Appendix F: Groundwater Reports



As requested, Hy-Geo Consulting has completed an assessment of the quantity and quality of well WID 69081 (WTN 128906) on your property, based on a 24.25 hour pumping test conducted by Independent Pump & Mechanical Ltd., from February 14 to February 15, 2024. The well was investigated as a potential water supply source to support a proposed brewery on the property at 12036 West Coast Road, Jordan River.

It is estimated that the proposed brewery for the subject property would initially need 350,000 L/year (959 L/day) of potable water potentially growing to 3,000,000 L/year (8219 L/day) over 10 years (Totangi Properties, 2024). This would be equivalent to an initial well production rate of 0.18 USgpm growing to 1.51 USgpm, from the well.

This report summarizes the results of pump testing the well and monitoring of potential effects on neighbouring wells. A groundwater assessment report on the southern portion of the property was previously completed by Hy-Geo Consulting (Kohut, 2023).

WELL LOCATION

Well WID 69081 is situated at an elevation just under 55 m, along the southern boundary of PID 9573356 on the north side of West Coast Road at Jordan River (Figure 1). There are numerous existing wells in the general region directly south and west of the property (Figure 1). First Creek lies approximately 360 m west of the well site at an elevation between 45 and 50 m. Another well, WID 18153 (WTN 95648) situated approximately 165 m northeast of WID 69081 was utilized as an observation well during the test pumping of WID 69081.

PUMPED WELL WID 69081 (WTN 128906)

Well WID 69081 is a 6 inch (15.24 cm) diameter well drilled in 2023 by Drillwell Enterprises Ltd., to a depth of 111 feet (33.83 m) and completed with 10 feet (3.05 m) of a screen assembly consisting of 5 feet (1.52 m) of 5 inch (12.7 cm) diameter 50 slot stainless steel well screen set at a depth from 106.5 to 111 feet (32.46 to 33.83 m) in

grey sandy gravel and a 2 foot (0.61 m) length of riser pipe with K packer from 104.5 to 106.5 feet (31.85 to 32.46 m). A copy of the well driller's log is provided in Appendix A.

The driller rated the well at 30 USgpm based on a brief 3 hour bailing test. Nonpumping water level recorded in October 2023 was 71 feet (21.64 m) below top of casing with a stickup of 22 inches (55.9 cm) above ground level. The well lies on a glacial-fluvial terrace that slopes gently southwesterly towards the ocean and is completed in a confined glacio-fluvial sand and gravel aquifer system designated as Aquifer 944 under the *BC Aquifer Classification System* (Bernardinucci and Ronneseth, 2002). The aquifer is classified as a IIB aquifer with a moderate level of demand and moderate vulnerability to contamination from surface sources.



Figure 1. Location of pump tested well WID 69081, Observation Well WID 18153 and neighbouring reported wells. Base map from Province of British Columbia (2024a).

OBSERVATION WELL WID 18153 (WTN 95648)

Well WID 18153 is a 6 inch (15.24 cm) diameter well drilled in 2006 by Drillwell Enterprises Ltd., to a depth of 114 feet (34.75 m) and completed open bottom without a screen. The well encountered coarse gravel to 56 feet (17.07 m), and grey sand from 56 to 59 feet (17.07 to 17.98 m) underlain by gravel with sand and cobbles to 114 feet (34.75 m). A copy of the well driller's log is provided in Appendix A. The absence of any reported fine-grained deposits suggests that the aquifer may be unconfined at this location.

The driller rated the well at 10 USgpm based on a brief 1.5 hour air lifting test. Nonpumping water level recorded in July 2006 was 71 feet (21.64 m) below top of casing with a stickup of 18 inches (45.7 cm) above ground level.

CLIMATE

The region is situated in the *Coastal Western Hemlock Biogeoclimatic Zone* with long, mild, and wet winters, and relatively sunny and dry summers. While a long-term climate station for Jordan River is not available, monthly normal precipitation for the Sooke Lake North climate weather station for the 1981-2010 period has been reported by the Government of Canada (2024) for climate station 1017563 as shown in Figure 2. The region receives about 1497 mm of precipitation on an annual basis (Government of Canada, 2024). Precipitation normally follows a seasonal cycle, with highest rainfall during the fall, winter and early spring months while the summer months are subject to drought conditions.

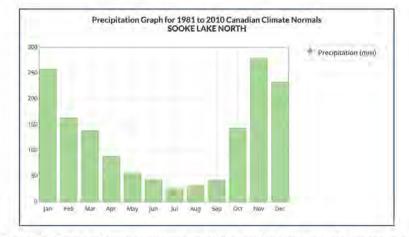
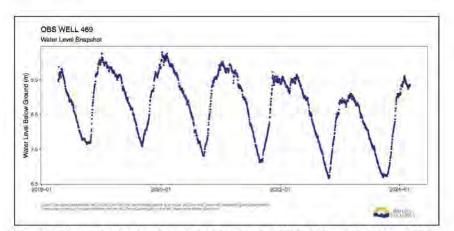
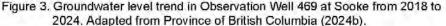


Figure 2. Graph of monthly normal precipitation for Sooke Lake North station (Climate ID. 1017563). Graph from Government of Canada (2024).

REGIONAL WATER LEVEL FLUCTUATIONS

From historic observation well data in unconsolidated deposits on southern Vancouver Island, groundwater levels in surficial wells generally rise and fall with the seasons in response to available precipitation, becoming highest during the late fall, winter and spring months and declining during the May to September period (Kohut *et al.*, 1984). Historic data from the closest provincial Observation Well 469 at Sooke, shows long-term water levels fluctuating over a narrow range of about 2.5 m with highest water levels during the winter months. Similar natural fluctuations might be expected for Aquifer 944 in the Jordan River area with water levels seasonally high in January and February.





PUMPING TEST OF WELL WID 69081 (WTN 128906)

A minimum 24 hour pumping test is the recommended standard for assessing wells completed in unconsolidated aquifers (Ministry of Environment, 2010). The project well WID 69081 was subsequently pump tested by Independent Pump & Mechanical Ltd., at a near constant rate, averaging 45.07 L/min (11.91 USgpm) for 24.25 hours from 8:00 am February 14 to 8:15 am, February 15, 2024. The pumping rate was determined from a totalizing flow metre and periodic measurements by filling of a 45 gallon drum.

Pumped water was discharged into a drainage ditch 200 feet (61 m) down slope away from the wellhead towards the west. Manual water level readings were taken in the project well during the test at prescribed intervals (Ministry of Environment, 2010) and a *Solinst Levelogger*® 5 datalogger set in the well also recorded water levels at ten minute intervals. A *Solinst Barologger*® 5 barometric data logger was also employed on site during the test.

Water levels in the neighbouring Observation well WID 18153 (WTN 95648) were also monitored during the pumping test with a *Solinst Levelogger*® 5 datalogger at ten minute intervals. Upon pump shutdown, recovery water levels in the pumped well WID 69081 were manually taken at prescribed intervals for 7.75 hours. Limited recovery water levels were also taken in Observation well WID 18153 for 5 hours. Recovery water levels were also recorded by the *Solinst Levelogger*® 5 dataloggers in both wells.

Water samples were taken from the pumped well near the end of the test and delivered within 20 hours of sampling with ice packs to the Bureau Veritas laboratory in Esquimalt for analysis of chemical and bacteriological parameters. One of the samples was also field filtered by A. Kohut for determination of dissolved metals. All samples were unadulterated and taken from the pumped well and delivered to the laboratory by A. Kohut.

PUMP TESTING RESULTS

Pumped Well WID 69081

Well test drawdown and recovery data for the pumped well are provided in Appendix B. Appendix C contains a copy of the water quality analytical laboratory report from Bureau Veritas.

The pumping test was started at 8:00 am on February 14 and ended at 8:15 am on February 15, 2024. Figure 4 shows the drawdown in the pumped well during pumping.

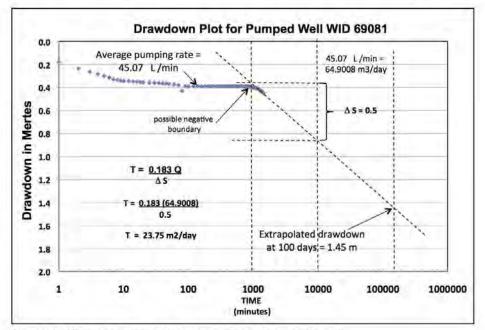


Figure 4. Semi-logarithmic drawdown graph for pumping well.

Drawdown at the end of the test reached 0.45 m below the initial non-pumping water level of 19.12 m below the top of casing at 0.56 m above ground utilizing only 3.5% of the available drawdown of (12.73 m) to the top of the well screen assembly at a depth of 31.85 m (106.5 feet). The water level reached relatively stabilized conditions within 100 minutes of the start of pumping but continued to drawdown slightly as the test progressed. A possible negative boundary condition appears to have been encountered at about 840 minutes into the test (Figure 4). Transmissivity of the aquifer was calculated at 23.75 m²/day based on the latter portion of the test.

Figure 5 shows the water level in the well, prior to during and after the pump test as recorded by the datalogger. Prior to the test the water level in the well was rising gradually (Figure 5). Initially on pumping the well drew down very quickly, becoming relatively stable and then drawing down slightly. Minor fluctuations in water level during the test may be related to pumping effects from nearby wells and possibly tidal effects. Upon shutdown the well recovered almost instantaneously but 0.1 m short of a full recovery. Water levels then continued to fall slowly. Figure 6 shows a semi-logarithmic plot of the recovery plot for the well. Recovery was not 100% complete as water levels were gradually falling slightly during and after the test.

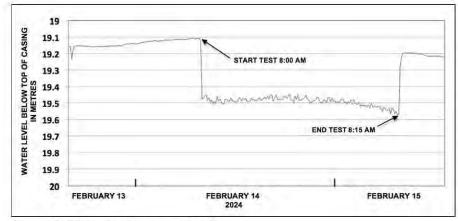


Figure 5. Water level in pumped well.

Given that the well was tested during the wettest time of the year, water levels during the late summer could be much lower reducing the available drawdown in the well by 3.0 metres. Extrapolation of the drawdown in the well to 100 days of continuous pumping as shown in Figure 4, indicates the drawdown would reach 1.45 m. Specific capacity of the well after 100 days would be 46.52 L/min per metre of drawdown. Utilizing this specific capacity and 70 percent of the available summer drawdown of 9.73 m in the well would suggest a long term yield of about 317 L/min or 84 USgpm. It is obvious that the well is capable of supplying much more than the rate at which it was pumped. The ultimate capacity of the well however, would be much less than 317 L/min (84 USgpm) and limited by the well diameter and screen design. Additional pump testing at higher rates would also be required to assess the maximum well capacity. Based on the current test, a well capacity twice that at which it was pumped or 90 L/min (24 USgpm) would be most possible without considering potential well interference effects. The well is therefore, entirely capable of meeting the maximum anticipated projected demand of the brewery for 3,000,00 L/year (8219 L/day). after 10 years. This would be equivalent to a well production rate of 1.51 USgpm (5.72 L/min), from the well.

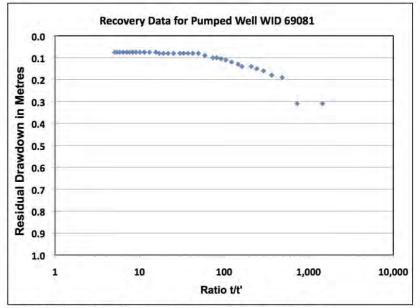


Figure 6. Semi-logarithmic recovery graph for pumped well.

Observation Well WID 18153

Figure 7 shows the water level in the observation well, prior to, during and after the pumping test. The water level in the observation well mirrors the water level response of the pumped well except when the pump is shut down. There is only a very minor water level recovery response in the observation well. This suggests that some dewatering of the aquifer has occurred during the pumping test.

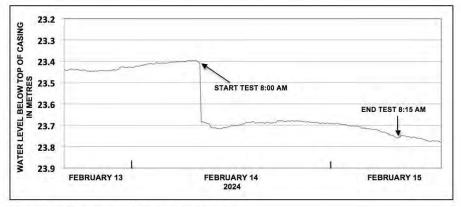


Figure 7. Water level in observation well.

