ADDRESSING DIRECT AND INDIRECT ENVIRONMENTAL IMPACTS OF A HIGHWAY EXTENSION WITH THE LAND TRANSFORMATION MODEL AND THE LONG-TERM HYDROLOGIC IMPACT ASSESSMENT MODEL

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ABSTRACT

The focus of this study is an approved environmental assessment for a highway extension in the south Lake Simcoe region in southern Ontario, which found the predicted impacts on wetlands, both direct and indirect, to be acceptable. The study examines the effectiveness of current methods used to predict impacts of land-use change. A retrospective analysis is performed on the environmental impacts of the proposed highway extension using two computer models: the Land Transformation Model (Purdue University, 2007) and the Long-Term Hydrologic Impact Assessment model (Purdue University, 2004; Local Government Environmental Assistance Network. 2008a). The models are used to estimate the future distribution of urbanization in the study area and the potential future loads of runoff and non-point source pollution to three selected wetland areas, with and without the presence of the highway. The results estimate that the presence of the highway and the subsequent distribution of landscape urbanization will cause more contaminants to be generated within the three wetland areas. The consequences of the predicted increase in contaminants on wetlands are discussed.