



COLLEGE of ENGINEERING AND PHYSICAL SCIENCES

MASc in Water Resources Engineering or Environmental Engineering *School of Engineering, University of Guelph and Earth and Environmental Sciences, University of Waterloo*

January 2024 (or May 2024) start date

POSITION: Understanding groundwater, agronomy and drainage system design influences on tile water quantity and quality

ADVISORS: Dr. Jana Levison, University of Guelph and Dr. Colby Steelman, University of Waterloo

START DATE: January 2024 (or May 2024)

DURATION: 2 years

STIPEND: available for 2 years (stipend is to offset tuition and living expenses; research expenses will be covered by the grant)

PROJECT DESCRIPTION: The goal of this research is to examine how tile drainage design influences groundwater quantity and quality in agricultural fields. The research will examine how spatiotemporal variations in groundwater recharge, land cover crop, geology, and nutrient application influence tile drainage performance. The proposed research will be conducted at the Huronview Demonstration Farm located near Clinton, Ontario. This project is in partnership with the Ausable Bayfield Conservation Authority (ABCA), Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), Huron County Soil and Crop Improvement Association (HCSCIA) and the Land Improvement Contractors of Ontario (LICO). The Master's candidate will contribute to the research through the development of an integrated groundwater-surface water flow model to determine how groundwater elevation impacts the flow regimes of two tile drainage systems (i.e., conventional systematic tile vs. contoured tile vs. untilled land) and vice versa. They will also examine groundwater quality (nutrients) and its relationship to tile water discharge quality, and the impacts of climate change on the system. Recommendations (for farmers and water managers) will be developed about which type of tile system is the best to use from water balance and nutrient management perspectives. This research contributes to sustainable management of Canadian land-water interactions in an agricultural context.

EXPERIENCE: Bachelor's degree in Water Resources Engineering, Environmental Engineering, Civil Engineering, Geological Engineering, Earth Sciences, Environmental Sciences, Geoscience, Geology or related discipline. Prior experience working with farmers or in rural settings will be considered an asset.

Please contact **Jana Levison** at jlevison@uoguelph.ca for more information or to apply for the position. To apply, please send a cover letter outlining your interest in this position as well as how your background makes you a suitable candidate, resume/CV, and a copy of your unofficial transcript. Fostering a culture of inclusion is an institutional imperative and we invite and encourage applications from all qualified individuals.