Notice of the Final Oral Examination
for the Degree of Doctor of Philosophy

of

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MA (Université Laval, 2017)
BSc (Université Laval, 2015)

“Access to drinking water in low-and middle-income countries: Monitoring and assessment”

Department of Civil Engineering

Wednesday, August 19, 2020
9:00 A.M.
Remote Defence

Supervisory Committee:
Dr. Caetano Dorea, Department of Civil Engineering, University of Victoria (Supervisor)
Dr. Elizabeth Tilley, Department of Civil Engineering, UVic (Co-Supervisor)
Dr. Owen Waygood, Department of Civil Engineering, UVic (Member)
Dr. Nathan Lachowsky, School of Public Health and Social Policy, UVic (Outside Member)

External Examiner:
Dr. Jessica Kaminsky, Department of Civil Engineering, University of Washington

Chair of Oral Examination:
Dr. Abdul Vahabpour Roudsari, School of Health Information Science, UVic

Dr. Stephen Evans, Acting Dean, Faculty of Graduate Studies
**Abstract**

Lack of access to drinking water remains widespread as 2.1 billion people live without safely managed service that includes improved water sources located on premises, available when needed, and free from contamination. Monitoring global access to drinking water is complex, yet essential, particularly in settings where households need to fetch water to meet their basic needs, as multiple factors that relate to accessibility, quantity and quality ought to be considered. The overall objective of this observational study is to increase knowledge surrounding monitoring and assessment of access to drinking water supply in low-and middle-income countries. The dissertation was comprised of five manuscripts which address the objective using various approaches including systematic review (manuscript 1), secondary data analysis (manuscript 2) and primary data analysis (manuscripts 3-5) to gather evidence towards improving access to drinking water. Primary data were collected through a seasonal cohort study conducted in Southern Malawi that included 375 households randomly selected in three different urban and rural sites. Methods used included structured questionnaires, observations, GPS-based measurements, and water quality testing. Findings from this study highlight the importance of conducting appropriate assessment of household behaviours in accessing drinking water in view of improving reliability of the indicators and methods used to monitor access to water. Seasonal variations that may affect water sources' reliability and household's needs should be put forward to improve benefits of improving access to water and sustainable health outcomes. Further to target reliable and continuous availability from an improved water source at proximity to the household, interventions should aim to ensure safe quality of water at the point of use for mitigating the effect of post-collection contamination, and ensure sufficient quantities of water to allocate for personal and domestic hygiene. Focusing on the benefits of improving access to water at the point of consumption is essential to generate more realistic estimations, suitable interventions and appropriate responses to need.