Figure 8 shows the drawdown date for the observation well extracted from the datalogger as the manually taken readings were compromised during the test. Extrapolation of the drawdown data to 100 days indicates that the drawdown would be similar to the extrapolated drawdown in the pumped well.

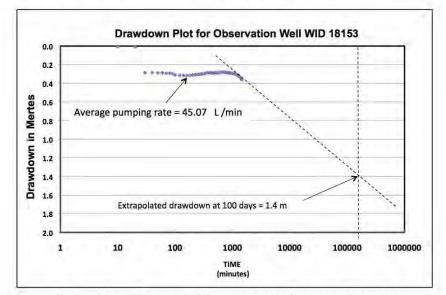
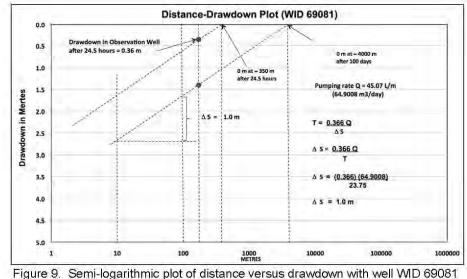


Figure 8. Semi-logarithmic plot of drawdown data in observation well.

Figure 9, indicates the lateral extent of the drawdown cone during the pumping test and after 100 days pumping at a rate of 45.07 L/min (11.91 USgpm). Assuming the aquifer is isotropic, Figure 9 indicates that the pumping test would have affected an area within a radius of 350 m from the pumping well. After 100 days pumping the radius of influence would theoretically extend to 4000 m.

While the radius of the cone of influence of pumping well WID 69801 at a rate of 45.07 L/min (11.91 USgpm) was relatively large (350 m) during the test, the amount of well interference was relatively small at <0.5 m. Similarly, while the radius of the cone of influence pumping well WID 69801 for 100 days would be quite large, again the degree of interference anticipated would also be relatively small at < 1.5m. This degree of well interference would not likely have any significant effect on the safe available drawdown in neighbouring domestic wells.

At a maximum continuous pumping rate of 5.72 L/min or (1.51 USgpm) the projected interference drawdowns would be proportionally much less and only 0.18 m in the observation well after 100 days of pumping. The cone of influence after 100 days, would also not extend to more than 300 m from the pumping well.



pumping up to 100 days.

Figure 10 shows the minimum size of the up gradient area that could be contributing recharge to the upper reaches of Aquifer 944 and well WID 69081. Recharge sources would include infiltration of a portion of precipitation falling on the northern portion of Aquifer 944, infiltration from runoff upslope of the aquifer, infiltration from First Creek and from other small creeks up slope. Based on a conservative estimate, for example, of only 2 percent of the annual normal rainfall (1497 mm) over the minimum recharge area, direct infiltration of precipitation, estimated to be 69.54 L/min in itself, would be more than enough to sustain a pumping rate for well WID 69081 at 5.72 L/min or (1.51 USgpm).

Based on the potential extent of the cone of influence of the well up to 300 m after 100 days pumping at 5.72 L/min or (1.51 USgpm) an examination of the location of licensed springs in the vicinity of well WID 69081 was undertaken. Figure 11 indicates that there is one licensed spring, namely Bliss Spring situated within 300 meters of the well.

Bliss Spring is licensed for a total quantity of 29.55 m^3 /day or equivalent to 20.52 L/min (Table 2). While currently unknown, there is a possibility that continuous pumping of well WID 69801 at a rate of 5.72 L/min or (1.51 USgpm) could have a minor effect on the flow of Bliss Spring.

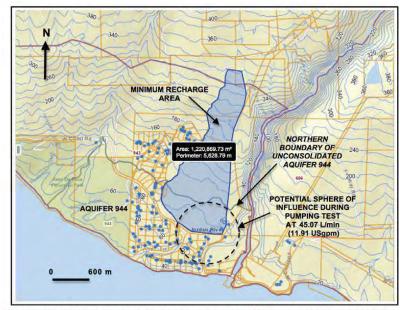


Figure 10. Minimum recharge area and potential cone of influence during pumping test of well WID 69081. Base map from Province of British Columbia (2024a).

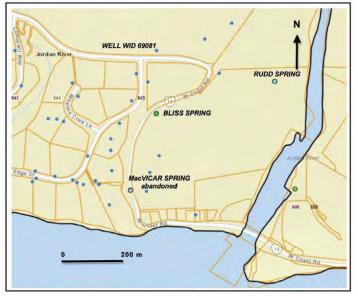


Figure 11. Location of licensed springs in the vicinity of well WID 69801. Base map from Province of British Columbia (2024a).

Licence Number			Quantity (MD)	
F014458	19430909	Bliss Spring	DOMESTIC	2.273
C123888	20080430	Bliss Spring	DOMESTIC	2.273
F011450	19380816	Bliss Spring	DOMESTIC	4.546
F127744	19410616	Bliss Spring	DOMESTIC	2.273
C061320	19840224	Bliss Spring	DOMESTIC	2.273
C110196	19950825	Bliss Spring	COMM. ENTERPRISE: ENTERPR	2.273
F012739	19380816	Bliss Spring	DOMESTIC	4.546
F014742	19491013	Bliss Spring	DOMESTIC	4.546
F110384	19380816	Bliss Spring	DOMESTIC	2.273
F014458	19430909	Bliss Spring	COMM. ENTERPRISE: ENTERPR	2.273
C110715	19960219	Rudd Spring	COMM. ENTERPRISE: ENTERPR	22.73
C110876	19960401	Rudd Spring	CAMPS & PUB FACIL: PUBLIC	2.273
			Total:	54.552

Table 2. Licensed springs in vicinity of well WID 69081.

Data from Province of British Columbia (2024a).

WATER QUALITY RESULTS

Laboratory results of the February 15, 2024 sampling (Table 1), indicate that the water quality of the project well met or exceeded the *Guidelines for Canadian Drinking Water* (Health Canada, 2022) for all parameters tested except for pH at 6.47, True Colour at 128 TCU, Turbidity at 9.9 TU, Total and Dissolved Iron at 9220 and 9560 µg/L respectively and Total and Dissolved Manganese at 202 and 198 µg/L respectively. **No detectable total coliforms or E.coli., bacteria were reported.**

Manganese levels above 20 μ g/L and total iron above 300 μ g/L are of aesthetic concern and may result in staining of laundry and/or toilet fixtures. Manganese above 120 μ g/L is also a health risk for infants consuming the water if it is used to prepare baby formula as it can have can effects on neurological development and behaviour; deficits in memory, attention, and motor skills.

The overall mineralization of the water is very low with a total dissolved solids (TDS) content of 90 mg/L. The Langelier Index @ 4.4°C is very low at -2.60 indicating the water is aggressive and corrosive for metal piping.

While bacteriologically potable, the presence of elevated levels of iron, manganese, colour, turbidity and low pH would require treatment for commercial purposes. Elevated levels of these parameters could also lead to potential corrosion issues, staining and deposits in the water system.

Parameters/Site and Sampling Date	WELL WID 69081 Jordan River Well	WELL WID 69081 Jordan River Well		Canadian DWGuideline 2022	Units
	Feb 15/24	Feb 15/24			6
PHYSICAL TESTS True Colour	128		-	< or =15	TCU
Transmittance at 254nm	18			< 01 = 10	%T/cm
Conductivity	110				µS/cm
Total Hardness (CaCO ₃)	30.9				mg/L
pH	6.47	1.1	1.1.1.1.1.1.1.1	7.0-10.5	pH units
Total Dissolved solids (TDS)	90			< or = 500	mg/L
Turbidity	9.9			<1.0	NTU
ANIONS	-				
Alkalinity (Total as CaCO ₃)	41				mg/L
Alkalinity (PP as CaCO ₃)	<1.0		1	12	mg/L
Bicarbonate	50		1.2.202.2	3	mg/L
Carbonate	<1.0		1.7.7.7.7.7		mg/L
Hydroxide	<1.0				mg/L
Chloride	4.4			< or = 250	mg/L
Fluoride	<0.050 <0.020		-	1.5	mg/L
Nitrate (N) Nitrite (N)	<0.020	-		10	mg/L mg/L
Total Organic Nitrogen (N)	0.589		-		mg/L
Total Ammonia (N)	0.29				mg/L
Nitrate plus Nitrite (N)	<0.020				mg/L
Total Nitrogen (N)	0.877				mg/L
Total Organic Carbon (C)	1.5				mg/L
Total Phosphorus (P)	0.0058			0.05	mg/L
Total Sulphide	0.0058			0.05	mg/L
Sulphide (as H2S) Sulphate	<1.0			< or =500	mg/L mg/L
	\$1.0	DISCOUNTS		~ 01 - 300	ilig/L
TOTAL METALS Aluminum	13.3	DISSOLVED 5.1	METALS	100 and 2900	µg/L
Antimony	<0.50	<0.50		6	µg/L
Arsenic	8.03	7.78		10	µg/L
Barium	7.0	6.7	2	2000	µg/L
Beryllium	<0.10	<0.10			µg/L
Bismuth	<1.0	<1.0	12.22	Same Transfer	
Boron	<50	<50	1.	5000	µg/L
Cadmium	0.031	<0.010		7	µg/L
Chromium Cobalt	<1.0 <0.20	<1.0 <0.20		50	µg/L
Copper	2.30	0.81		1000 and 2000	µg/L µg/L
Iron	9220	9560		< or = 300	µg/L
Lead	0.20	<0.20		5	µg/L
Manganese	202	198	12.00	20 and 120	µg/L
Mercury	< 0.0019			1	µg/L
Molybdenum	<1.0	<1.0			µg/L
Nickel	<1.0 <0.10	<1.0 <0.10		50	µg/L
Selenium Silicon	<0.10	<0.10		50	µg/L
Silver	<0.020	<0.020			µg/L µg/L
Strontium	25.5	26.6	-	7000	µg/L
Thallium	<0.010	< 0.010		1000	Pare
Tin	<5.0	<5.0			µg/L
Titanium	<5.0	<5.0		1	µg/L
Uranium	<0.10	<0.10		20	µg/L
Vanadium	<5.0	<5.0			µg/L
Zinc	41.9 <0.10	26.9 <0.10		< or = 5000	µg/L
Zirconium Calcium	<0.10	<0.10 8.07			µg/L mg/L
Magnesium	2.74	2.84			mg/L
Potassium	0.786	0.786			mg/L
Sodium	6.47	6.32		< or = 200	mg/L
Sulphur	<3.0	<3.0			mg/L
MICROBIOLOGICAL					
Total coliforms	0			ND	CFU/100m
Escherichia coli (E. coli)	0			ND	CFU/100m

Turbidity guideline applies to a surface water source or a groundwater source under the direct influence of surface water.

ND means none detectable. Exceedances shown in red font.

The following conclusions on the available water quantity and water quality of well WID 69081 can be made:

- 1 Well WID 69081 was pump tested for 24.25 hours between February 14 and February 15, 2024 by Independent Pump & Mechanical Ltd., at a near constant rate, averaging 45.07 L/min (11.91 USgpm). The maximum well capacity could be as much as 90 L/min (24 USgpm) without considering potential well interference effects. The well is therefore, entirely capable of meeting the initial demand of 350,000 L/year (959 L/day) and potentially growing to 3,000,000 L/year (8219 L/day) over 10 years. This would be equivalent to an initial well production rate of 0.18 USgpm growing to 1.51 USgpm (5.72 L/min).
- Analysis of observation well date indicates that during the pumping test, the drawdown cone likely extended over an affected area with a radius of 350 m surrounding the pumping well.
- While the radius of the cone of influence of the pumping well during the test was relatively large (350 m), the amount of well interference was relatively small at <0.5 m.
- 4. One licensed spring, namely Bliss Spring is situated within 300 meters of well WID 69081. There is a possibility that eventual pumping of well WID 69081 at 5.72 L/min or (1.51 USgpm) could have some minor effect on this water source after 100 days of continuous pumping. Further investigations of this water source may be warranted as part of a water licence application for the well.
- 5. Water samples collected at the end of the pumping test and submitted for laboratory testing indicate the water is of potable quality, with no detectable collform or E.coli bacteria. The presence of Total Iron, Dissolved Iron, Total Manganese and Dissolved Manganese exceeding the aesthetic levels under *Guidelines for Canadian Drinking Water Quality* (Health Canada, 2022) will require treatment for commercial purposes. Elevated levels of these elements could also lead to potential corrosion issues, staining and deposits in the water system. Elevated manganese at or above 120 µg/L is also a health risk for infants consuming the water if it is used to prepare baby formula as it can have can effects on neurological development and behaviour; deficits in memory, attention, and motor skills.

