

Project Title: Polishing of Municipal Lagoon Effluent Using A Constructed Wetland and Vegetated Filter System

UNIVERSITÉ
de GUELPH
CAMPUS d'ALFRED

A. Crolla, C. Kinsley

In Partnership With:

Stantec Consulting Ltd.
Township of Alfred and Plantagenet
South Nation Conservation

Project Outline:

A pilot constructed wetland and vegetated filter system has been built to polish the municipal lagoon effluent from the Village of Alfred (approximate population of 1200 people) in Eastern Ontario, Canada. The municipal wastewater from the Village is currently being treated by a two lagoon (9 hectares each) system, which has an annual discharge in the spring. The pilot constructed wetland and vegetated filter system is being evaluated as a cost effective means for the polishing of municipal lagoon effluent to increase the sanitary sewage treatment capacity of the Village of Alfred. The pilot wetland operates from June to November and is designed to treat 155 m³/day of lagoon effluent, which represents approximately 10% of the lagoon system's daily influent volume.

Program Results :

Biochemical Oxygen Demand (BOD₅)

BOD₅ percent removal ranged from 30% to 67% as compared to the typical percent removals of 65% to 85%.

Total Ammonia (NH₃ + NH₄⁺)

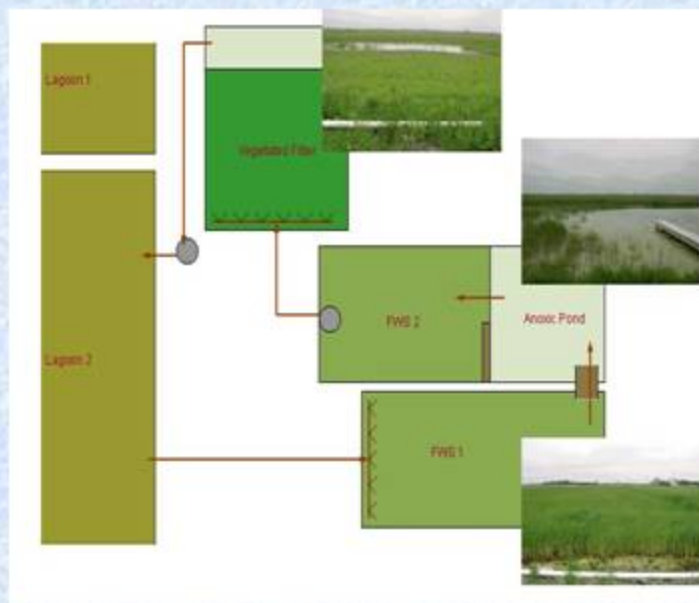
Total ammonia concentrations from the vegetated filter effluent ranged from 0.03 ± 0.02 to 0.40 ± 0.44 mg/L; well below the criteria of 1-3 mg/L set by the Ontario Ministry of the Environment.

Total Phosphorus (TP)

The percent removal of total phosphorus within the system ranged from 81% to 99% during the six year monitoring period.

Total Suspended Solids (TSS)

TSS mean concentrations in the vegetated filter effluent ranged from 4 ± 2 mg/L and 6 ± 4 mg/L; below the TSS discharge criteria of 10 mg/L.



The Alfred wetland is a marsh/pond/marsh system built in 1998. The marsh cells are vegetated with common cattails (*Typha latifolia*), while the vegetated filter is planted yearly with barley (*Hordeum vulgare*).

Support and Funding By:



Community Benefits Include: Reduced environmental pollution, a cost effective solution to polish sewage lagoon effluent