

The Lake Erie Action Plan

Six years of shared accomplishments and the road ahead

Harry Keess, Canada Water Agency
Latornell Conservation Symposium
November 3, 2025



Canada
Water Agency

Agence de l'eau
du Canada

Canada



Overview

- 01** All about the LEAP
- 02** Looking back to 2018
- 03** Looking forward from 2025
- 04** How the CWA supports the LEAP



All about the LEAP

Lake Erie - 1960s to 2011

1965: Lake Erie “literally dying”
(The Economist)

1970s-80s: Management to reduce
P inputs

1993: Lake Erie “restored”

Early 2000s: Hints of algal blooms

2011: Massive algal bloom

Goodbye to Lake Erie ?

AMONG the five Great Lakes, Lake Erie has perhaps been the least distinguished. It is not biggest, most beautiful or nearest to Niagara Falls in the chain



J. Great Lakes Res. 19(2):197
Internat. Assoc. Great Lakes Res., 1993

1997

PREFACE

SPECIAL ISSUE OF THE JOURNAL OF GREAT LAKES RESEARCH
Evidence for the Restoration of the Lake Erie Ecosystem



This problem impacts Canadians

A threat to our economy and society

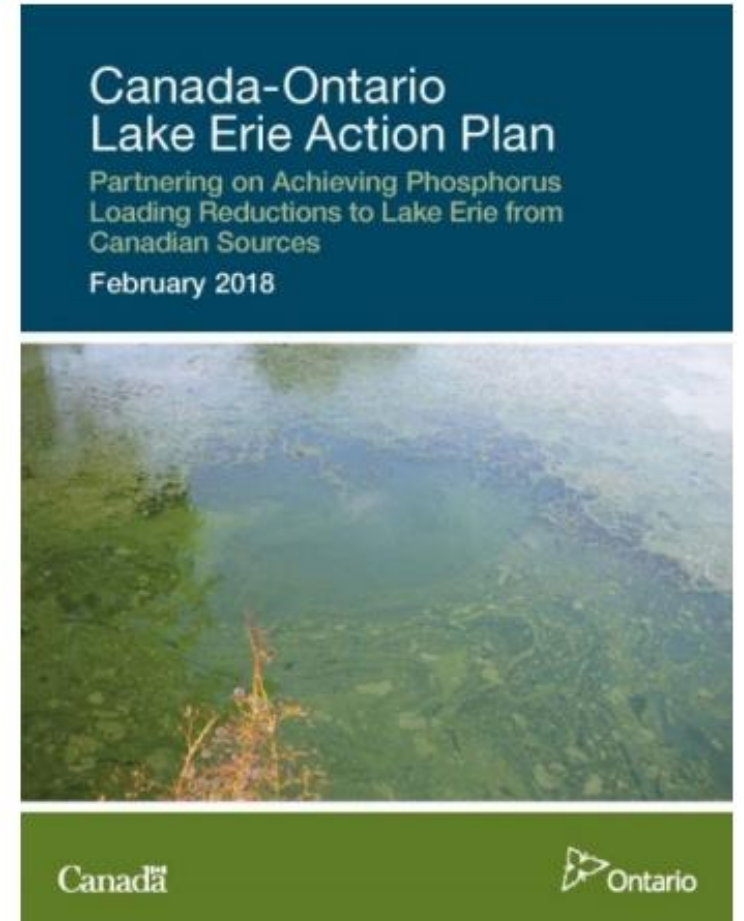
- Economic impacts of \$412 million/year to Canadians
- Tourism sector hit the hardest
- World-renowned freshwater fishery
- First Nation and Métis communities



What is the LEAP?

Canada-Ontario Lake Erie Action Plan (2018)

- The roadmap for Lake Erie phosphorus control efforts undertaken by Canada, Ontario, and partners
- 1 of 6 **Domestic Action Plans** supporting progress towards **binational phosphorus reduction targets**
- Use of an adaptive management approach supported by strong monitoring, research and modelling efforts
- Includes over 120 actions by Canada, Ontario and partners



How does the LEAP help Lake Erie?

