



July 28, 2020  
File No.: G20144

Mr. Francesco Fiorani  
Brutto Consulting  
999 Edgeley Blvd. Unit 6  
Vaughan ON L4K 5Z4

Attention: Mr. Fiorani

**Re: Hydrogeological Assessment of Basement and Water Table  
287 & 291 Woolwich St., Waterloo**

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This letter presents an assessment of the water table elevation in relation to the proposed basements at the proposed residential development at 287 & 291 Woolwich St. in Waterloo, Ontario.

This assessment was undertaken to confirm that the water table elevation would be at least 0.5 m below the basement elevation of the proposed townhouses and that no permanent under slab dewatering drainage system would be required to reduce the potential impact from seasonal fluctuation on groundwater conditions.

### **Investigation Results**

CVD completed a geotechnical investigation at the property, including the drilling of six boreholes and the installation of three water-table monitoring wells on December 1, 2020, and water level monitoring conducted on December 15, 2020. The geotechnical investigation is summarized under separate cover (CVD, January 15, 2021).

Subsequent to the geotechnical investigation, follow-up water level monitoring has been conducted through the spring season on March 4, April 12 and May 11, 2021. Table 1 (attached) presents the water level and elevation data as well as a hydrograph of the data during the monitoring period.

Also attached to this letter is Figure 1, which presents interpreted “high” water table contours using the highest water levels measured. The highest levels at this property were measured in late fall (December 2020), which was a particularly wet period.

### **Water Table vs Basement Elevations**

K. Smart Associates and Caricari Lee Architects Inc. have utilized the high water table contours from Figure 1 to design the elevations of the proposed residences to provide a 0.6 m offset distance between the high water table to the basement floor elevations (BFE), as measured at the centre of each proposed

building (e.g., Block A FFE is 319.97 m and the BFE is 317.12 m (2.85 m drop), while the High Groundwater Elevation is 316.5 m, per Figure 1, for a 0.62 m separation).

On this basis, the basement off-sets have been designed to meet the City's requirement for separation and no future groundwater issues are anticipated. As a result, no groundwater drainage system (e.g., underslab drains) are necessary. Standard perimeter weeping tile and sump pump systems are recommended to handle any temporary surface water drainage that may reach the foundation level from time to time.

Should you have any questions regarding this assessment, please do not hesitate to contact us.