RECOMMENDATIONS

 Consideration should be given to equipping the discharge line from the well with a totalizing water flow meter to monitor and record the well use with time and installing a water level sounding tube in the well for taking periodic water level measurements.

- Further water quality sampling should be undertaken to assist with the design of an appropriate water treatment system that will be effective and economical for the intended use of the water for commercial purposes.
- Under the Water Sustainability Act a water licence would be required to operate the well for commercial purposes. An application for use would need to be submitted to FrontCounter BC in Nanaimo through the website https://portal.nrs.gov.bc.ca/web/client/home
- Investigate and assess the conditions surrounding Bliss Spring and any potential for well interference by pumping of well WID 69081.

CLOSURE

This report was prepared in accordance with generally accepted engineering, hydrogeological and consulting practices. It is intended for the prime use of Totangi Properties Ltd., in connection with its purpose as outlined under the scope of work for this project. This report is based on data and information available to the author from various sources at the time of its preparation and the findings of this report may therefore be subject to revision. Data and information supplied by others has not been independently confirmed or verified to be correct or accurate in all cases. Any errors, omissions or issues requiring clarification should be brought to the attention of the author. The author retains full copyright of the material contained in the report. The author and Hy-Geo Consulting accepts no responsibility for damages suffered by any third party as a result of any unauthorized use of this report.

Respectfully submitted,

KOHUT 10194

Alan P. Kohut PEng. Principal and Senior Hydrogeologist

HY-GEO CONSULTING Permit to Practice Number: 1001034

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PPSS-3

COLUMBIA he Best Place on Eas		linistry of wironmen	🗆 Well	Construction Report Closure Report	4994 Polkey Road Duncan, B.C. V9L 6W Phone: 250-746-5269 and faxe-mail here, it deal	Minist	try Well ID Plate Number: try Well Tag Number: onfirmation/alternative spec riginal well construction rep	cs. attached
Wher nam Iailing add Vell Locatio or Legal de	ie: Iress: on: Add escription	Tota Victor, dress: stree	ngi ia Ma et no. 120 Plan		1777. 194 Town Viet est Coast Ro Block Se	toria bad to	notes & definitions of a . Prov. &C Postal (wm <i>Tordan</i> A Rg. Land District	code V8W2E River
rientation	drilling: of well ell (see n	air rotary	utm N cable to horizontal	asting: 0421647 orthing: 5364372 ol mud rotary auger Ground elevation: 18 FSupply Sub-cla private domestic water sup	m or driving jetting exc ft (asi) Metho ss of well:	od (see note 4): Domes	(specify): Dual Reten GRS Stic	J.
From	To ft (bgl)	Relative Hardness	see notes 7- Colour	14) or closure descript Material Description (Use reco List in order of decreasing	ommended terms on reverse.	Water-bearing Estimated Flow (USgpm)	Observations (e.g., fractu well sorted, silty wash),	
26' 71'	26' 71' 111' 111'	Hard med harse Herd	Bran Gray Cray Cray	Grand + Cobbles Tick + very sitte Grand, Sandy tiel	J grend J , quy color	Sw		
From ft (bgl) ft	To (bgl) 7'	Dia Ca in Ca	teel / Re		ft (bgl) ft (bgl) 1046 1066	Dia in 5″ Ki	Type (see note 18) Pucker + Rissr	Slot Size
From ft (bgl) ft O I	To (bgl)	Dia in (0" S 6" S	teel / Re steel	1 Open Hole Thickness Drive in Shoe .219 DR	$\begin{array}{c c} \mathbf{From} & \mathbf{To} \\ \mathbf{ft}(bgl) & \mathbf{ft}(bgl) \\ \hline 1046 & 1066 \\ \mathbf{i}666^{*} & 1117 \\ \hline \end{array}$	in 5" Ki 5" S	Redor + Risor S. Screen	Slot Size
ft (bgl) ft 0 1 0 2 Surface seal: Method of ins Backfill: Type iner: PV/ Diameter:	To (bgl) 7' 11' : Type: stallation a:	Dia in Ca Ca Ca Ca Ca Ca Ca Ca Ca Ca Ca Ca Ca	teel / Re iteel inite □ Pumped	'Open Hole Thickness Drive in Shoe 	From To ft (bgl) ft (bgl) IO4'6' IO6'6' IO6'6' IIII' ft Intake: Screen type: Iteles ft Screen material: Screen opening: Iteles in Screen bottom: Bit Screen bottom:	in 5 '' Ki 5 '' 5 Open bottom scope Pipe s Stainless steel Continuous slot ail XPlug 1 ft To: ft	Perker + Riser	
From ft (bg) f	To (bgl) 7' 11' stallation a: C (bgl) Tc ed by: Surgecify):	Dia in Ca (O [*] S G ⁻⁽ⁱ⁾ S BerC ⊗ Poured Other (specif in : ft (bg)) ging □ Jetti	heel / Re isteel Pumped y): Perforated:	'Open Hole Thickness Drive in Shoe 	ft (bg)) ft (bg)) ft (bg)) ft (bg)) ft (bg)) ft (bg) ft (bg) f	in 5 '' Ki S '' S Open bottom scope Pipe s Stainless steel [Continuous slot ail XPlug 1 ft To: ft arial: pletion data 111 ft (btoc)	Purker + Risser	• 050" ify): pipe in (\ft (bgl) Aft (bgl)
From ft (bg)) ft ft (bg)) ft (bg) ft (To (bgl) 7' 11' :: :	Dia in Ca (0" S (0" S (1") S (1") (1") (1")	heel / Re- heel / Re- heel Pumped y): Perforated: illing Dump cop Durat por Durat por Durat por Durat por Durat por Durat	'Open Hole Thickness Drive in In In	From To ft (bgl) ft (bgl) 1046 1066 1066 1111 ft Intake: screen type: Teles ft Screen type: ft Screen opening: screen opening: Screen type: ft Screen opening: in Screen opening: ft Filter pack: From: Type and size of mate Final stick up: Screen SWL: 71" Artesian flow: Type of well cap: Where well D plates in Where well D plates in	in 5 '' Ki 5 '' S Open bottom scope Pipe s Stainless steel [Continuous slot ail XPlug 1 ft To: ft arial: pletion data 11(ft (bloc) USgr Velded Lid s attached: O V formation:	Perfor + Rissr S, Screen Uncased hole ize Plastic Other (specify): Thickness: Finished well depth: Estimated well depth: State of the second Depth to bedrock: N Estimated well yield: 3 pm, or Artesian pressure: Well disipfecter Multi Calory	• 050" ify): pipe in (\
From ft (bgi) ft ft (bgi) ft i ft (bgi) ft	To (bgl) 7' 11'	Dia in Ca in Ca in Ca Ca in Sec.C is Poured Other (specif in n in ft (bgl) ging Jetti mated by if (bgl) Galarity Ca Clear (X) t clear(V):	heel / Re: ; + cel Pumped y): Perforated: illing Othe Sgpm Durat oc) Pumping characteri Cloudy	'Open Hole Thickness Drive in In In	From To ft (bgl) ft (bgl) 1046 1066 1066 1111 ft Intake: gt Intake: ft Intake: ft Screen type: ft Screen type: ft Screen opening: ft Screen opening: ft Screen opening: ft Screen opening: ft Filter pack: From: Type and size of mate Final well com Total depth drilled: SWL: 71 * Artesian flow: Type of well cap: W Where well ID plate is Well closure: Method of closure: Method of closure: Sealant material:	in S '' Ki S '' S Open bottom scope Pipe s Stainless steel [Continuous slot ail XPlug ft To: ft arial: pletion data 111 ft k' in ft (bloc) uSgr Jeldud Lod s attached: O y formation: Poured Pur	Perfor + Rissr S, Screen Uncased hole ize Plastic Other (specify): Thickness: Finished well depth: Estimated well depth: State of the second Depth to bedrock: N Estimated well yield: 3 pm, or Artesian pressure: Well disipfecter Multi Calory	• 050" ify): pipe in (\

PPSS-3

BRITISH COLUMBIA Well Alteration Report	4994 Polley Hoad Inden, B.C.2 V9L 6W3 hone: 250-746-5268	Confirmat Original w	I ID Plate Number: 853 I Tag Number: 95648 ion/alternative specs, attached vell construction report attached
Red lettering indicates minimum mandatory information.	S	ee reverse for r	otes & definitions of abbreviations
Dwner name: IUTONGI FULESTNY MA.	Town V/10	tora	Prov.BC Postal Code &
Aailing address: 2000× 404 Veil Location: Address: Street no. Street name	Town/(c	To	Adada di t
D.L.	Block Sec.	1	Rg. Land District
or) PID: (and) Description of well location (attach sk		t-hose por	5 in plans: 4 JTR, 2387
The share is the state of the s	iE.		
IAD 83: Zone: <u>V</u> see note 2) UTM Northing: <u>536 1407</u> UTM Easting: <u>V</u> 0421504	m or	Latitude (see n Longitude:	ote 3):
lethod of drilling: air rotary able tool and rotary auger drive			(specify): Dual Retar
Prientation of well: vertical horizontal Ground elevation: 199		od (see note 4):	l l
lass of well (see note 5): Water Supply Sub-class	of well: Dome	2560	
later supply wells: indicate intended water use: 2 private domestic 2 water supply sy	stem irrigation	commercial or indus	trial other (specify):
Lithologic description (see notes 7-14) or closure description From To Relative Colour Material Description (Use recomme ft (bgl) ft (bgl) Hardness List in order of decreasing am	ended terms on reverse.	Water-bearing Estimated Flow (USgpm)	Observations (e.g., fractured, weathere well sorted, silty wash), closure details
	ount, in approabley	(eegpiii)	
or on the bill	ense	aig	
26 27 Long Jone	ppr	NR.	
27 My Green Greened Hand	Contras	00	
Did al # P	the		
Dua Nor De	chann		
quere	_	-	
6.			
		-	
ft (bgl) ft (bgl) in in Shoe	ft (bgl) ft (bgl)	Server	
Image: Surface seal: Type: Image: Surface seal: Type: Surface seal: Type: Surface seal: Type: Image: Surface seal: Type: Ty		scope Pipe si Stainless steel	ze] Plastic Other (specify):
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IIII G Attack SIN DR Surface seal: Type: Depth: SIN Depth: ft Aethod of installation: Poured Pumped Thickness: in in Sackfill: Type: Depth: ft in in in Iner: PVC Other (specify): Diameter: in in in	Screen type: Tele Screen material: Screen opening: Screen bottom: B Screen bottom: B Filter pack: From:	scope Pipe si Stainless steel Continuous slot ail Plug 1 ft To: ft	ze Plastic Other (specify):
Image: Sector	Screen type: Tele Screen material: Screen opening: Screen bottom: BFilter pack: From: Type and size of mat	scope Pipe si Stainless steel C Continuous slot ail Plug 1 ft To: ft erial:	ze Plastic Other (specify): Slotted Perforated pipe Plate Other (specify): Thickness:
Image: Surface seal: Type: Depth: Surface seal: Type: Depth: ft Aethod of installation: Pourped Pumped Thickness: in Matchill: Type: Depth: ft Iner: PVC Other (specify): Diameter: in Diameter: in Thickness: in rcom: ft (bgl) To: ft (bgl) Developed by: Developed by: Developed by:	Screen type: Tele Screen material: Screen opening: Screen bottom: B Filter pack: From: Type and size of mat Final well com	scope Pipe si Stainless steel C Continuous slot ail Plug I ft To: ft erial: pletion data:	ze Plastic Other (specify): Slotted Perforated pipe Plate Other (specify): Thickness:
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arrace seal: Type: Depth: ft surface seal: Type: Depth: ft fethod of installation: Poured Pumped Thickness: in iaackfill: Type: Depth: ft in in iaackfill: Type: Depth: ft in in iner: PVC Other (specify):	Screen type:	scope Pipe si Stainless steel Continuous slot ail Plug f ft To: ft erial: upletion data: ft in ft (btoc) USgr s attached: formation:	ze Plastic Other (specify): Slotted Perforated pipe Plate Other (specify): Thickness: Finished well depth: Finished well depth: Gottom of Artesian pressure: Welt disinfected: Yes
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arrange arrange arrange arrange surface seal: Type: Depth: ft Aethod of installation: Poured Pumped Thickness: in iaackfill: Type: Depth: ft in iaackfill: Type: Depth: ft iner: PVC Other (specify): in iner: PVC Other (specify): in iner: ft (bgl) To: ft (bgl) Perforated: From: ft (bgl) To: @ Coveloped by: in Total duration: hrs @ Other (specify): Total duration: hrs icles: Mell yield estimated by: hrs Pumping Air lifting Bailing Other (specify): Icles: USgpm Duration: hrs SWL before test: ft (btoc) Pumping water level: ft (btoc) Obvious water quality characteristics: Solour/odour: Water sample collected: Image: Water first, last) (see note 19): Solour/Autor Water sample collected: Image: Registration no. (see note 20): Solour/Autor Solour/Autor <	Screen type:	scope Pipe si Stainless steel Continuous slot ail Plug 1 ft To: _ft erial: ft ft ft ft 	ze Plastic Other (specify): Slotted Perforated pipe Plate Other (specify): Thickness: Finished well depth: fit (b Depth to bedrock: fit (b Estimated well yield: USgp om, or Artesian pressure: Well disinfected: Yes nped Backfill material:
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APPENDIX B