Over 120 actions by Canada, Ontario and partners:

- Reduce phosphorus loadings
- Ensure effective policies, programs, and legislation
- Improve the knowledge base
- Educate and build awareness
- Strengthen leadership and coordination

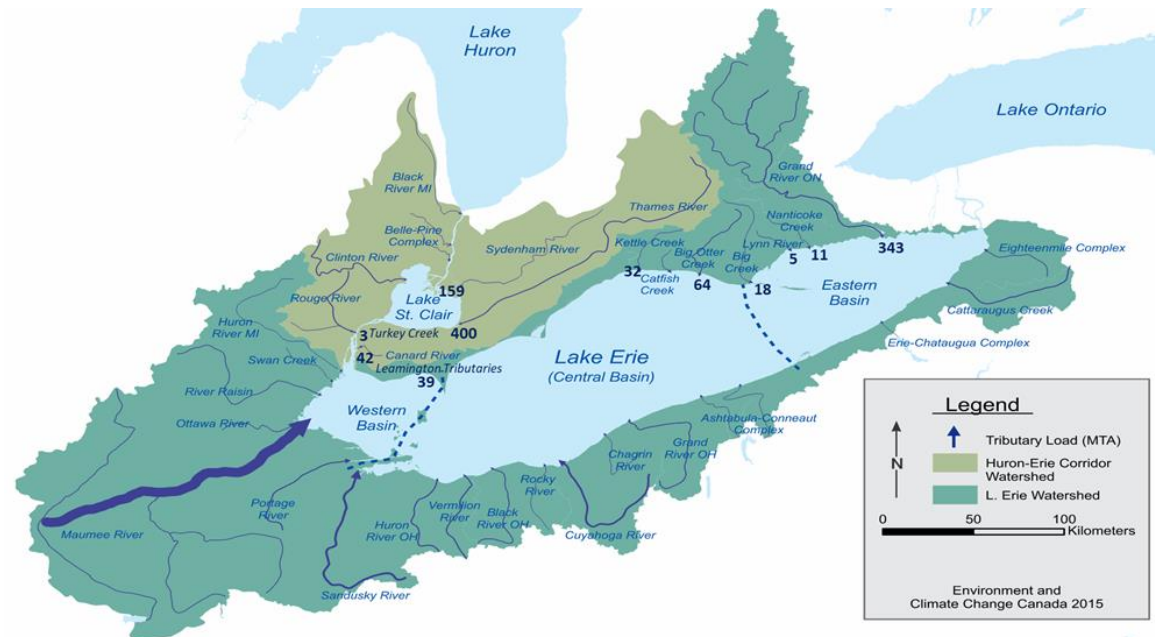


Supports progress towards **binational phosphorus reduction targets** (GLWQA):

- 40% reduction from 2008 levels in spring total phosphorus and soluble reactive phosphorus for priority tributaries
- 40% reduction from 2008 levels in phosphorus loadings to the western and central basins



These support progress towards **Lake Ecosystem Objectives** for Lake Erie



The LEAP is a true partnership-based effort

LEAP IMPLEMENTATION TEAM

CANADA

Canada Water Agency
Environment and Climate Change Canada
Agriculture and Agri-Food Canada

ONTARIO

Ministry of the Environment, Conservation and Parks
Ministry of Natural Resources
Ministry of Agriculture, Food and Agribusiness

CONSERVATION AUTHORITIES

Essex Region CA Kettle Creek CA
Grand River CA Catfish Creek CA
Lower Thames Valley CA Long Point Region CA
Upper Thames River CA
St. Clair CA
Conservation Ontario

INDIGENOUS PARTNERS

Aamjiwnaang FN
Bkejwanong Territory
Caldwell First Nation
Chiefs of Ontario
Chippewas of the Thames
Eelunaapeewi Lahkeewit (Delaware Nation)
Mississaugas of the New Credit
Munsee-Delaware Nation
Oneida Nation of the Thames
Six Nations of the Grand River
Métis Nation of Ontario

MUNICIPALITIES

London
Leamington

AGRICULTURAL PARTNERS

Fertilizer Canada
Grain Farmers of Ontario
Land Improvement Contractors of Ontario
Ontario Agri-Business Association
Ontario Federation of Agriculture
Ontario Greenhouse Vegetable Growers
Ontario Pork

