



WATER RESOURCES

Integrated Water Balance and Nutrient Analysis

Lake Simcoe Basin Environmental Modeling Update

Client: Lake Simcoe Region Conservation Authority

Location: Lake Simcoe Watershed, Ontario

Following the successful completion of an Assimilative Capacity Study (ACS) by GREENLAND for the Lake Simcoe Region Conservation Authority (LRSCA) in 2006, GREENLAND was retained the next year to update the water balance and nutrient loading components. The latest version of CANWET™ was used. The project refined work of the ACS by utilizing CANWET™ (Version ‘3’) and incorporating latest science from a University of Guelph research team for monthly adjustments to surface runoff, groundwater recession, and evapotranspiration factors.

The updated model was developed for all 23 subwatersheds and used 18 years of up-to-date precipitation records. It also incorporated both urban and rural Best Management Practices. Model calibration was accomplished using available stream flow, base flow, and observed water quality data. The CANWET™ (Version ‘3’) model was run under existing land use and future land use conditions, in accordance with approved municipal Official Plan documents.

The modeled water balance and nutrient loads were summarized for each subwatershed within the Lake Simcoe Basin and showed how conditions were predicted to change under future land use conditions. Results showed that Best Management Practices could greatly reduce the phosphorus loading within the watershed. Completed June 2008.