PUMPING TEST DATA

B1: Pumped Well WID 69081(WTN 128906)

B2: Observation Well WID 18153 (WTN 95648)

APPENDIX B1

Pumping Test Data for Subject Well

Project: Well WD 6	59081 (WTN 128906)
Client;	
Location: 12036 We	st Coast Rd., Jordan River
Date of Test:	Wednesday February 14, 2024
Test Conducted by:	Independent Pump & Mechanical Ltd

33.83 m deep (111 feet) 45.07 L/min (11.91 USgpm) 19.12 m Pumped Well: Pumping Rate: Static Water Level:

	reading		of sounding tube
	56 m (
Observation V	Vells:	WID 1815	3 (WTN 95648)
Pump Start Ti		8:00 AM	Feb. 14, 2024
Pump End Tin	ne:	8:15 AM	Feb. 15, 2024
Analysis by:		A. Kohut, F	P.Eng.

Drawdown Data:

Recovery Data: Time f Time t' Water Level t/t' Residual

Time (minutes)	Water Level (m)	Drawdown (m)	Time f (minutes)	Time t' (minutes)	Water Level (m)	t/t ^e	Residual Drawdown (m)
fummereal				(minutes)			
1	19,300	0.180	1456	1	19,430	1456.0	0.310
2	19.360	0.240	1457	2	19,430	728.5	0.310
3	19.385	0.265	1458	3	19.310	486.0	0.190
4	19.405	0,285	1459	4	19.300	364.8	0.180
5	19.420	0,300	1460	5	19.280	292.0	0.160
6	19.435	0.315	1461	6	19.270	243.5	0 150
7	19.450	0.330	1462	7	19.260	208.9	0.140
8	19.455	0.335	1464	9	19.260	162.7	0.140
9	19.460	0.340	1465	10	19.250	146.5	0.130
10	19.465	0.345	1467	12	19.240	122.3	0.120
12	19.465	0.345	1469	14	19.230	104.9	0.110
14	19.470	0.350	1471	16	19.225	91.9	0.105
16	19.470	0.350	1473	18	19.220	81,8	0.100
18	19 475	0.355	1475	20	19.220	73.8	0.100
20	19.475	0,355	1480	25	19.210	59,2	0.090
25	19.480	0.360	1485	30	19.200	49.5	0.080
30	19.480	0.360	1490	35	19.200	42.6	0.080
35	19.482	0.362	1495	40	19.200	37.4	0.080
40	19.485	0.365	1500	45	19.200	33.3	0.080
45	19,485	0.365	1505	50	19.200	30,1	0.080
50	19.490	0.370	1515	60	19.200	25.3	0.080
60	19.495	0.375	1525	70	19.200	21.8	0.080
70	19.500	0.380	1535	80	19.200	19,2	0.080
80	19.550	0,430	1545	90	19.200	17.2	0.080
90	19.510	0,390	1555	100	19.195	15,6	0.075
100	19.510	0.390	1575	120	19,195	13.1	0.075
120	19.510	0.390	1595	140	19.195	11.4	0.075
140	19.510	0,390	1615	160	19.195	10,1	0.075
160	19.510	0,390	1635	180	19.195	9,1	0.075
180	19.510	0.390	1655	200	19.195	8.3	0.075
200	19.510	0.390	1675	220	19.195	7.6	0.075
220	19.510	0.390	1695	240	19.195	7.1	0.075
240	19.510	0.390	1725	270	19.195	6.4	0.075
270	19.510	0.390	1755	300	19.195	5.9	0.075
300	19.510	0.390	1785	330	19.195	5.4	0.075
330	19,510	0.390	1815	360	19.195	5.0	0.075
360	19,510	0,390	-			1000	
390	19,510	0.390	-			_	-
420	19.510		-				-
450	19.510 19.510	0.390					
480	19.510	0.390	-				
510						_	
540	19,510	0.390	-				-
57.0	19,510	0.390					-
600	19.510 19.510	0.390			-		
660	19.510	0.390		-	-	-	-

Time (minutes)	Water Level (m)	Drawdown (m)	Time t (minutes)	Time t' (minutes)	Water Level (m)	t/t'	Residual Drawdowr (m)
690	19.510	0.390				_	6
720	19.510	0.390			1	_	
750	19.510	0.390	- 1 1				
780	19.510	0.390					
810	19.510	0.390					
840	19.510	0.390		2	1		1
870	19.515	0.395	(i)				
900	19.515	0.395			· · · · · · · · · · · · · · · · · · ·		
930	19.520	0.400		5			
960	19.520	0.400		1	1		
990	19.520	0.400			·		· · · · · · · · · · · · · · · · · · ·
1020	19.525	0.405					1
1050	19.525	0.405					Č.
1080	19.525	0.405					6
1110	19.525	0.405		1			
1140	19.530	0.410	_				
1170	19.530	0.410					
1200	19.530	0.410			·		
1230	19.540	0.420		1	1		6
1260	19.540	0.420					0.0
1290	19.550	0.430	-		C7		1
1320	19.550	0.430	-	-	-		-
1350	19.550	0.430	· · · · · · · · · · · · · · · · · · ·		7		
1380	19.560	0.440					
1410	19.565	0.445		1. I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I	4		
1440	19.570	0.450					0
1455	19.570	0.450		Sec. 19	·	_	

APPENDIX B2

Pumping Test Data for Observation Well WID 18153

Project: Well WID 69081 (WTN 128906) Reference: all readings from top of sounding tube Client: at lop of csing Obs Well Stick up: 0.30 m (12") Location: 12036 West Coast Rd., Jordan River Pumped Well: WID 69081 (WTN 128906) Date of Test: Wednesday February 14, 2024 Test Conducted by: Independent Pump & Mechanical Ltd. Observation Well: 34.75 m deep (114 feet) Pump Start Time: 8:00 AM Pumping Rate: 45.07 L/min (11.91 USgpm) Pump End Time: 8:15 AM A. Kohut, P.Eng. Static Water Level: 23,400 Analysis by: Drawdown Data: Recovery Data: Water Level Water Level Residual t/ť Time Drawdown Time t Time t' Drawdown (minutes) (m) (m) (minutes) (minutes) (m) 23.406 23.411 23.686 10 0.006 20 30 0.011 0.286 23.683 40 50 0.287 60 23 687 0.287 23.692 23.690 23.696 70 0.292 0.290 80 90 0.296 23.710 23.714 23.716 100 0 310 120 0314 140 0.316 160 23.717 0.317 23.714 23.710 180 0.314 200 0.310 220 23.709 0.309 23.705 240 260 0.305 0.303 23.701 23.702 23.694 280 0.301 300 330 0.302 0 294 360 23.686 0.286 390 23.687 0.287 23.690 23.688 23.689 23.685 420 0.290 450 0 288 480 0.289 0.285 510 23.689 23.688 540 0.289 570 0.288 23.688 23.678 23.684 23.680 23.682 600 0.278 630 0.284 680 0.280 730 0.282 23.682 23.684 23.687 23.689 780 0.284 830 0.287 880 0.289 23.693 0.293 0.292 0.294 930 23.693 23.692 23.694 23.697 980 1030 1080 0,297 23.697 23.703 23.705 23.715 23.719 23.731 23.731 23.738 23.757 23.760 1130 0.303

0.305

0.315 0.319 0.331

0.338

0.360

Note: All readings during pumping extracted from datalogger.

Feb. 14, 2024

Feb. 15, 2024

(m)

1180

1230 1280 1330

1380

APPENDIX C LABORATORY WATER QUALITY ANALYSES FOR WID 69081 (WTN 128906)

February 15, 2024



Your Project #: TOTANG Your C.O.C. #: WI034487

Attention: AL KOHUT HY-GEO CONSULTING 4470 Arsens Place VICTORIA, BC Canada V8Z 2M9

> Report Date: 2024/02/26 Report #: R3467520 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C410716 Received: 2024/02/15, 11:29

Sample Matrix: Water # Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3, HCO3, OH	1	N/A	2024/02/16	BBY6SOP-00026	SM 24 2320 B m
Chloride/Sulphate by Auto Colourimetry	-4)	N/A	2024/02/21	BBY6SOP-00011 / BBY6SOP-00017	SM24-4500-CI/SO4-E m
Color (True) by Automated Analyzer	1	N/A	2024/02/16	BBY6SOP-00057	SM 24 2120 C m
Conductivity @25C	1	N/A	2024/02/16	BBY6SOP-00026	SM 24 2510 B m
Fluoride	1	N/A	2024/02/21	BBY6SOP-00037	SM 24 4500-F C m
Sulphide (as H2S) (1)	1	N/A	2024/02/21		Auto Calc
Hardness Total (calculated as CaCO3) (3)	1	N/A	2024/02/22	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO3)	ì	N/A	2024/02/22	BBY WI-00033	Auto Calc
Mercury (Total) by CV	1	2024/02/10	6 2024/02/16	AB SOP-00084	BCMOE BCLM Oct2013 m
Heterotropic Plate Count (MF) in Water	1	N/A	2024/02/16	BBY4SOP-00003	SM 24 9215D
Iron Related Bacteria (4)	1	N/A	2024/02/16	BBY4SOP-00004	BI BART User Manual
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2024/02/22	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (dissolved) (5)	1	N/A	2024/02/21	BBY750P-00002	EPA 6020b R2 m
Na, K, Ca, Mg, S by CRC (CPMS (total)	1	N/A	2024/02/22	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (total)	1	N/A	2024/02/21	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Nitrogen (Total)	1	N/A	2024/02/22	BBY6SOP-00016	SM 24 4500-N C m
Ammonia-N (Total)	1	N/A	2024/02/21	AB SOP-00007	SM 24 4500 NH3 A G m
Nitrate + Nitrite (N)	1	N/A	2024/02/16	BBY6SOP-00010	SM 24 4500-NO3- H m
Nitrite (N) Regular Level Water	1	N/A	2024/02/16	BBY65OP-00010	SM 24 4500-NO2- m
Nitrogen - Nitrate (as N)	1	N/A	2024/02/17	BBY WI-00033	Auto Calc
Nitrogen (Tot. Organic) Calculation	1	N/A	2024/02/22	BBY WI-00033	Auto Calc
pH @25°C (6)	1	N/A	2024/02/16	BBY6SOP-00026	SM 24 4500-H+ B m
Sat. pH and Langelier Index (@ 4.4C)	ì	N/A	2024/02/22	BBY WI-00033	Auto Calc
Sat. pH and Langelier Index (@ 60C)	1	N/A	2024/02/22	BBY WI-00033	Auto Calc
Total Sulphide (1)	1	N/A	2024/02/21	AB SOP-00080	SM 24 4500 S2-A D Fm
Sulphate Reducing Bacteria (4)	1	N/A	2024/02/16	BBY4SOP-00004	BI BART User Manual
Total Dissolved Solids (Filt. Residue)	1	2024/02/2	1 2024/02/22	BBY6SOP-00033	SM 24 2540 C m
Total Coliform & E.Coli by MF-Chromocult	1	N/A	2024/02/16	BBY450P-00143	Merck KGaA Version 1
Carbon (Total Organic) (7)	1	N/A	2024/02/16	BBY6SOP-00053	SM 24 5310 B m
Turbidity	1	N/A	2024/02/16	BBY6SOP-00027	SM 24 2130 B m

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Bureau Veritas Burriaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Your Project #: TOTANG Your C.O.C. #: WI034487

Attention: AL KOHUT HY-GEO CONSULTING 4470 Arsens Place VICTORIA, BC Canada V8Z 2M9

> Report Date: 2024/02/26 Report #: R3467520 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C410716

Received: 2024/02/15, 11:29 Sample Matrix: Water

Samples Received: 1

Analyses	Date Quantity Extracted	Date Analyzed	Laboratory Method	Analytical Method
UV Transmittance (2)	1 2024/02/23	2024/02/2	3 CAM SOP-00459	SM 24 5910 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8

(2) This test was performed by Bureau Veritas Campobello, 6740 Campobello Road , Mississauga, ON, L5N 2L8

(3) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).