CONSERVATION (NON-GOVERNMENT)

Alternative Land Use Services (ALUS)
Ducks Unlimited
Nature Conservancy of Canada

Looking back to 2018: celebrating progress

LEAP Accomplishments to Date



Urban

- Wastewater Treatment Plant Optimization
- Effluent Limits
- Low Impact Development (LID)
- Wastewater improvements
- Monitoring and reporting - \$10m investment by Ontario

Natural Heritage

- Conservation Authorities and Partners – developed watershed management plans and strategies
- Ontario Eastern Habitat Joint Venture
- Lake Erie Watershed Wetland Initiative
- Wetland Conservation Partner Program
- Habitat studies

Agriculture

- Agricultural Sector Working Group
- Soil Action Group
- 4R Nutrient Stewardship
- Ontario Greenhouse Environmental Strategy Working Group
- On-Farm Applied Research and Monitoring
- Ontario Agri-Food Innovation Alliance

- Diverse and engaged community of implementation partners
- Successful implementation of the first LEAP cycle - progress made on most LEAP actions through agency and partner activities
- Knowledge base is stronger and can help target on-the-ground actions
- Initiating steps to link on-the-ground action and edge-of-field to tributary loads (modelling)
- Many actions have co-benefits for soil health, climate change mitigation and biodiversity

New insights and opportunities



What have we learned since 2018?

- Most Canadian phosphorus loads are from **non-point sources**
- **Phosphorus loads vary dramatically**, due to variability in precipitation patterns
- **Climate change impacts timing and intensity** of precipitation events
- **Combinations of actions and BMPs** are most likely to achieve phosphorus reductions
- **Land use is changing**, and consequently so are phosphorus runoff patterns
- **Sewage and resulting phosphorus loads to wastewater plants** will continue to increase with population growth
- **Continued urban development** creates more impermeable surfaces, causing rainfall to be diverted to storm or combined sewers
- **Legacy phosphorus** remains on the surface and in lake and stream sediments
- **It will take time** to see results

Evaluation and Update Report



Canada-Ontario Lake Erie Action Plan:
2024 Evaluation and Update Report

- LEAP accomplishments and actions since 2018
- Improved understanding of drivers and pathways of phosphorus loads
- Challenges, lessons learned, and updated priorities
- Recommitment to LEAP goals



Canada  Ontario 

<https://www.canada.ca/en/canada-water-agency/freshwater-ecosystem-initiatives/great-lakes/great-lakes-protection/taking-action-protect/preventing-toxic- nuisance-algae/erie-evaluation-update-2024.html>

Priorities to reduce phosphorus loads



Continue to target reductions at high-risk phosphorus loading sources with focus on the Thames River, Sydenham River, and Leamington/Kingsville area of the Lake Erie basin



Continue to prioritize efforts that address the seven LEAP phosphorus loss pathways



Continue to build understanding of how individual management practices, and combinations of practices, work to reduce phosphorus and to guide actions and investments



Seek out and emphasize measures that provide multiple benefits



Continue to expand the LEAP partnership to more municipalities, agricultural organizations, and other partners



Actively work to support and strengthen First Nations and Métis participation in the LEAP

Status of Actions: improving transparency



- Public, evergreen database released in 2025
- Progress to date for each action
- Current status of each action
- Implementation partners driving each action
- Links to partner programs, projects and findings
- Can be filtered by keyword, status, and category

Filters

▼ Action

- A (Reduce phosphorus loadings)
- B (Ensure effective policies, programs, and legislation)
- C (Improve the knowledge base)
- D (Educate and build awareness)
- E (Strengthen leadership and coordination)

▼ Status

- Completed
- Underway
- Ongoing
- Not started

8 results out of 128

A.1.08

Description

Canada and Ontario will continue to support the conservation and restoration of Ontario's wetlands through programs such as the Ontario Eastern Habitat Joint Venture, the Habitat Stewardship Program and the National Wetland Conservation Fund.

