Additional Environmental Services 2020 Research Highlights

Research Project	Partner(s)	Research Benefit
RESEARCH THEME: PUBLIC HEALTH		
Substances of concern passive sampling program at select water and wastewater facilities within York Region	Trent University	Allows the Region to establish a baseline understanding of probable emerging contaminants, such as pharmaceuticals and personal care products.
RESEARCH THEME: SAFE DRINKING WATER		
Summary of all Biofiltration work by Drinking Water Research Group	University of Toronto-Drinking Water Research group	Optimizes performance of existing biofiltration processes benefiting water quality.
Monitoring and mitigation of mussel impact to treatment facilities	University of Toronto-Drinking Water Research group	Protects water/wastewater treatment equipment.
Distribution pipe loop pilot to address residual loss	University of Toronto-Drinking Water Research group, Town of Newmarket	Makes the best use of Town of Newmarket water distribution system information to understand residual losses and inform preventative action.
Biofilm (coating within pipe walls) composition and relationships to residual loss	University of Toronto-Drinking Water Research group	Improves our understanding of factors contributing to residual loss and informs decisions to reduce loss which ensures provision of high-quality water and protects public health.
Developing guidance for assessment and evaluation of harmful algal blooms, and implementation of control strategies in source water	University of Toronto-Drinking Water Research group, Southern Nevada Water Authority	Evaluates novel methods to reduce and monitor algal blooms in advance of potential regulatory change and improves operational response to protect public health.

Research Project	Partner(s)	Research Benefit
Water distribution system microplastics sampling	Health Canada, McGill, Town of Georgina	Characterizing the prevalence of microplastics across source waters, treatment processes and in distribution systems to inform future treatment decisions.

RESEARCH THEME: WASTEWATER TREATEMENT

Research Project	Partner(s)	Research Benefit
Microplastics in sewage sludge exploration and detection	York University (Lassonde School of Engineering)	Measuring new approaches to address microplastics and their impact on wastewater treatment systems and advance understanding of prevalence and fate.
Feasibility of using granulated activated carbon to treat for Per- and polyfluoroalkyl substances/Perfluoro-octanoic acid (PFAS/PFOA) from wastewater	University of Toronto-Drinking Water Research group	Assessing modern methods to treat wastewater system for emerging contaminant of concern in advance of potential regulatory change to protect public health.
Optimization of membrane performance during cold weather conditions	University of Waterloo (Civil Engineering Department)	Improves membrane performance under cold weather conditions.
Water reuse research demonstration project	Royal Bank of Canada-Bluewater, Ministry of the Environment, Conservation and Parks, University of Waterloo, Agriculture Canada	Through this Ontario Water and Wastewater Association Award winning research, this project identified benefits to applying reclaimed water in an agricultural context, and application limitations related to salinity issues in the reclaimed water. Further research on other applications in the sewage-shed area will be pursued later in 2021.

RESEARCH THEME: CLIMATE CHANGE ACTION AND ENERGY CONSERVATION

Research Project	Partner(s)	Research Benefit
Solar system net metering feasibility study	Internal research	Supports fiscal responsibility by determining cost/benefits for selling surplus energy to the electricity grid.

Research Project	Partner(s)	Research Benefit
Paramedic Station passive house design	Pilot project	Supports corporate vision for net zero emissions by exploring application of Passive House standards at a proposed York Region paramedic stations Energy efficiency measures will be adopted into the design.
Reducing municipal water loss and energy consumption through pressure management	Hydratek, Independent Electricity System Operator, York Region's local municipalities, National Research Council Canada, Ontario Clean Water Agency, Ontario Water Works Association, University of Toronto and other municipalities	Awareness of new mobile technology, identification of distribution system leaks, as well as potential cost savings and increased water and energy efficiency.

RESEARCH THEME: HEALTHY FORESTS

Research Project	Partner(s)	Research Benefit
Biological controls for Emerald Ash Borer	Natural Resources Canada	Tests biological control options informing management of Emerald Ash Borer populations to reduce impacts on trees and forests.
Biological controls for dog-strangling vine	Silv-Econ Ltd., Agriculture and Agri-Food Canada	Tests biological control informing management of the invasive species dog-strangling vine and protects York Region forests and biodiversity.
Automation of woodland cover re-assessment	Ecopia Ltd.	Supports monitoring of Regional Official Plan target and may provide a more efficient and cost-effective method to map woodlands

RESEARCH THEME: DIGITAL INNOVATION

Research Project	Partner(s)	Research Benefit
Big data analytics and machine learning for improved wastewater sewer system response forecasted rainfall events	Corporate Services - Data Analytics and Visualization Services Team	Results can be used to direct inflow and infiltration reduction programming and remediation projects in a timely manner, while increasing our ability to better manage extraneous flows during or immediately after major rainfall events.

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