

DSI AND COR	BC HYDRO AND POWER AUTHORITY	PROJECT NO. - BOREHOLE NO.
FORMER WHONNOCK SUBSTATION	DRILL: HOLLOW STEM AUGER	V23201251.001-MW102
MAPLE RIDGE, BRITISH COLUMBIA		
SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> SPT <input type="checkbox"/> A-CASING <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> CORE	
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE <input type="checkbox"/> PEA GRAVEL <input type="checkbox"/> SLOUGH <input type="checkbox"/> GROUT <input type="checkbox"/> DRILL CUTTINGS <input type="checkbox"/> SAND	

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Depth (ft)
0	GRAVEL (FILL) - coarse, dry, grey			0
	SAND AND GRAVEL - some silt, moist to wet, brown, no discernible odour			
1	- wet			Jan.28/11
	SILT - clayey, moist, compact, beige grey			5
2				
3				10
4	- blue silt and clay			15
5				20
6	END OF BOREHOLE (6.10 metres) Monitoring well installed to 2.44 metres			20
7				25
7.5				25

 <small>A PROFESSIONAL COMPANY</small>	LOGGED BY: BR	COMPLETION DEPTH: 6.1 m
	REVIEWED BY: BD	COMPLETE: 11/01/18
	DRAWING NO: 23201251-02	Page 1 of 1

9.2.1 Groundwater Elevations

The groundwater depths in the monitoring wells were measured periodically between August 26, 2010 and March 21, 2011 to observe potential seasonal variation in aquifer water table. Initially, monitoring wells EBA10-MW1 and MW5 were dry. The data indicated that the aquifer water table above the clay layer on the Property is potentially seasonal, with the highest groundwater elevation in January. During the summer months, the groundwater table thickness is significantly reduced. During the August 26, 2010 monitoring well development event, the thickness of the groundwater table was approximately 0.6 m. Sampling events during winter months revealed water table thicknesses of approximately 1.0 m to 2.5 m, with a greater water table thickness within wells on the southern portion of the Property.

EBA surveyed the elevation of the top of monitoring wells EBA10-MW1, MW2, MW3, and MW5 on August 30, 2010. Monitoring wells EBA10-MW101, 102, and 103 were surveyed on January 28, 2011, and were tied into the initial surveying event. The elevations are relative to an assumed bench mark of 100 m, which was assigned to a surveying pin located northeast corner of the intersection of 96 Avenue and 284 Street. Surveyed datum elevations along with the groundwater depths are provided in Table 1. Based on the relative groundwater elevations of January 28, 31, and February 21, 2011, the groundwater underneath the Property has been determined to flow in a south-easterly direction under a hydraulic gradient in the order of 0.048 m/m. This is consistent with the groundwater flow direction that was calculated during the Stage 2 PSI using groundwater elevations measured on September 4, 2010.

The groundwater elevations and contours measured on January 28, 31, and February 21, 2011 are shown on Figures 11A, 11B and 11C.

9.2.2 Hydraulic Conductivity

EBA completed particle-size analysis on a soil sample from borehole EBA10-MW102. The particle-size analysis for MW102-2 revealed the soils to be silt and clay, with a distribution, by weight, of 40% clay, 59 % silt, and 1% sand. Based on this, EBA estimated the hydraulic conductivity of the soils, using the average of hydraulic conductivities calculated using ten different methods (using methodology based on Vukovic and Sorro - 1992).

Below is a summary of the different calculated hydraulic conductivities, and the corresponding method used:

Calculated Hydraulic Conductivities

Method	Hydraulic Conductivity (m/s)	Method	Hydraulic Conductivity (m/s)
Hazan	2.47×10^{-10}	Slichter	4.91×10^{-11}
Terzaghi	7.14×10^{-11}	Beyer	2.94×10^{-10}
Sauerbrei	1.48×10^{-10}	Krueger	4.61×10^{-09}
Kozeny	5.69×10^{-10}	Zunker	8.28×10^{-10}
Zamarinu	2.22×10^{-09}	USBR	8.34×10^{-11}
Maximum	4.6×10^{-09}	Minimum	4.91×10^{-11}
Arithmetic Mean	9.12×10^{-10}	Geometric Mean	3.30×10^{-10}