(4) Presence/Absence Method. Number is an estimate.

(5) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.

(6) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Ventas endeavours to analyze samples as soon as possible after receipt.

(7) TOC present in the sample should be considered as non-purgeable TOC.

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Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386



Your Project #: TOTANG Your C.O.C. #: WI034487

Attention: AL KOHUT HY-GEO CONSULTING 4470 Arsens Place VICTORIA, BC Canada V82 2M9

> Report Date: 2024/02/26 Report #: R3467520 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C410716 Received: 2024/02/15, 11:29

Encryption Key

Please direct all questions regarding this Certificate of Analysis to: Michelle Rivest (Hospedales), B.Sc., Customer Solutions Representative Email: michelle.rivest@bureauveritas.com Phone# (604) 734 7276

This report has been generated and distributed using a secure automated process.

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Raphael Kwan, Senior Manager, BC and Yukon Regions responsible for British Columbia Environmental laboratory operations.

> Total Cover Pages : 3 Page 3 of 13

Bureau Veritas Burnaby: 4606 Canada Way VSG 1K5 Telephone(604) 734-7276 Fax(604) 731-2386



HY-GEO CONSULTING Client Project #: TOTANGI

VIHA PKG, WELLS/SPRINGS - BURNABY (WATER)

Bureau Veritas ID		CJG147		
Sampling Date		2024/02/15 08:20	1.00	Sec. 1
COC Number	1	W1034487		
	UNITS	JORDAN R. WELL	RDL	QC Batch
ANIONS				
Nitrite (N)	mg/L	<0.0050	0.0050	B287596
Calculated Parameters				
Total Hardness (CaCO3)	mg/L	30.9	0.50	B285428
Nitrate (N)	mg/L	<0.020	0.020	B285468
Total Organic Nitrogen (N)	mg/L	0.589	0.020	B286395
Sulphide (as H2S)	mg/L	0.0062	0.0020	B285763
Misc. Inorganics				
Conductivity	uS/cm	110	2.0	B287440
рH	pН	6.47	N/A	B287434
Total Organic Carbon (C)	mg/L	1,5	0.50	B287657
Total Dissolved Solids	mg/L	90	10	B290422
Anions				
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	B287437
Alkalinity (Total as CaCO3)	mg/L	41	1.0	B287437
Bicarbonate (HCO3)	mg/L	50	1.0	B287437
Carbonate (CO3)	mg/L	<1.0	1.0	B287437
Dissolved Fluoride (F)	mg/L	<0.050	0.050	B290280
Hydroxide (OH)	mg/L	<1.0	1.0	B287437
Total Sulphide	mg/L	0.0058	0.0018	B289796
Chloride (Cl)	mg/L	4.4	1.0	B290536
Sulphate (SO4)	mg/L	<1.0	1.0	B290536
MISCELLANEOUS				
True Colour	Col. Unit	128	10	B287165
Transmittance at 254nm	%T/cm	18	N/A	B293309
Nutrients				
Total Ammonia (N)	mg/L	0.29	0.015	B290458
Nitrate plus Nitrite (N)	mg/L	<0.020	0.020	B287592
Total Nitrogen (N)	mg/L	0.877	0.020	B290418
Physical Properties				
Turbidity	NTU	9.9	0.10	B287002

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HY-GEO CONSULTING Client Project #: TOTANGI

VIHA PKG, WELLS/SPRINGS - BURNABY (WATER)

Bureau Veritas ID	/	CJG147		
Sampling Date		2024/02/15 08:20	1.00	·
COC Number	1	W1034487		
	UNITS	JORDAN R. WELL	RDL	QC Batch
Elements				-
Total Mercury (Hg)	ug/L	<0.0019	0.0019	B287581
Total Metals by ICPMS				
Total Aluminum (Al)	ug/L	13.3	3.0	B290301
Total Antimony (Sb)	ug/L	<0.50	0.50	B290301
Total Arsenic (As)	ug/L	8.03	0.10	B290301
Total Barium (Ba)	ug/L	7.0	1.0	B290301
Total Beryllium (Be)	ug/L	<0.10	0.10	B290301
Total Bismuth (Bi)	ug/L	<1.0	1.0	B290301
Total Boron (B)	ug/L	<50	50	B290301
Total Cadmium (Cd)	ug/L	0.031	0.010	B290301
Total Chromium (Cr)	ug/L	<1.0	1.0	B290301
Total Cobalt (Co)	ug/L	<0.20	0.20	B290301
Total Copper (Cu)	ug/L	2.30	0.20	B290301
Total Iron (Fe)	ug/L	9220	5.0	B290301
Total Lead (Pb)	ug/L	0.20	0.20	B290301
Total Manganese (Mn)	ug/L	202	1.0	B290301
Total Molybdenum (Mo)	ug/L	<1.0	1.0	B290301
Total Nickel (Ni)	ug/L	<1.0	1.0	B290301
Total Selenium (Se)	ug/L	<0.10	0.10	B290301
Total Silicon (Si)	ug/L	17200	100	B290301
Total Silver (Ag)	ug/L	<0.020	0.020	B290301
Total Strontium (Sr)	ug/L	25,5	1.0	B290301
Total Thallium (TI)	ug/L	<0.010	0.010	B290301
Total Tin (Sn)	ug/L	<5.0	5.0	B290301
Total Titanium (Ti)	ug/L	<5.0	5.0	B290301
Total Uranium (U)	ug/L	<0.10	0.10	B290301
Total Vanadium (V)	ug/L	<5.0	5.0	B290301
Total Zinc (Zn)	ug/L	41.9	5.0	B290301
Total Zirconium (Zr)	ug/L	<0.10	0.10	B290301
Total Calcium (Ca)	mg/L	7.86	0.050	B285820
Total Magnesium (Mg)	mg/L	2,74	0.050	B285820
Total Potassium (K)	mg/L	0.786	0.050	B285820
Total Sodium (Na)	mg/L	6.47	0.050	B285820

Page 5 of 13. Bureau Ventas Burnaby: 4606 Ganada Way V56 1K5 Telephone(604) 734-72,76 Fax(604) 731-2386



HY-GEO CONSULTING Client Project #: TOTANG

VIHA PKG, WELLS/SPRINGS - BURNABY (WATER)

Bureau Veritas ID		CJG147	h.,	Sec. 14	
Sampling Date	1	2024/02/15 08:20	1	<u></u>	
COC Number	1	WI034487			
	UNITS	JORDAN R. WELL	RDL	QC Batch	
Total Sulphur (S)	mg/L	<3.0	3.0	B285820	
Microbiological Param.					
Heterotrophic Plate Count	CFU/mL	<1	1	B287355	
Iron Bacteria	CFU/mL	25	25	B287353	
Sulphate reducing bacteria	CFU/mL	<75	75	B287354	
Total Coliforms	CFU/100mL	0	N/A	B287351	
E. coli	CFU/100mL	0	N/A	B287351	
Calculated Parameters					
Langelier Index (@ 4.4C)	N/A	-2.60	N/A	B286396	
Langelier Index (@ 60C)	N/A	-1.82	N/A	B286397	
Saturation pH (@ 4.4C)	N/A	9.06	N/A	B286396	
Saturation pH (@ 60C)	N/A	8.29	N/A	B286397	

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HY-GEO CONSULTING Client Project #: TOTANG

CSR D. METALS (NO CV-HG)-DISS

Bureau Veritas ID		CIG147	-	-
Sampling Date		2024/02/15 08:20		
COC Number		WI034487	1.00	
	UNITS	JORDAN R. WELL	RDL	QC Batch
Calculated Parameters				
Dissolved Hardness (CaCO3)	mg/L	31.8	0.50	B285810
Dissolved Metals by ICPMS			1	-
Dissolved Aluminum (Al)	ug/L	5.1	3.0	B287484
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	B287484
Dissolved Arsenic (As)	ug/L	7.78	0.10	B287484
Dissolved Barium (Ba)	ug/L	6.7	1.0	B287484
Dissolved Beryllium (Be)	ug/L	<0.10	0.10	B287484
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	B287484
Dissolved Boron (B)	ug/L	<50	50	B287484
Dissolved Cadmium (Cd)	ug/L	<0.010	0.010	B287484
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	B287484
Dissolved Cobalt (Co)	ug/L	<0.20	0.20	B287484
Dissolved Copper (Cu)	ug/L	0.81	0.20	B287484
Dissolved Iron (Fe)	ug/L	9560	5.0	B287484
Dissolved Lead (Pb)	ug/L	<0.20	0.20	B287484
Dissolved Lithium (Li)	ug/L	<2.0	2.0	B287484
Dissolved Manganese (Mn)	ug/L	198	1.0	B287484
Dissolved Molybdenum (Mo)	ug/∟	<1.0	1.0	B287484
Dissolved Nickel (Ni)	ug/L	<1.0	1.0	B287484
Dissolved Selenium (Se)	ug/L	<0.10	0.10	B287484
Dissolved Silicon (Si)	ug/L	16000	100	B287484
Dissolved Silver (Ag)	ug/L	<0.020	0.020	B287484
Dissolved Strontium (Sr)	ug/L	26.6	1.0	B287484
Dissolved Thallium (TI)	ug/L	<0.010	0.010	B287484
Dissolved Tin (Sn)	ug/L	<5.0	5.0	B287484
Dissolved Titanium (Ti)	ug/L	<5.0	5.0	B287484
Dissolved Uranium (U)	ug/L	<0.10	0.10	B287484
Dissolved Vanadium (V)	ug/L	<5.0	5.0	B287484
Dissolved Zinc (Zn)	ug/L	26.9	5.0	B287484
Dissolved Zirconium (Zr)	ug/L	<0.10	0.10	B287484
Dissolved Calcium (Ca)	mg/L	8.07	0.050	B285811
Dissolved Magnesium (Mg)	mg/L	2.84	0.050	B285811

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Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386



HY-GEO CONSULTING Client Project #: TOTANG

CSR D. METALS (NO CV-HG)-DISS

Bureau Veritas ID		CJG147		
Sampling Date		2024/02/15 08:20		
COC Number		W1034487	1.2. 11	1
	UNITS	JORDAN R. WELL	RDL	QC Batch
Dissolved Potassium (K)	mg/L	0.786	0.050	B285811
Dissolved Sodium (Na)	mg/L	6.32	0.050	B285811
Dissolved Sulphur (S)	mg/L	<3.0	3.0	B285811

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Bureau Veritas Burnaby: 4606 Canada Way VSG 1K5 Telephone(604) 734-7276 Fax(604) 731-2386



HY-GEO CONSULTING Client Project #: TOTANGI

GENERAL COMMENTS

Sample. CIG147 [JORDAN R. WELL] : Sample was analyzed past recommended hold time for Heterotropic Plate Count (MF) in Water. Sample was analyzed past recommended hold time for Iron Related Bacteria. Sample was analyzed past recommended hold time for Sulphate Reducing Bacteria. UVT Analysis: Sample received at the analyzing laboratory past the recommended holding time. Analysis performed with client's consent.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