Status: Ongoing

Summary

Canada supported partners in the rehabilitation of 17 wetlands over four years in the Lake Erie basin through the Habitat Stewardship Fund. Ontario supported Ducks Unlimited Canada by protecting over 170 hectares of wetland and 195 hectares of upland habitat, and enhancing over 28 hectares of wetlands and 338 hectares of associated upland habitat in the Lake Erie watershed through the Eastern Habitat Joint Venture. In 2020, Ontario introduced the Wetlands Conservation Partner Program, providing funding over 5 years to restore and enhance wetlands in priority areas in Ontario, and support municipalities with stormwater management. Canada and Ontario continue to support these wetland conservation initiatives.

More information

- [Ontario Eastern Habitat Joint Venture \(ON-EHJV\) - Government of Ontario](#)
- [Habitat Stewardship Program for Species at Risk - Government of Canada](#)
- [National Wetland Conservation Fund - Government of Canada](#)

<https://www.canada.ca/en/canada-water-agency/freshwater-ecosystem-initiatives/great-lakes/great-lakes-protection/taking-action-protect/preventing-toxic- nuisance-algae/preventing-toxic- nuisance-algae-status-of-actions.html>

Looking ahead from 2024: building on successes

Looking ahead for the LEAP



- Continued efforts, and increasingly targeted efforts in identified high-risk areas for phosphorus loss
- Engaging new and existing partners
- Improving performance measures
- Identifying new actions
- Revising existing actions where needed



Bringing everyone together



Photo credits: Ontario Ministry of the Environment, Conservation and Parks

Canada Water Agency and the Great Lakes Freshwater Ecosystem Initiative



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Canada Water Agency



Agence de l'eau du Canada



- Established in **October 2024** and headquartered in **Winnipeg, MB**
- Improves **federal collaboration** on fresh water in Canada and develops and coordinates **whole-of-government** approaches for freshwater stewardship
- Advances the **protection** and **restoration** of freshwater ecosystems, as informed by science and Indigenous knowledges
- Proactively collaborates on freshwater **opportunities** and **challenges**



Canada

Great Lakes Freshwater Ecosystem Initiative



- Funding program launched in 2024
- Supports actions by others including:
 - restoring water quality and ecosystem health in Great Lakes Areas of Concern (AOCs)
 - **preventing toxic and nuisance algae**
 - restoring and protecting critically important coastal areas, including wetlands
 - reducing releases of harmful chemicals
 - supporting community-based science
 - increasing participation of Indigenous Peoples in governance, stewardship, and monitoring
 - advancing Great Lakes governance, accountability, and reporting mechanisms



Two Lake Erie nutrients sub-streams:

