Hydrogeological Assessment

2411061 Ontario Inc.

Type of Document:

FINAL Report

Project Name:

Proposed Subdivision Development
1210-1240 Wharncliffe Road South
London, Ontario

Project Number:

KCH-23001068-A0

Prepared and Reviewed By:

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Date Submitted:

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Executive Summary

EXP Services Inc. (EXP) was retained by **2411061 Ontario Inc.** to conduct a hydrogeological assessment relating to the proposed development to be located at 1210 and 1240 Wharncliffe Road South in London, Ontario, hereinafter referred to as the 'Site'.

The objective of the hydrogeological assessment was to examine the hydrogeological characteristics of the Site by reviewing the Ministry of the Environment, Conservation and Parks (MECP) Water Well Records (WWR), reviewing the soils and groundwater information provided from a series of sampled boreholes and monitoring wells at the Site, collecting a full year of groundwater elevations to identify any seasonal variations, and assess the natural heritage features on the property. It is understood that the hydrogeological assessment will be submitted for review and approval by the City of London (the City) and the Upper Thames River Conservation Authority (UTRCA).

Based on the results of the hydrogeological assessment, the following findings are presented:

- The Site is situated within the Dingman Creek sub-watershed;

- The Site contains two (2) reaches of an unnamed drain that connect in the southern portion of the Site and an unevaluated wetland all of which are considered regulated lands of the UTRCA;

- The Site is covered with a low-permeability clayey silt overlying clayey silt till. The till is underlain by sandy silt;

- Overall, groundwater levels within the shallow till wells installed on Site (BH1/MW, BH6/MW, BH7/MW and BH8/MW-B) ranged from a seasonal low of 5.86 m below ground surface (bgs; February 2023) to a seasonal high of 0.36 m bgs (May 2023). Groundwater levels within the deeper well (BH8/MW-A) ranged from seasonal low of a 5.25 m bgs (February 2023) to a seasonal high of 4.88 m bgs (May 2023);

- The existing wetland is predominantly fed by surface water runoff with a downward vertical gradient. Surface water was present throughout the monitoring period in the southern portion of the wetland (station SW1) and was seasonally dry in the northern portion of the wetland (station SW2);

- Single Well Response Tests (SWRT) were completed on two (2) of the monitoring wells. Four (4) grain size analyses were carried out on samples of the clayey silt till. Hydraulic conductivities based on SWRTs and grain size analyses ranged between $1.7x10^{-9}$ m/s to $7.3x10^{-11}$ m/s for the till soils;

- Groundwater quality sampling results had no exceedances of the Ontario Drinking Water Quality Standards (ODWQS) Maximum Acceptable Concentrations (MAC) for any of the analyzed water quality parameters. Total aluminum, cobalt, copper, iron and zinc exceeded the Ontario Provincial Water Quality Objectives (PWQO) in the surface water samples;

- A search of MECP WWR within 500 m of the Site identified sixteen (16) water supply wells. None of the wells are shallow (< 10 m bgs);

- During construction, short term dewatering may be required where excavations extend into the shallow groundwater table. Based on the water levels and hydraulic conductivity of the shallow soils on Site, it is not expected that a dewatering permit from the MECP will be required; however, the need for a more detailed dewatering assessment should be reassessed at the detailed design stage of the project; and

- The monitoring wells on Site have been maintained for ongoing study past the completion of this report. When the wells are no longer required, they should be decommissioned in accordance with O. Reg. 903.

Groundwater and surface water level monitoring began in June, 2022 and continued until July 2023. A pre-consultation meeting was held with the City and UTRCA. The results of the scoped study requirements are included in the following report.