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November 6, 2015

Reference No. 1411-S001W

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C.C. Tatham & Associates Ltd.
50 Andrew Street South, Suite 100
Orillia, Ontario
L3V 7T5

Attention: Mr. Joshua Nemisz

**Re: Seasonal Groundwater Level Monitoring
Proposed Residential Development
Bayou Park Subdivision
Grand Tamarack Crescent, East of Highway 11
Township of Severn (Cumberland Beach)**

Dear Sir:

This letter is to present the results for long-term seasonal groundwater monitoring at the captioned site.

Background

A long-term groundwater monitoring program was carried out on the subject site located along the north and south sides of Grand Tamarack Crescent, east of Highway 11, in the Township of Severn (Cumberland Beach), in support of a Proposed Residential Development. The purpose of the seasonal groundwater monitoring was to assess the potential for the seasonal high groundwater levels to impact proposed foundation depths for future servicing and home construction. The monitoring program was authorized as an extension of work for a geotechnical investigation which included the soil investigation for the site; these findings were



presented under a separate cover (report Reference No. 1411-S001, dated February 2015).

Groundwater monitoring was conducted at three (3) monitoring well locations installed on the site as a part of the Hydrogeological Assessment. Groundwater levels were recorded manually during our site visits that were carried out every 3 to 4 months to correlate any groundwater table response to precipitation and seasonal fluctuations. The monitoring well locations are presented on Drawing No. 1, enclosed.

The monitoring well installation details are presented in the table below.

Monitoring Well Installation Details

Well ID	Installation Date	UTM Coordinates		Ground Surface El. (masl)	Well Depth (mbgs)	Screen Interval (mbgs)	Casing Dia. (mm)
		East	North				
BH/MW 1	Dec. 3, 2014	627091.8	4950331.7	221.4	4.6	2.4 - 4.6	50.8
BH/MW 7	Dec. 3, 2014	627226.0	4950660.6	220.4	4.6	2.4 - 4.6	50.8
BH/MW 8	Dec. 3, 2014	627067.1	4950532.8	220.4	4.6	2.4 - 4.6	50.8

The elevation at each monitoring well location was determined by survey using the Global Navigation Satellite System, with hand-held surveying equipment, Trimble GeoXH 6000, having an accuracy of $0.1 \pm$ m.

The groundwater levels measured by our representative during the monitoring period are presented in the following table.



Groundwater Level Measurements

Date	Measured Groundwater Levels Hydrogeological Monitoring Wells					
	BH/MW 1		BH/MW 7		BH/MW 8	
	Depth (mbgs)	EL. (masl)	Depth (mbgs)	EL. (masl)	Depth (mbgs)	EL. (masl)
Dec. 12, 2014 *	1.2	220.2	1.19	219.2	0.21	220.2
Mar. 31, 2015	0.72	220.6	0.70	219.7	0.02	220.4
July 31, 2015	1.06	220.3	1.22	219.2	0.11	220.3
October 23, 2015	2.23	219.1	1.72	218.7	1.07	219.3

* measurements taken prior to well development

The trend for shallow groundwater levels suggests that high water table conditions exist during spring, with groundwater levels across the site dropping by late summer and early fall. During summer, the groundwater levels are slightly lower than during spring. Due to heat and unusual rain precipitation, the groundwater levels are at their lowest over the summer and early fall seasons.

Discussion

Review of the groundwater level monitoring results suggests that the shallowest water table level occurs from March through to July. Subsoils at BH/MW 1 and BH/MW7 comprise primarily of silty clay and subsoils at BH/MW 8 comprise silt and sandy silt with trace of clay.

The measured groundwater levels range from 0.02 to 2.23 m below the prevailing ground surface, or at elevation 218.7 to 220.4 m above sea level (masl). The shallowest groundwater level recorded is 0.02 m below the prevailing ground, corresponding to elevation 220.4 masl, on monitoring well BH/MW 8. Given the



seasonal fluctuation of the water table, the shallow groundwater levels are expected to respond to precipitation received throughout the year.

We trust that this correspondence addresses your current requirements and ask that you contact the undersigned should you have any questions or require additional information.

Yours truly,
SOIL ENGINEERS LTD.

Bhawandeep Brar, B.Sc.

Gavin O'Brien, M.Sc. P.Geo.
BB/GO:dd



Encls.

- c. Soil Engineers Ltd (Barrie)
Attn: Mr. Darcy Heitzner



Approximate
Location of
Monitoring Well

Site Location



Title:

Monitoring Well Location
Plan

Project:

Proposed Residential
Development
Grand Tamarack Crescent,
East of Highway 11
Township of Severn
(Cumberland Beach)

Date

November 2, 2015

Reference No.

1411-S001W

Scale

N.T.S

Drawing No.

1