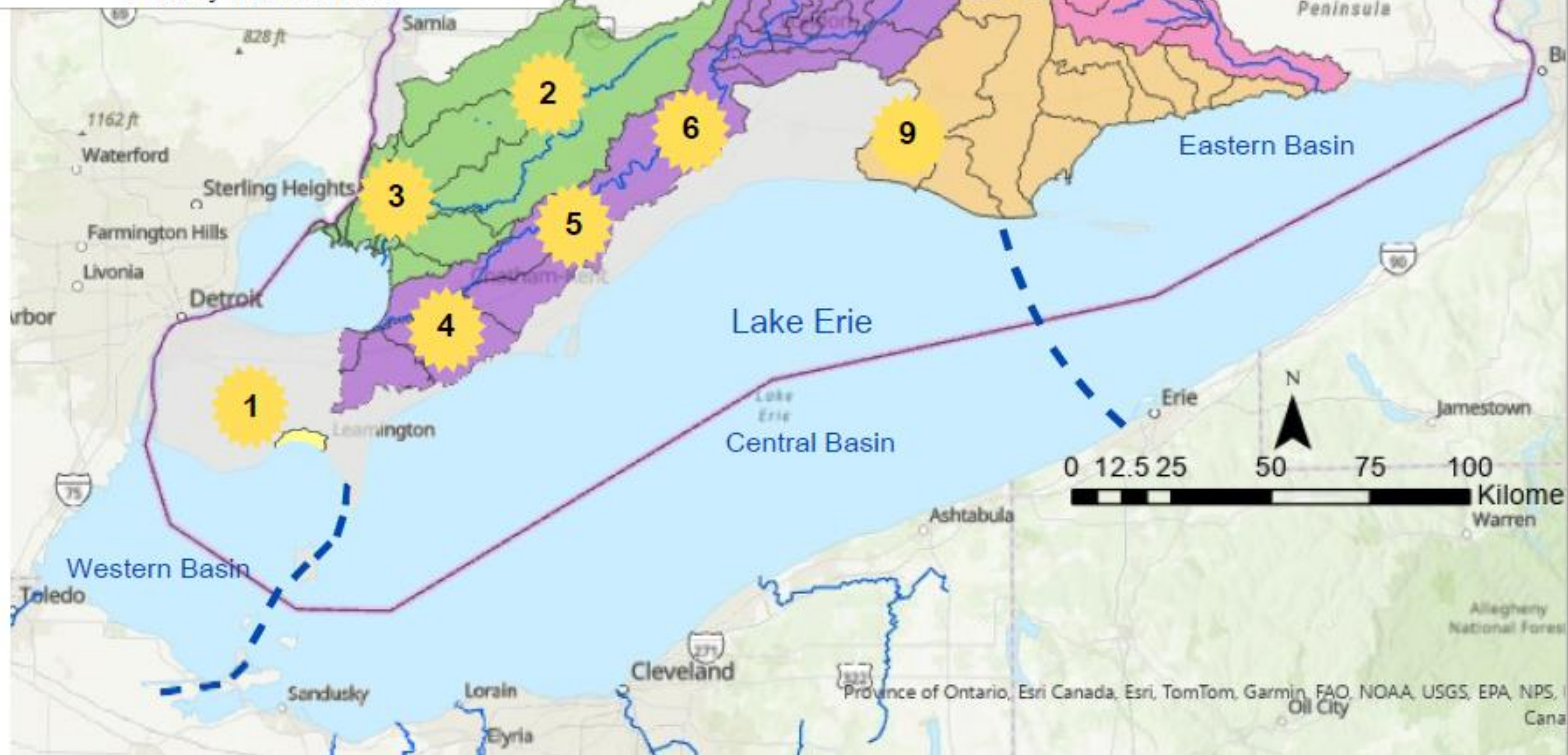
- Precision Conservation
- Innovation

Precision Conservation Projects (2024-2028)

- 1 **Essex Region Nutrient Reduction Program** (Essex Region Conservation Authority) \$6,300,000
- 2 **Lake Erie Small Excavated Wetlands for Phosphorus Retention in the Lake Erie Watershed** (Ducks Unlimited Canada) \$329,000
- 3 **Sydenham River Phosphorus Reduction Initiative** (St.Clair Region Conservation Authority) \$7,850,000
- 4 **Engaging Farmers and Ranchers in Phosphorus Reduction in the Sydenham and Thames River Watersheds** (ALUS Canada) \$2,050,000
- 5 **Lower Thames River Watershed Precision Phosphorus Reduction Program** (Lower Thames Valley Conservation Authority) \$13,000,000
- 6 **Our Responsibility: Caring for Deshkan Ziibi (Thames River) and Lake Erie** (Chippewas of the Thames First Nation) \$1,544,000
- 7 **Upper Thames River Watershed** (Upper Thames River Conservation Authority) \$17,410,000
- 8 **Addressing Non-Point Source Phosphorus in Priority Grand River Watersheds** (Grand River Conservation Authority) \$493,000
- 9 **Using Best Management Practices to Address Phosphorus loading in the Long Point Region Watershed** (Long Point Region Conservation Authority) \$470,000

Legend

-  Thames River Watershed*
-  Sydenham River Watershed*
-  Leamington Tributaries*
-  Grand River Watershed
-  Long Point Watershed
-  Priority Tributaries
-  Canada-USA Border
- *Priority Watersheds





