

EVALUATING MUNICIPAL WASTEWATER TREATMENT PLANT IMPACTS ON
SURFACE WATER QUALITY USING THE CANADIAN WATER QUALITY INDEX: A
CASE STUDY OF THE NITH RIVER, ONTARIO

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ABSTRACT

This case-study of water quality in the Nith River, Ontario, used the Canadian Council of Ministers of the Environment Canadian Water Quality Index (WQI) to examine data from two sampling sites, in three different time periods between 1981 and 2004 to determine if changes in the regulation of Municipal Wastewater Treatment Plant (MWTP) effluents resulted in observable changes in water quality. The WQI at Paris, ON has improved from “marginal” to “fair”, whereas New Hamburg has declined from “marginal” to “poor”. Changes in WQI are explained by: changes in MWTP requirements, MWTP improvements, increasing population, reduction in agricultural land, and increased urbanization. Time lags between changes in policy and Certificate of Approval renewals may partly account for slow improvements. In addition, high economic costs for plant upgrades, and extensive agriculture in the sub-watershed indicate it is unlikely that the Nith River will score “good” or “excellent” under existing policy approaches.