Yours truly,

**CHUNG & VANDER DOELEN ENGINEERING LTD.**



William (Sandy) Anderson, M.Sc., P.Eng.  
Senior Hydrogeologist and Engineer

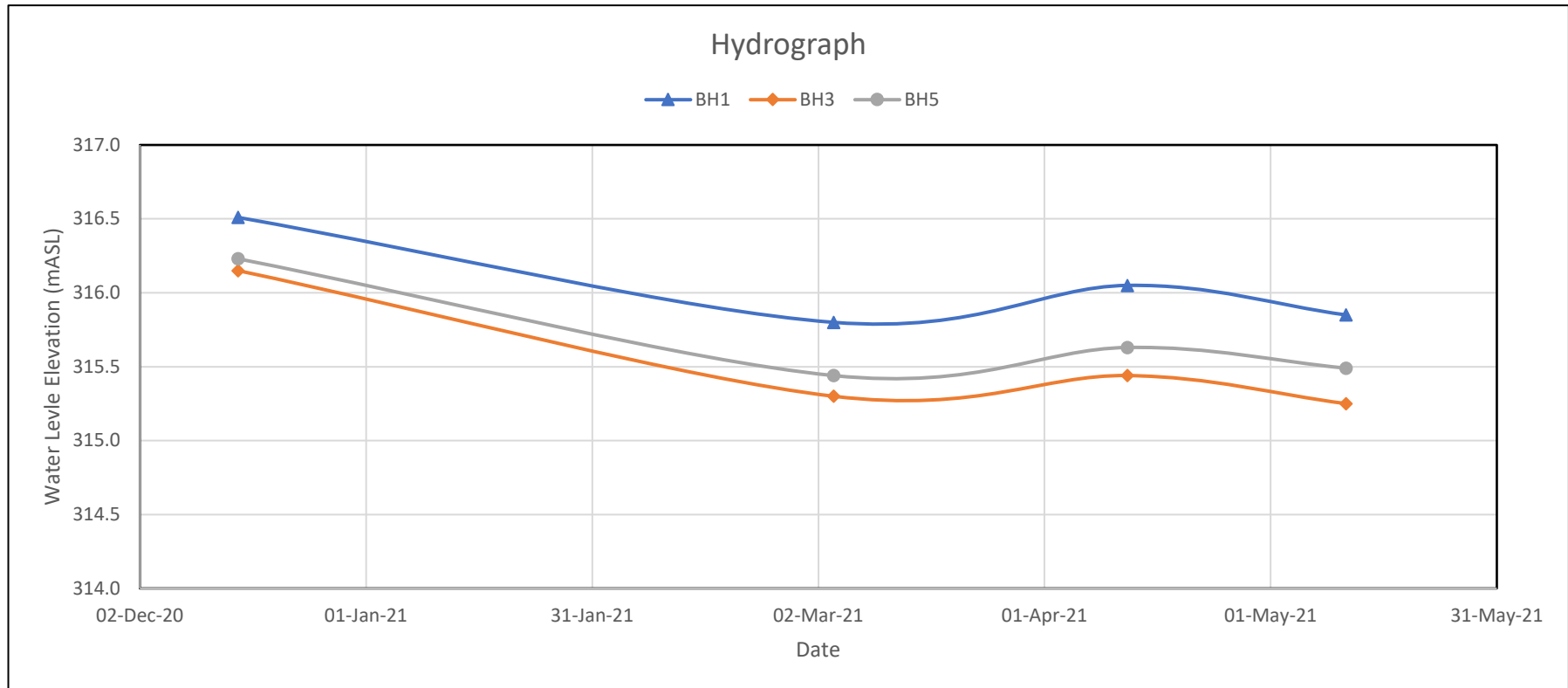


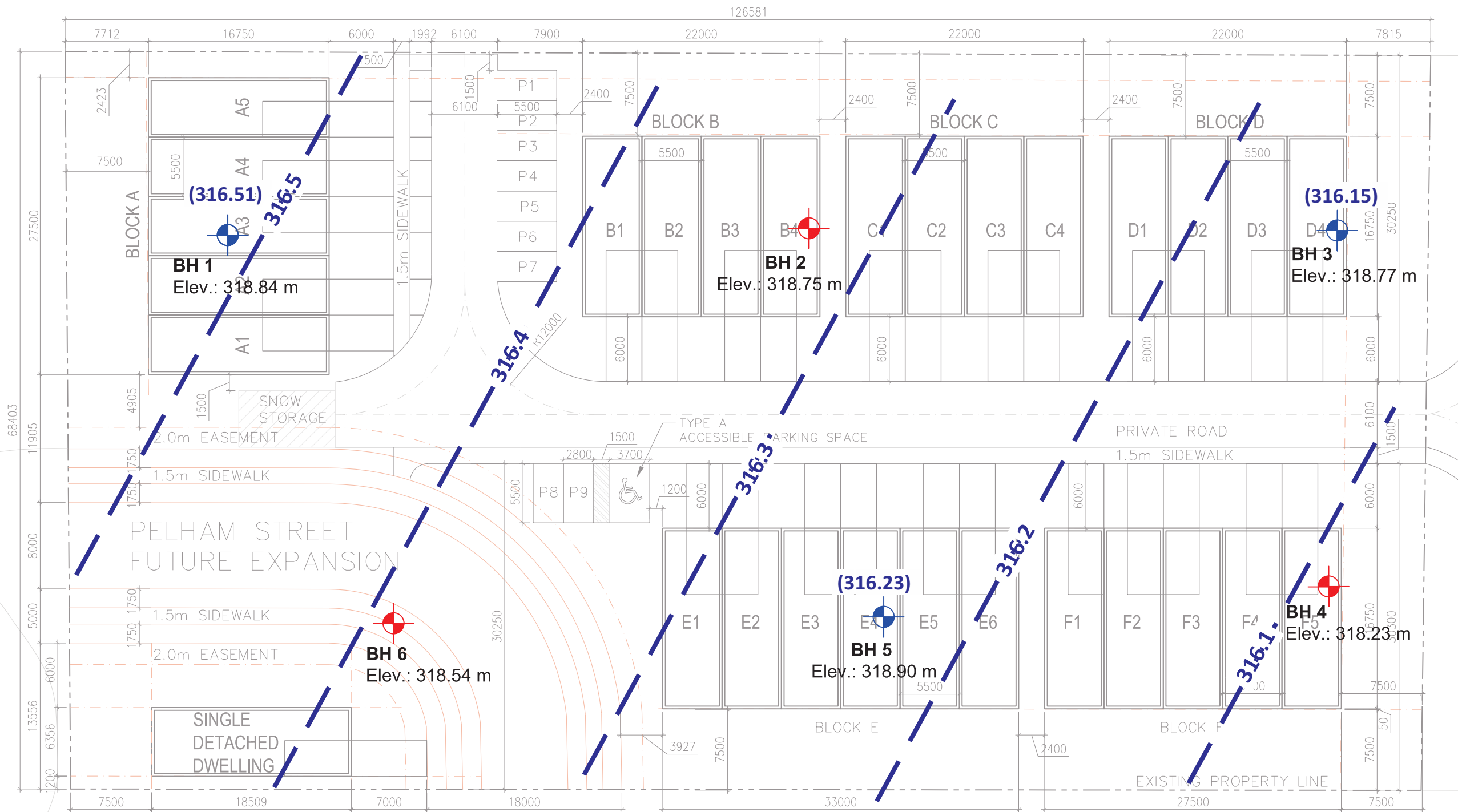
**Table 1 - Summary of Water Levels, Elevations & Fluctuations**