HY-GEO CONSULTING Client Project #: TOTANGI

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QCLimit
B287002	Turbidity	2024/02/16		-	101	80 - 120	<0.10	NTU	NC	20
8287165	True Colour	2024/02/16			103	80 - 120	<2.0	Col. Unit	NC.	20
8287434	pH.	2024/02/16		-	100	97-103			0.33	N/A
6287497	Alkalinity (PP as CaCO3)	2024/02/16		-	P4		<1.0	mg/L	NC	20
B287437	Alkalinity (Total as CaCO3)	2024/02/16	·		97	80 - 120	<1.0	mg/L	0.43	20
8287437	Bicarbonate (HCO3)	2024/02/16	· · · · · · ·	1			<1,0	mg/L	0.43	20
B287437	Carbonate (CO3)	2024/02/16					<1.0	mg/L	NC	20
B287437	Hydroside (OH)	2024/02/16		-	1	1	<1.0	mg/L	NC	20
8287440	Conductivity	2024/02/16	1		100	90-110	<2.0	u5/cm	· · · · · · · · · · · · · · · · · · ·	
B287484	Dissolved Aluminum (Al)	2024/02/21	104	80 120	106	80 120	<3.0	ug/L	15	20
B287484	Dissolved Antimony (Sb)	2024/02/21	103	80-120	104	80 120	<0.50	UR/L	1.4	20
B287484	Dissolved Arsenic (As)	2024/02/21	108	80-120	108	80 - 120	<0.10	ug/L	0.96	20
B287484	Dissolved Barlum (Ba)	2024/02/21	100	80 120	103	80 120	<1.0	UE/L	0.39	20
B287484	Dissolved Beryllium (Be)	2024/02/21	105	80-120	105	80 - 120	<0.10	uE/L	NC	20
8287484	Dissolved Bismuth (Bi)	2024/02/21	99	80 120	101	80 - 120	<1.0	Ug/L	NC	20
B287484	Dissolved Boron (6)	2024/02/21	105	80-120	106	80 - 120	<50	ug/L	NC	20
8287484	Dissolved Cadmilum (Cd)	2024/02/21	104	80-120	104	80-120	<0.010	ug/L	NC	20
B287484	Dissolved Chromium (Cr)	2024/02/21	101	80-120	104	80-120	<1.0	ug/L	NC	20
B287484	Dissolved Cobalt (Co)	2024/02/21	99	80-120	102	80-120	<0.20	ug/1	NC	20
B287484	Dissolved Copper (Cu)	2024/02/21	96	80-120	101	80 - 120	<0.20	ug/I	0.46	20
B287484	Dissolved iron (Fe)	2024/02/21	105	80 - 120	105	80 120	<5.0	ug/L	1,5	20
B287484	Dissolved Lead (Pb)	2024/02/21	99	80-120	101	80 - 120	<0.20	ug/L	NC	20
B287484	Dissolved Lithium (Li)	2024/02/21	101	80 120	103	80 120	<2.0	ug/L	NC	20
B287484	Dissolved Manganese (Mn)	2024/02/71	99	80-120	102	80 - 120	<1.0	ug/L	0.60	20
B287484	Dissolved Molybdenum (Mo)	2024/02/21	NC	80-120	108	80 120	<1.0	ug/L	15	20
B287484	Dissolved Nickel (Ni)	2024/02/21	98	80-120	102	80 - 120	<1,0	ug/t	NC	20
B287484	Dissolved Selenium (Se)	2024/02/21	102	80 120	105	80 120	<0.10	ug/L	9.3	20
B287484	Dissolved Silicon (Si)	2024/02/21	NC.	80-120	111	80-120	<100	ug/L	0.14	20
B287484	Dissolved Silver (Ag)	2024/02/21	103	80-120	103	80 - 120	<0.020	ug/L	NC	20
B287484	Dissolved Strontium (Sr)	2024/02/21	NC	80-120	103	80 - 120	<1.0	ug/t	2.6	20
6287484	Dissolved Thallium (11)	2024/02/21	100	80-120	102	80-120	<0.010	ug/L	NC	20
8287454	Dissolved Tin (Sn)	2024/02/21	102	80-120	104	50-120	<5.0	ug/1	NC	-20
6287484	Dissolved Titanium (Ti)	2024/02/21	98	80-120	103	80-120	<5.0	ug/L	NC	20

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614 million Ventar Burnaty: A606 Ganada Way V5G 1x5 Teraphone (604) 734-7276 hav(614) 731-2386



QUALITY ASSURANCE REPORT(CONT'D)

HY-GEO CONSULTING Client Project #: TOTANGI

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QCLimits	% Recovery	QC Limits	Value	UNITS	Value (%)	QCLimit
B287484	Dissolved Uranium (U)	2024/02/21	103	80-120	102	80 - 120	<0.10	ug/L	0.83	20
8287484	Dissolved Vanadium (V)	2024/02/21	102	80-120	103	80 - 120	<5.0	UE/L	NC	20
B287454	Dissolved Zinc (Zn)	2024/02/21	99	80-120	103	80-120	<5.0	up/l	NC.	20
6287484	Dissolved Zirconium (Zr)	2024/02/21	101	80-120	97	80-120	<0.10	ug/L	NC	20
B287581	Tictal Mercury (Hg)	2024/02/16	87	80-120	91	80 - 120	<0,0019	ug/l	NC	20
8287592	Nibrate plus Nitrite (N)	2024/02/16	113	80-120	105	80-120	<0.020	mg/L	NC	25
B287596	Nitrite (N)	2024/02/16	106	80 120	105	80 120	<0,0050	mg/L	NC	20
B287657	Total Organic Carbon (C)	2024/02/16		1	105	80 - 120	<0.50	mg/L		· · · · · · · · · · · · · · · · · · ·
8289796	Total Sulphide	2024/02/21	97	80-120	-94	80 - 120	<0.0018	mg/L	NC	20
6290280	Dissolved Fluoride (F)	2024/02/21	105	80-120	102	80 120	<0.050	mg/L	NC	20
8290301	Total Aluminum (Al)	2024/02/21	99	80-120	193	SD 120	<3.0	UR/L	4.2	20
B290301	Total Antimony (Sb)	2024/02/21	103	80-120	103	80 - 120	<0.50	ug/L	NC	20
B290301	Total Arsenic (As)	2024/02/21	106	80 120	109	80 120	<0.10	ug/L	0.24	20
B290301	Total Barium (Ba)	2024/02/21	100	80~120	102	80 - 120	<1.0	UE/L	NC	20
B290301	Total Bervillum (Be)	2024/02/21	97	80-120	100	80 - 120	<0.10	Ug/L	NC	20
R290301	Total Bismuth (Bi)	2024/02/21	95	80-120	103	80 - 120	<1.0	ug/L	NC	20
8290301	Total Boron (B)	2024/02/21	110	80-120	112	80-120	<\$0	ug/L	3.5	20
6290301	Total Cadmium (Cd)	2024/02/21	100	80-120	103	80-120	<0.010	ug/L	7.6	20
6290301	Tetal Chromium (Cr)	2024/02/21	96	80-120	101	80-120	<1.0	ug/1	NC	-20
8290301	Total Cobalt (Co)	2024/02/21	97	80-120	100	80 - 120	<0.20	ug/l	NC.	20
B290301	Total Copper (Cu)	2024/02/21	.93	80-120	100	80 120	<0.20	ug/L	1.6	20
8290301	Total Iron (Fe)	2024/02/21	100	80-120	104	80 - 120	< 5.0	ug/L	0.66	20
8290301	Total Lead (Pb)	2024/02/21	97	80-120	102	80 120	<0.20	ug/L	0.90	20
B290301	Total Manganese (Mn)	2024/02/21	94	80-120	98	80 - 120	<1.0	ug/1	0.28	20
6290301	Tetal Molybdenum (Mo)	2024/02/21	108	80-120	105	80 120	<1.0	Ug/L	0.031	20
B290301	Tatal Nickel (Ni)	2024/02/21	95	80-120	101	80 - 120	<1,0	ug/L	NC	20
8290301	Total Selenium (Se)	2024/02/21	100	80 120	104	80 120	<0.10	ug/L	NC	20
B290301	Total Silicon (SI)	2024/02/21	NC.	80-120	116	80 - 120	<100	ug/L	0.48	20
B290301	Total Silver (Ag)	2024/02/21	99	80-120	103	80 - 120	<0.020	ug/L	NC	20
B250301	Total Strontium (Sr)	2024/02/21	NG	80-120	98	80 - 120	<1.0	ug/L	1.3	20
6290301	Total Thallium (11)	2024/02/21	99	80-120	104	80-120	<0.010	UR/L	NC	20
B290301	Tetal Tin (Sn)	2024/02/21	102	80-120	105	50-120	<5.0	ug/L	NC	20
6290301	Total Titanium (Ti)	2024/02/21	100	80-120	102	80-120	<5.0	ug/L	NC	20

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QUALITY ASSURANCE REPORT(CONT'D)

HY-GEO CONSULTING Client Project #: TOTANGI

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limit
B290301	Total Uranium (U)	2024/02/21	103	80-120	105	80 - 120	<0.10	ug/L	3.5	20
8290301	Total Vanadium (V)	2024/02/21	98	80-120	99	80 - 120	<5.0	UE/L	NC	20
B290301	Total Zinc (Zn)	2024/02/21	95	80-120	102	80-120	<5.0	up/l	0.40	20
6290301	Total Zirconium (Zr)	2024/02/21	106	80-120	109	80 - 120	<0.10	ug/L	NC	20
B290418	Total Nitrogen (N)	2024/02/22	1	1.72.41	103	80 - 120	<0.020	mg/L	NC	20
8290422	Total Dissolved Solids	2024/02/22	103	80-120	101	80 - 120	<10	mg/L	3.0	20
B290458	Total Ammonia (N).	2024/02/21	105	80 120	100	80 120	<0.015	mg/L	1.7	20
B290536	Chloride (CI)	2024/02/21	107	80-120	100	80 - 120	<1.0	mg/L	3.4	20
8290536	Sulphate (SO4)	2024/02/21	92	80-120	59	80 - 120	<1.0	mg/L	NC.	20
8293309	Transmittance at 254mm	2024/02/23	1		- 99	97 103	-		15	25

N/A = Not Applicable

Suplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement,

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank. A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration) was less than the native sample concentration)

NC (Duplicate RPD); The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

Perge: 12 pf 13 Invenue Ventar Sumary: ASDS Canada Wey VSC 125 Technolog(04) 724-72 75 hansles 731-2185



HY-GEO CONSULTING Client Project #: TOTANGI

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Anastassia Hamanov, Scientific Specialist

Suwan (Sze Yeung) Fock, B.Sc., Scientific Specialist



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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Raphael Kwan, Senior Manager, BC and Yukon Regions responsible for British Columbia Environmental laboratory operations.

