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Wednesday, August 30, 2023

Sent via email:

Attention: Municipal Council Clerks (for distribution)

Town of Amherstburg

Town of Essex

Town of Kingsville

Town of LaSalle

Municipality of Leamington

Municipality of Lakeshore

Township of Pelee

Town of Tecumseh

City of Windsor

Ministry Environment, Conservation Parks

Environment and Climate Change Canada

Ontario Greenhouse Vegetable Growers

Municipal Council Members, MECP, ECCC, OGVG

Re: Expanding greenhouse sector in Essex County, ON and downstream water quality degradation. Kingsville Leamington Nutrient Project 2012-2022

The attached report is a comprehensive review of a decade of water quality data collected in watercourses primarily in Leamington and Kingsville. This work was funded through Canada-Ontario Agreements with the MECP. The study began in 2012 with the selection of several similar stream locations that were either greenhouse influenced (greenhouse infrastructure upstream of the sampling location) or non-greenhouse influenced (no greenhouse infrastructure upstream of the sampling location). A peer-reviewed publication in 2017 using data from this program collected between 2012 and 2016 showed that phosphorus concentrations were over 20 times higher in greenhouse influenced streams than in non-greenhouse influenced streams.

Since that publication, the program has been enhanced to include event-based sampling to capture nutrient loss during storm runoff events. Now, with a decade of data and this enhanced sampling, the attached reports shows that greenhouse influenced streams continue to have higher concentrations than non-greenhouse influenced streams. We have also shown that the disparity in concentrations is

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highest during the summer months when greenhouse fertigation practices are in place. In a typical agricultural stream, nutrient concentrations are highest during storm events in the winter months when the ground is bare, and surface run-off is highest. In the greenhouse influenced streams, the highest concentrations occur during baseflow conditions in the summer months, with storm events acting to dilute concentrations, which is typical in watercourses with a continuous point source. Lastly, the greenhouse sector is expanding northward on Highway 77 in Leamington, which is in the headwaters of the Ruscom River. Our monitoring has shown a significant increase in nutrient concentrations in this watershed since these greenhouses were built.

The Essex Region Conservation Authority Board of Director's received this report at their meeting on August 3, 2023, at which time they requested that the report be provided to all member municipalities and the Ministry of the Environment Conservation and Parks. The report is also being provided to Environment and Climate Change Canada and the Ontario Greenhouse and Vegetable Growers and can be found on ERCA's [website](#).

Should you require further information, please contact me by email at kstammler@erca.org or by phone at 519-981-4184

Regards,



Katie Stammler, PhD
Water Quality Scientist and Source Water Protection Project Manager

Attachments:

- Expanding greenhouse sector in Essex County, ON and downstream water quality degradation: Kingsville Leamington Nutrient Project 2012 – 2022 with Appendix 1