**Farms
Implementing**

of Farms

339



**BMPs
Implemented**

of BMPs

1,036



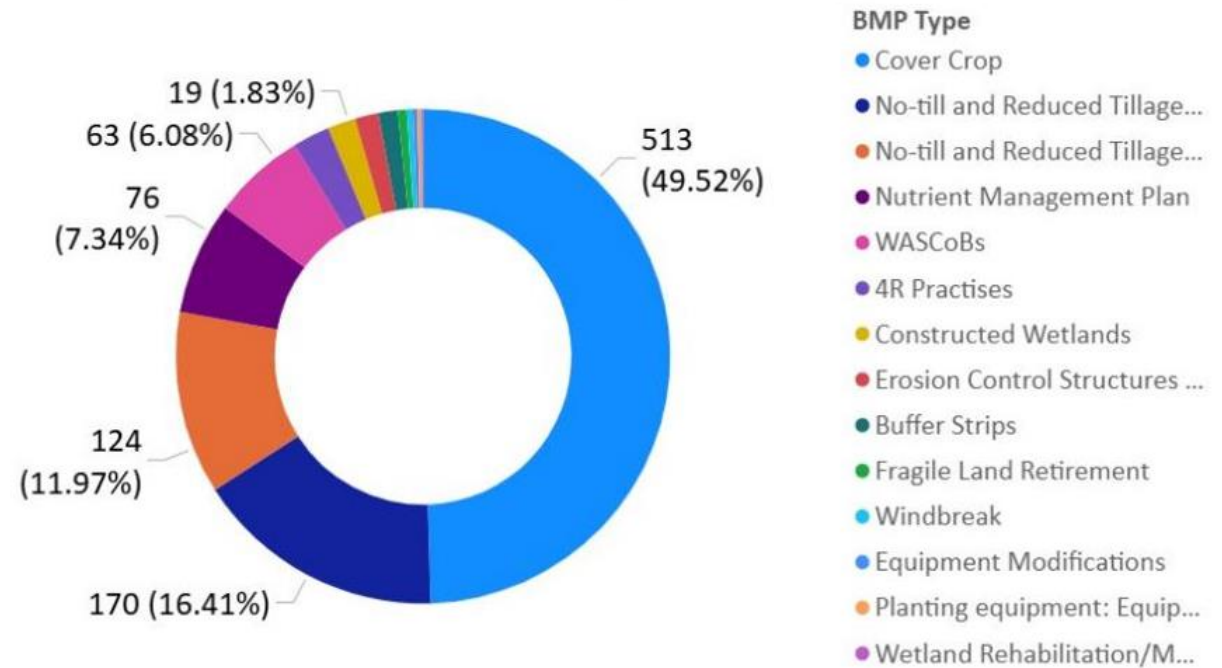
BMP Coverage

Hectares

26,275

Year 1 of the program resulted in an estimated reduction of 12.3 Tonnes/year of total phosphorus at the edge-of-field.

Number of BMPs Implemented by Type





Cover Crops

St. Clair Region
Conservation Authority
staff inspecting cover
crops planted during the
first year of their project,
near Watford, Ontario in
March 2025.



Fragile Land Retirement

ALUS undertook a project
in Chatham-Kent region
that transitioned riverside
land use from agriculture to
prairie grass and an
expanded riparian buffer.



Creating Wetlands

Ducks Unlimited Canada
constructed this wetland in
Lambton County located in
the Sydenham River
watershed.



Engagement in Upper Thames

Upper Thames River Conservation Authority engages land-owners and operators on their demonstration farm in Thorndale, ON.



Engagement in Lower Thames

Lower Thames Valley Conservation Authority hosted an event at the Blenheim Legion to hear from three agriculture industry experts, and about the CWA-funded Phosphorus Reduction program.

FUNDING AVAILABLE FOR REDUCING PHOSPHORUS LOADING IN THE BIG OTTER CREEK SUB-WATERSHED

Long Point Region Conservation Authority

Target Area (Big Otter Creek)

Project Options to Support Agricultural Landowners:

- Cover crops
- Erosion control practices
- Strip structures
- water and sediment control basins
- grassed waterways
- grade control structures

Fill out the expression of interest form on our website to see if you're eligible for funding!

*We also have funding available for watershed residents outside of the Big Otter Creek.

819-813-1213 www.prcan.ca

Funding support provided by:
Canada Water Agency Agence de l'eau du Canada

Outreach in Big Otter Creek

Long Point Region Conservation Authority helped promote their new phosphorus reduction programming through various means including this newspaper ad.