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BRITIS COLUME the Base Place of	MA IN	Ainistry of nvironmen	U Well	Construction Report Closure Report Alteration Report	ort Canano I	VELL ENTERPA 4994 Polkey Ro Juncan, B.C. V9L Phone: 250-746-5	ad 6W 3 268	Ministr	y Well ID Plate Number: y Well Tag Number: nfirmation/alternative specs ginal well construction report	. attached
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		10 C 17 K 1		Private domestic wa 4) or closure des Material Description (U: List in order of dec	cription se recomme	(see notes 15 and nded terms on rever	16) Water-be se. Estimate	aring d Flow	trial lother (specify): Observations (e.g., fractur well sorted, silty wash), c	
it (bgi)	26'	Hard	Ra	Gravel + Cob bl		ount, il applicable)	(USgp	мп)	weil sorted, sity wash), c	iosure details
26'	71'		Gray	Till + Very . Grand, Se		end	w	3		
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lethod of ackfill: Ty iner: 🗌 I liameter:	PVC	in io: ft (bgl)	Perforated: i	Thickness: From: ft (bgl) To:	in ft (bgl)	Screen bottom: Filter pack: From: Type and size of	ft To:	ft	Thickness:	in
lethod of ackfill: Ty iner; 🔲 I liameter: rom:		o: ft (bgl)	Perforated:			Filter pack: From: Type and size of Final well co	ft To: material:	data		
Method of lackfill: Ty iner; liameter: rom: Develo Air liftir Other (lotes:	ft (bgl) T ped by ng Sur (specify):	io: ft (bgl) ; rging 🗌 Jetti	ing 🗌 Pumpi		ft (bgl)	Filter pack: From: Type and size of Final well co Total depth drilled	ft To: material:	data: ft in toc)		t (bgl)
Method of lackfill: Ty iner; biameter: rom: Develo Air liftin Other lotes: Nell yi Pumpi Rate:	ft (bgl) T ped by: ng □ Sur (specify): eld esti 30	in t (bgl) trging _ Jetti trated by lifting _ Ba	ing Pumpi : iilling Othe Sgpm Durati	From: ft (bgl) To: ng Ø Bailing Total duration: 3 pr (specify): on: 3	ft (bgl)	Filter pack: From: Type and size of u Final well cc Total depth driller Final stick up: SWL: 7/ Artesian flow: Type of well cap: Where well ID pla	ft To: material: completion d: 111 22" ft (b Welded tte is attached:	data: ft in toc) USgp LJ	Finished well depth:] (Depth to bedrock: N Å Estimated well yield: 3 (t ft (bgl) ft (bgl) USgpm ft
Method of lackfill: Ty iner; Diameter: rom: Develo Air liftin Other lotes: Well yi Rate: SWL befo Dbviou	ft (bgl) T ped by: ng □ Sur (specify): eld esti ng ⊠ Air 30 re test: us wate	in the second se	ing Pumpi : illing Othe Sgpm Durati oc) Pumping :haracteris	From: ft (bgl) To: ng Ø Bailing Total duration: 3 pr (specify): on: 3 water level:	ft (bgl)	Filter pack: From: Type and size of the si	ft To: material: completion d: 111 22 " ft (b weldad the is attached: c: informati e:	data: In toc) USgp LJ OV on:	Finished well depth: 11 Depth to bedrock: N A Estimated well yield: 30 m, or Artesian pressure: Well disipfected: Well disipfected:	t ft (bgl) ft (bgl) USgpm ft
Aethod of Sackfill: Ty iner; Diameter, from; Develo Air liftir Other Iotes: Mell yi Rate: SWL befo Dbviou Solour/od	ft (bgl) T ped by: ng Sur (specify): eld esti ng Air 30: re test: us wate Satty our:	ic: ft (bgl) imated by itifting Ba US ft (btc r quality c Clear X	ing Pumpi : illing Othe Sgpm Durati oc) Pumping :haracteris	From: ft (bgl) To: ng Ø Bailing Total duration: 3 er (specify): on: 3 water level: stics:	ft (bgl)	Filter pack: From: Type and size of the filter of the filt	ft To: material: completion f: 111 22 " ft (b weldad ate is attached: informati e: :	data: In toc) USgp LJ OV on:	Finished well depth: 11 Depth to bedrock: N A Estimated well yield: 30 m, or Artesian pressure: Well disipfected: Well coding	t ft (bgl) ft (bgl) USgpm ft
Aethod of Backfill: Ty iner: Diameter: From: Oevelo Air liftir Other Other Other Other Nell yi Rate: SWL befo Dbviou Fresh Colour/od Nell dr Name (fi	ft (bgl) T ped by: g Sur (specify): eld esti ag Air 30 re test: is wate Saty our: riller (prir rst, last)	in t clearly); (see note 15	ing Pumpi ; illing Othe Sgpm Durati oc) Pumping characteris Cloudy I	From: ft (bgl) To: ng Ø Bailing Total duration: 3 ar (specify): on: 3 water level: stics: Sediment Gas Water sample colled Burrow ۶	ft (bgl)	Filter pack: From: Type and size of the filter of the filt	ft To: material: mmpletion d: 111 22" ft (b welded e informati e: : Poured (see note 17):	data: ft in toc) USgp LU OV on:	Finished well depth: 11 Depth to bedrock: N A Estimated well yield: 30 m, or Artesian pressure: Well disipfected: Well disipfected:	t ft (bgl) ft (bgl) USgpm ft

PPSS-3 PLEASE NOTE: The information recorded in this well report describes the works and hydrogeologic conditions at the time of construction, white: Customer copy attention or closure, as the case may be. Well yield, well performance and weir quality are not guaranteed as they are influenced by a number of factors, including natural variability, human activities and condition of the works, which may change over time.

PPSS-3

and the second second	TISH JMBIA		I Closure	Nepon on	DRILLWELL ENTERPRISES	Confirma	tion/alternative specs. at vell construction report a	ttached
	Environment tering inc	licates mini	mum manda	tory information.	Phone: 250-746-5268		notes & definitions of al	
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itholo	aic des	scription	(see notes 7-1	4) or closure des	cription (see notes 15 and 16)	147-1 - 1 1 1		
From	То	Relative	Colour	Material Description (Us	e recommended terms on reverse.	Estimated Flow		
ft (bgl)	ft (bgl)	Hardness	- and	List in order of dec	reasing amount, if applicable)	(USgpm)	well sorted, silty wash),	closure details
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	details		ning Material /	Wall	Screen details		Turne (see pote 18)	Slot Size
From ft (bgl)	t details To ft (bgl)	Dia Ca in Ca	ted Ru	Open Hole Thickness in Undant	Screen details	Dia	Type (see note 18)	Slot Size
From	To	Dia Ca in Ca		Open Hole Thickness in	Drive From To Shoe ft (bgl) ft (bgl)	Dia in		Slot Size
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From ft (bgl)	To ft (bgl)	Dia in 10' by 6 b Be-to	ted Ru Ital	Open Hole Thickness in Use out = 319 Depth: 15	Drive From To Shoe ft (bgl) ft (bgl) DR ft Intake: Screen Screen In Screen	Dia in Screen Materia Ba	Uncased hole	
From ft (bgl)	To ft (bgl)	Dia in 10' by 6 b Be-to	ted Ru Ital	Open Hole Thickness in Uldant	Drive From To Shoe ft (bgl) ft (bgl) DR ft Intake: Screen Screen In Screen	Dia in Screen Materia Ba	Uncased hole	
From ft (bgl)	To ft (bgl)	Dia in Ca 10 10 6 10 8 10 n: Poured	Led Ru tral	Open Hole Thickness in Use out Depth: 15 Thickness: 0	Drive Shoe From ft (bgl) To ft (bgl) ft Intake: Screen ft Intake: Screen ft Screen type: Teke ft Screen material: Screen opening:	Dia in Serve and Participation Participation Pipe s Stainless steel Continuous slot	Uncased hole ize Plastic Other (speci Stotted Perforated	ity): fl.t.t.es pipe
From ft (bgl)	To ft (bgl)	Dia in 10' by 6 b Be-to	Led Ru tral	Open Hole Thickness in Use out Depth: 15 Thickness: 0	Drive Shoe From ft (bgl) To ft (bgl) ft Intake: Screen ft Intake: Screen ft Screen type: Teke ft ft Screen material: Screen opening: screen opening: Screen bottom: E	Dia in Server Copen bottom escope Pipe s Stainless steel Continuous slot Bail Plug	Uncased hole ize Plastic Other (speci Stotted Perforated Plate Other (specify):	ity): fl.t.t.es pipe
From ft (bgl)	To ft (bgl)	Dia in C Ca Ca in C Ca Ca in Ca in Ca in Ca in Ca in Ca in Ca in Ca in Ca in C C C Ca Ca C C C Ca C C C Ca C C C C	Led Ru Itsel	Open Hole Thickness in U.S	Drive Shoe From ft (bgl) To ft (bgl) R Intake: Screen ft Intake: Screen in Screen type: Tell Tell ft Screen opening: Screen opening: in Screen bottom: E ft Screen kype: Tell	Dia in Server Matter Bai Copen bottom escope Pipe s Stainless steel Continuous slot Bail Plug ft To: ft	Uncased hole ize Plastic Other (speci Stotted Perforated	ity): futures
From ft (bgl) Uurface set tethod of ackfill: Ty iner: 1 biameter: rom:	To ft (bgl)	Dia Ca in Ca 6 Dia Ca 7 Dia Ca 6 Dia Ca 7 Dia Ca 7 Dia Ca 6 Dia Ca 7 Dia Ca	Led Ru Itsel	Open Hole Thickness in Uddatt Depth: 15 Thickness: Original Thickness:	Drive Shoe From ft (bgl) To ft (bgl) ft Intake: Screen ft Intake: Screen ft Screen type: Tek ft ft Screen opening: Screen opening: in Screen opening: Screen type: ft Filter pack: From: Type and size of ma Type and size of ma	Dia in Server Copen bottom escope Pipe s Stainless steel Continuous slot Bail Plug 1 ft To: ft terial:	Uncased hole ize Plastic Other (speci Slotted Perforated Plate Other (specify): Thickness:	ity): futures
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APPENDIX B

PUMPING TEST DATA

B1: Pumped Well WID 69081(WTN 128906)

B2: Observation Well WID 18153 (WTN 95648)

APPENDIX B1

Pumping Test Data for Subject Well

Project: Well WI	0 69081 (WTN 128906)	Reference: al	I reading	s from top o	of sounding tube
Client: Blair Ro	bertson	é	at top of c	sing	Ū.
Location: 12036 W	/est Coast Rd., Jordan River	Stick up: (0.56 m (2	2")	
Date of Test:	Wednesday February 14, 2024	Observation ¹	Wells:	WID 18153	3 (WTN 95648)
Test Conducted by	Independent Pump & Mechanical Ltd.				
Pumped Well:	33.83 m deep (111 feet)	Pump Start T	ime:	8:00 AM	Feb. 14, 2024

Pumping Rate: 4 Static Water Level: 1

33.83 m deep (111 feet) 45.07 L/min (11.91 USgpm) 19.12 m

Pump Start Time:	8:00 AM	Feb. 14, 2024
Pump End Time:	8:15 AM	Feb. 15, 2024
Analysis by:	A. Kohut,	P.Eng.

Drawdown Data: **Recovery Data:** Water Level Drawdown Water Level Residual Time t t/ť Time Time t' Drawdown (minutes) (minutes) (m) (m) (minutes) (m) (m) 19.300 0.180 1456 19.430 1456.0 0.310 1 19.360 0.240 1457 19.430 728.5 0.310 2 19.385 0.265 1458 19.310 486.0 0.190 3 3 4 19.405 0.285 1459 4 19.300 364.8 0.180 5 19.420 0.300 1460 5 19.280 292.0 0.160 6 19.435 0.315 1461 6 19.270 243.5 0.150 7 19.450 0.330 1462 19.260 208.9 0.140 7 8 19.455 0.335 1464 9 19.260 162.7 0.140 9 19.460 0.340 1465 10 19.250 146.5 0.130 10 19.465 0.345 1467 12 19.240 122.3 0.120 12 19.465 0.345 1469 14 19.230 104.9 0.110 14 19.470 0.350 1471 16 19.225 91.9 0.105 16 19.470 0.350 1473 18 19.220 81.8 0.100 18 19.475 0.355 1475 20 19.220 73.8 0.100 25 30 20 19.475 0.355 1480 19.210 59.2 0.090 25 19.480 0.360 1485 19.200 49.5 0.080 30 19.480 0.360 1490 35 19.200 42.6 0.080 35 19.482 0.362 1495 40 19.200 37.4 0.080 40 19.485 0.365 1500 45 19.200 33.3 0.080 45 19.485 0.365 1505 50 19.200 30.1 0.080 25.3 21.8 50 19.490 0.370 1515 60 19.200 0.080 60 19.495 0.375 1525 70 19.200 0.080 1535 19.2 70 19.500 0.380 80 19.200 0.080 80 19.550 0.430 1545 90 19.200 17.2 0.080 90 19.510 0.390 1555 100 19.195 15.6 0.075 100 19.510 0.390 1575 120 19.195 13.1 0.075 120 19.510 0.390 1595 140 19.195 11.4 0.075 140 19.510 0.390 1615 160 19.195 10.1 0.075 0.390 160 19.510 1635 180 19.195 9.1 0.075 8.3 180 19.510 1655 200 19.195 0.075 200 220 220 240 270 300 7.6 19.510 0.390 1675 19.195 0.075 19.510 0.390 1695 19.195 0.075 240 270 19.510 19.510 0.390 1725 1755 6.4 5.9 19.195 0.075 19 195 0.075 5.4 300 19.510 0.390 1785 330 19.195 0.075 330 19,510 0.390 1815 360 19,195 0.075 360 390 19.510 0.390 19,510 0.390 420 19,510 0.390 450 19.510 0.390 480 19.510 0.390 510 19 510 0.390 540 19,510 0.390 570 19.510 0.390 600 19.510 0.390 630 19 510 0.390 19.510 660 0.390

Drawdown Data:			Recovery Data:					
Time (minutes)	Water Level (m)	Drawdown (m)	Time t (minutes)	Time t' (minutes)	Water Level (m)	t/t'	Residual Drawdowr (m)	
690	19.510	0.390	0.0					
720	19.510	0.390	00.00					
750	19.510	0.390	10 N					
780	19.510	0.390						
810	19.510	0.390	47 - 130					
840	19.510	0.390	(1992)					
870	19.515	0.395	0.0		2			
900	19.515	0.395	0.50			-		
930	19.520	0.400						
960	19.520	0.400						
990	19.520	0.400						
1020	19.525	0.405						
1050	19.525	0.405	0.0		2			
1080	19.525	0.405	6.3					
1110	19.525	0.405	(e.g)		2			
1140	19.530	0.410						
1170	19.530	0.410						
1200	19.530	0.410						
1230	19.540	0.420	(0.0)					
1260	19.540	0.420	03					
1290	19.550	0.430	6.3					
1320	19.550	0.430	(660)					
1350	19.550	0.430						
1380	19.560	0.440						
1410	19.565	0.445	1. St.					
1440	19.570	0.450	(1947)					
1455	19.570	0.450	0.0					

APPENDIX B2

Recovery Data:

Pumping Test Data for Observation Well WID 18153

 Project:
 Well WID 69081 (WTN 128906)

 Client:
 Blair Robertson

 Location:
 12036 West Coast Rd., Jordan River

 Date of Test:
 Wednesday February 14, 2024

 Test Conducted by:
 Independent Pump & Mechanical Ltd.

