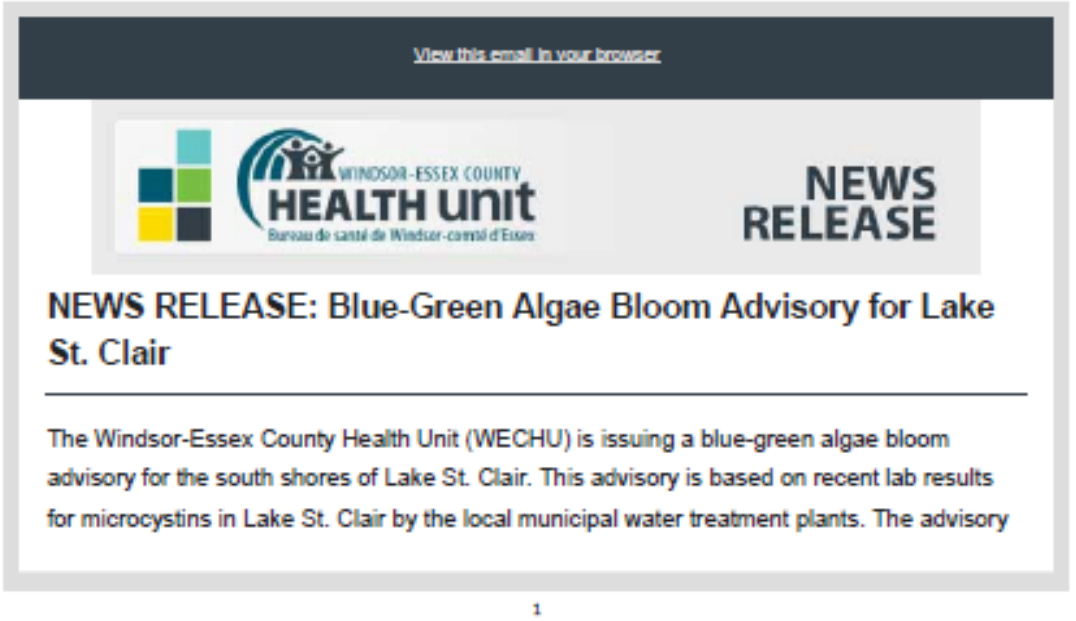
Notifications to the Public (Health Unit)

- News release and posted on social media; updates on the Windsor-Essex County Health Unit website.
- Warnings to owners of wells and cisterns (e.g. private cottages with wells) not to drink the water unless routine microcystin tests are below 1.5 ug/L. This includes adults and children as well as pets, livestock and animals. Municipal water is safe to drink.
- General beach recommendations: if water looks cloudy or like green paint or pea soup, avoid swimming, especially young children (under age 6). Pets should not drink lake water during a blue-green algae bloom.
- Summary of health effects.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WINDSOR-ESSEX COUNTY HEALTH UNIT
Bureau de santé de Windsor-comté d'Essex

NEWS RELEASE

NEWS RELEASE: Blue-Green Algae Bloom Advisory for Lake St. Clair

The Windsor-Essex County Health Unit (WECHU) is issuing a blue-green algae bloom advisory for the south shores of Lake St. Clair. This advisory is based on recent lab results for microcystins in Lake St. Clair by the local municipal water treatment plants. The advisory

1

www.wechu.org/drinking-water-small-drinking-water-systems-beaches/blue-green-algae-bloom

Questions?