



WATER RESOURCES

Assimilative Capacity Studies

Cobourg Creek

Client and Location: Town of Cobourg, Ontario

The Town of Cobourg Water Pollution Control Plant No. 1 (WPCP No.1) was constructed in 1972 and expanded in 1996 on the west side of Cobourg Creek at the west end of University Avenue. The plant is a conventional activated sludge plant and has a design capacity of 16,026 m³ per day. The plant discharges to Cobourg Creek, which ultimately discharges to Lake Ontario, approximately 1.2 km downstream of the plant.

In response to occurrences of elevated total suspended solids (TSS) in the effluent discharged to Cobourg Creek from the Town's WPCP No. 1, the Ontario Ministry of the Environment ordered that the Municipality complete an assimilative capacity study. **GREENLAND** was retained to complete the study prior to the issuance of a new Certificate of Approval for WPCP No. 1. The study provided sufficient detail to establish discharge limits for Total Phosphorus, TSS, Total Ammonium as Nitrogen, Chlorine, E.coli. and BOD with consideration for downstream dissolved oxygen sag.

GREENLAND compiled the necessary data to generate design 7Q20 flows and background concentrations in the stream, as well as seasonal effluent flows and constituent concentrations from the treatment plant. A QUAL2E water quality model was developed, calibrated and validated to simulate in-stream concentrations of each parameter at regular distance intervals in Cobourg Creek. A CORMIX dispersion model was also used to simulate physical mixing in the creek downstream of the effluent discharge point.

The models were run iteratively to establish maximum allowable constituent concentrations in the discharge effluent, for each season, that would ensure compliance with Provincial Water Quality Objectives.