Monitoring Station

St. Clair Region Conservation Authority installed a monitoring station on Brown Creek near Alvinston, ON. This is downstream of a targeted priority area for reducing phosphorus loads in the Sydenham River.



Monitoring Station

Chippewas of the Thames First Nation, located along the banks of Thames River, have enhanced their water monitoring regime on reserve land to track changes in phosphorus levels.



Monitoring Station

Lower Thames Valley Conservation Authority installed a monitoring station on East Two Creeks, north of Wheatley Harbour, ON.

GLFEI Lake Erie Innovation sub-stream projects (2024-2028)

Innovative approaches and technologies to reduce phosphorus loads to Lake Erie, and/or fill knowledge gaps through strategic science and monitoring.

University of Windsor - \$1,050,000

- **“Assessment of Seasonal Phosphorus Dynamics and Sources in the Leamington Tributaries of the Lake Erie Watershed”**



University of Windsor

Ontario Soil and Crop Improvement Association - \$1,000,000

- **“Comprehensive Implementation and Enhanced Analysis of Agricultural Best Management Practices to Reduce Phosphorus Loading to Lake Erie”**



Flowers Canada (Ontario) Inc. - \$887,000

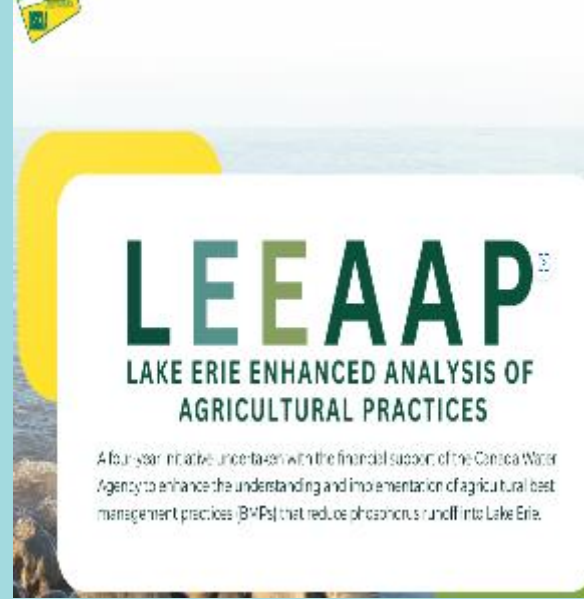
- **“Assessment of Phosphorus Removal and Recovery Using Hybrid Treatment Swales in the Leamington/Kingsville Area”**



Upper Thames River Conservation Authority - \$850,000

- **“Demonstrating Phosphorus Reduction Techniques in the Upper Thames River Watershed”**





University of Windsor

Data collection in the Leamington, ON area tributaries.

Flowers Canada (Ontario) Inc.

Testing and selection of site for hybrid treatment swale installation near Leamington, ON.

Ontario Soil and Crop Improvement Association

A project website to share information and results including their data governance framework for project partners.

Upper Thames River Conservation Authority

Construction of an innovative edge-of-field phosphorus capture and recycling system near St. Marys, ON.

A photograph of several pumpkins of various sizes and colors (orange and green) resting on a bed of dry straw and grass. The pumpkins are arranged in a cluster, with some showing signs of being cut or damaged. The background is a field of dry vegetation.

Thank you!

Harry Keess
Canada Water Agency
harry.keess@cwa-aec.gc.ca
289-302-3002

Lake Erie Action Plan - Status of Actions

<https://www.canada.ca/en/canada-water-agency/freshwater-ecosystem-initiatives/great-lakes/great-lakes-protection/taking-action-protect/preventing-toxic-nuisance-algae/preventing-toxic-nuisance-algae-status-of-actions.html>

Lake Erie Action Plan – Evaluation and Update Report

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Canada Water Agency – Preventing Toxic and Nuisance Algae

<https://www.canada.ca/en/canada-water-agency/freshwater-ecosystem-initiatives/great-lakes/great-lakes-protection/taking-action-protect/preventing-toxic-nuisance-algae.html>