



Thames River

PHOSPHORUS REDUCTION COLLABORATIVE

Project Progress – May 2021

Muddy River (London)

Site:

The City of London has granted access to a test site fully serviced with access to the Medway Creek to test this technology from [Muddy River Inc.](#) The site location is unique as it is not influenced by urban runoff. The system is designed to operate year-round.



Partners:

Muddy River Inc. is working with researchers at Western University and GAPS to operate and monitor the technology.

Research description:

A 20 foot container houses a silt pre-filtration system, a reactor filled with lava rock (source of magnesium) and a post treatment filtration assisted with use of flocculant to capture dissolved phosphorus. In 2021, the reactor will be filled with magnesium pellets for a final test. The system, equipped to recover the phosphorus and effluent water, can be

treated for pH if adjustment is required. Operating parameters will be adjusted to optimize performance.

Water will be sampled after each step and a Western student will take samples at regular intervals, especially after major rain events.

Measurements:

Pounds of P removed will be the metric and calculated using data on total P and dissolved P to determine the technology's efficiency. The recovered phosphorus will be used for assessment of bioavailability.

Progress:

Initially the system was not equipped for pre-filtration which resulted in a catastrophic fouling of the unit. Following a retro-fit for pre-filtration the lava rock test continued, however with virtually no success. Working with Western researchers, Muddy River redesigned its test to rely on pure magnesium pellets where the ions would be released through electrolysis. The

University of Western Ontario conducted laboratory tests to determine the optimal magnesium pellet size in relation to contact time with water. The laboratory results are promising and the treatment system will be re-started in June 2021 to complete a scale up trial.