**287 - 291 Woolwich St., Waterloo  
CVD Engineering - G20144**

| Well | Ground Elevation (m ASL) | Water Level (m Below Ground) |           |           |           | Water Elevation (m Above Sea Level) |           |           |           | Water Fluctuation (m)<br>Dec 15 2020 - March 4 2021 |
|------|--------------------------|------------------------------|-----------|-----------|-----------|-------------------------------------|-----------|-----------|-----------|---|
|      |                          | 15-Dec-20                    | 04-Mar-21 | 12-Apr-21 | 11-May-21 | 15-Dec-20                           | 04-Mar-21 | 12-Apr-21 | 11-May-21 |   |
| BH1  | 318.84                   | 2.33                         | 3.04      | 2.79      | 2.99      | 316.51                              | 315.80    | 316.05    | 315.85    | -0.71   |
| BH3  | 318.77                   | 2.62                         | 3.47      | 3.33      | 3.52      | 316.15                              | 315.30    | 315.44    | 315.25    | -0.85   |
| BH5  | 318.90                   | 2.67                         | 3.46      | 3.27      | 3.41      | 316.23                              | 315.44    | 315.63    | 315.49    | -0.79   |

- Notes: 1) All Elevations Referenced to Geodetic Survey  
2) Negative Water Level Fluctuation is a Decline in Water Level from Initial






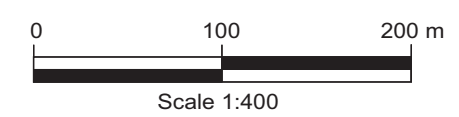
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**CLA** 2021/02/22

**LEGEND**

-  Monitoring Well & Borehole (CVD 2020)
- (316.23)** Measured Water Table Elevation (mASL) (December 15, 2020)
- 316.1 —** Interpreted Water Table Contour (mASL) (December 15, 2020)

 **CHUNG & VANDER DOELEN**  
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**Figure 1**  
 Interpreted "High" Water Table  
 Hydrogeological Assessment  
 287 & 291 Woolwich St., Waterloo

Drawn By: SA Date: May 12, 2021 File No.: G20144