 Observation Well:
 34.75 m deep (114 feet)

23,400

45.07 L/min (11.91 USgpm)

Pumping Rate: Static Water Level: Reference: all readings from top of sounding tube at top of csing Obs Well Stick up: 0.30 m (12") Pumped Well: WID 69081 (WTN 128906)

Pump Start Time: Pump End Time: Analysis by: 8:00 AM Feb. 14, 2024 8:15 AM Feb. 15, 2024 A. Kohut, P.Eng.

Drawdown Data:

Water Level Water Level t/ť Residual Drawdown Time t Time t' Time Drawdown (minutes) (m) (m) (minutes) (minutes) (m) (m) 10 23.406 0.006 20 23.411 0.011 30 23.686 0.286 40 23.683 0.283 23.687 0.287 60 23.687 0.287 70 23.692 0.292 80 0.290 23.690 90 23.696 0.296 100 23.710 0.310 120 23.714 0.314 140 23.716 0.316 160 23.717 0.317 180 23.714 0.314 200 23.710 0.310 220 23.709 0.309 240 23.705 0.305 260 23.703 0.303 280 23.701 0.301 300 23.702 0.302 330 23.694 0.294 360 23.686 0.286 390 23.687 0.287 420 23.690 0.290 450 23.688 0.288 480 23.689 0.289 510 23.685 0.285 23.689 23.688 540 0.289 570 0.288 600 23.678 0.278 630 23.684 0.284 680 23.680 0.280 730 23.682 0.282 780 23.684 0.284 830 23.687 0.287 880 23.689 0.289 930 23.693 0.293 23.692 980 0.292 1030 23.694 0.294 1080 23.697 0.297 1130 23.703 0.303 1180 23.705 0.305 1230 23.715 0.315 23.719 1280 0.319 1330 23.731 0.331 1380 23.738 0.338 Note: All readings during pumping extracted from datalogger. 23.757 23.760 1440 0.357 0.360 1450

APPENDIX C

LABORATORY WATER QUALITY ANALYSES

FOR WID 69081 (WTN 128906)

February 15, 2024

Your Project #: TOTANGI Your C.O.C. #: WI034487

Attention: AL KOHUT HY-GEO CONSULTING 4470 Arsens Place VICTORIA, BC Canada V82 2M9

Report Date: 2024/02/26 Report #: R3467520 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C410716

Received: 2024/02/15, 11:29

Sample Matrix: Water # Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH	1	N/A	2024/02/16	BBY6SOP-00026	SM 24 2320 B m
Chloride/Sulphate by Auto Colourimetry	1	N/A	2024/02/21	BBY6SOP-00011 / BBY6SOP-00017	SM24-4500-Cl/SO4-E m
Color (True) by Automated Analyzer	1	N/A	2024/02/16	BBY65OP-00057	SM 24 2120 C m
Conductivity @25C	1	N/A	2024/02/16	BBY6SOP-00026	SM 24 2510 B m
Fluoride	1	N/A	2024/02/21	BBY6SOP-00037	SM 24 4500-F C m
Sulphide (as H2S) (1)	1	N/A	2024/02/21		Auto Calc
Hardness Total (calculated as CaCO3) (3)	1	N/A	2024/02/22	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO3)	1	N/A	2024/02/22	BBY WI-00033	Auto Calc
Mercury (Total) by CV	1	2024/02/16	2024/02/16	AB SOP-00084	BCMOE BCLM Oct2013 m
Heterotropic Plate Count (MF) in Water	1	N/A	2024/02/16	BBY4SOP-00003	SM 24 9215D
Iron Related Bacteria (4)	1	N/A	2024/02/16	BBY4SOP-00004	BI BART User Manual
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2024/02/22	BBY WI-00033	Auto Calc
elements by CRC ICPMS (dissolved) (5)	1	N/A	2024/02/21	BBY75OP-00002	EPA 6020b R2 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	N/A	2024/02/22	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (total)	1	N/A	2024/02/21	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Nitrogen (Total)	1	N/A	2024/02/22	BBY6SOP-00016	SM 24 4500-N C m
Ammonia-N (Total)	1	N/A	2024/02/21	AB SOP-00007	SM 24 4500 NH3 A G m
Nitrate + Nitrite (N)	1	N/A	2024/02/16	BBY6SOP-00010	SM 24 4500-NO3- H m
Nitrite (N) Regular Level Water	1	N/A	2024/02/16	BBY6SOP-00010	SM 24 4500-NO2- m
Nitrogen - Nitrate (as N)	1	N/A	2024/02/17	BBY WI-00033	Auto Calc
Nitrogen (Tot. Organic) Calculation	1	N/A	2024/02/22	BBY WI-00033	Auto Calc
pH @25°C (6)	1	N/A	2024/02/16	BBY6SOP-00026	SM 24 4500-H+ B m
Sat. pH and Langelier Index (@ 4.4C)	1	N/A	2024/02/22	BBY WI-00033	Auto Calc
Sat. pH and Langelier Index (@ 60C)	1	N/A	2024/02/22	BBY WI-00033	Auto Calc
Fotal Sulphide (1)	1	N/A	2024/02/21	AB SOP-00080	SM 24 4500 S2-A D Fm
Sulphate Reducing Bacteria (4)	1	N/A	2024/02/16	BBY4SOP-00004	BI BART User Manual
Total Dissolved Solids (Filt. Residue)	1	2024/02/21	2024/02/22	BBY6SOP-00033	SM 24 2540 C m
Total Coliform & E.Coli by MF-Chromocult	1	N/A	2024/02/16	BBY4SOP-00143	Merck KGaA Version 1
Carbon (Total Organic) (7)	1	N/A	2024/02/16	BBY6SOP-00053	SM 24 5310 B m
Turbidity	1	N/A	2024/02/16	BBY65OP-00027	SM 24 2130 B m

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Burgau Venitas Burnaby: 4606 Canana Way VSG 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Your Project #: TOTANGI Your C.O.C. #: WI034487

Attention: AL KOHUT HY-GEO CONSULTING 4470 Arsens Place VICTORIA, BC Canada V8Z 2M9

> Report Date: 2024/02/26 Report #: R3467520 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C410716 Received: 2024/02/15, 11:29

Sample Matrix: Water

Samples Received: 1

	Date	Date			
Analyses	Quantity Extracted	Analyzed	Laboratory Method	Analytical Method	
UV Transmittance (2)	1 2024/02/2	3 2024/02/2	3 CAM SOP-00459	SM 24 5910 m	

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St., Calgary, AB, T2E 6P8

(2) This test was performed by Bureau Veritas Campobello, 6740 Campobello Road , Mississauga, ON, L5N 2L8

(3) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).

(4) Presence/Absence Method. Number is an estimate.

(5) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.

(6) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.

(7) TOC present in the sample should be considered as non-purgeable TOC.

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Bureau Venitas Burnaby: 4606 Canana Way VSG 1KS Telephone(604) 734-7276 Fax(604) 731-2386

Your Project #: TOTANGI Your C.O.C. #: WI034487

Attention: AL KOHUT HY-GEO CONSULTING 4470 Arsens Place VICTORIA, BC V8Z 2M9 Canada

> Report Date: 2024/02/26 Report #: R3467520 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C410716 Received: 2024/02/15, 11:29

Encryption Key

Please direct all questions regarding this Certificate of Analysis to: Michelle Rivest (Hospedales), B.Sc., Customer Solutions Representative Email: michelle.rivest@bureauveritas.com

Phone# (604) 734 7276

This report has been generated and distributed using a secure automated process. Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.

For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Raphael Kwan, Senior Manager, BC and Yukon Regions responsible for British Columbia Environmental laboratory operations.

Total Cover Pages : 3 Page 3 of 13

Bureau Ventas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386



HY-GEO CONSULTING Client Project #: TOTANGI

VIHA PKG, WELLS/SPRINGS - BURNABY (WATER)

Bureau Veritas ID	1.	CJG147		
Sampling Date	=	2024/02/15 08:20		
COC Number	1	WI034487		
	UNITS	JORDAN R. WELL	RDL	QC Batch
ANIONS			1	
Nitrite (N)	mg/L	<0,0050	0.0050	B287596
Calculated Parameters				
Total Hardness (CaCO3)	mg/L	30,9	0.50	B285428
Nitrate (N)	mg/L	<0.020	0.020	B285468
Total Organic Nitrogen (N)	mg/L	0.589	0.020	B286395
Sulphide (as H2S)	mg/L	0.0062	0.0020	B285763
Misc. Inorganics			7	
Conductivity	uS/cm	110	2.0	B287440
рН	pН	6.47	N/A	B287434
Total Organic Carbon (C)	mg/L	1.5	0.50	B287657
Total Dissolved Solids	mg/L	90	10	B290422
Anions				-
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	B287437
Alkalinity (Total as CaCO3)	mg/L	41	1.0	B287437
Bicarbonate (HCO3)	mg/L	50	1.0	B287437
Carbonate (CO3)	mg/L	<1.0	1.0	B287437
Dissolved Fluoride (F)	mg/L	< 0.050	0.050	B290280
Hydroxide (OH)	mg/L	<1.0	1.0	B287437
Total Sulphide	mg/L	0.0058	0.0018	B289796
Chloride (CI)	mg/L	4.4	1.0	B290536
Sulphate (SO4)	mg/L	<1.0	1.0	B290536
MISCELLANEOUS				
True Colour	Col. Unit	128	10	B287165
Transmittance at 254nm	%T/cm	18	N/A	B293309
Nutrients				
Total Ammonia (N)	mg/L	0.29	0.015	B290458
Nitrate plus Nitrite (N)	mg/L	<0.020	0.020	B287592
Total Nitrogen (N)	mg/L	0,877	0.020	B290418
Physical Properties			2	
Turbidity	NTU	9.9	0.10	B287002

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HY-GEO CONSULTING Client Project #: TOTANGI

VIHA PKG, WELLS/SPRINGS - BURNABY (WATER)

Bureau Veritas ID		CJG147	1 - 1	
Sampling Date		2024/02/15 08:20		
COC Number	1	WI034487		
	UNITS	JORDAN R. WELL	RDL	QC Batch
Elements				
Total Mercury (Hg)	ug/L	<0.0019	0.0019	B287581
Total Metals by ICPMS				
Total Aluminum (Al)	ug/L	13.3	3.0	B290301
Total Antimony (Sb)	ug/L	<0.50	0.50	B290301
Total Arsenic (As)	ug/L	8.03	0.10	B290301
Total Barium (Ba)	ug/L	7.0	1.0	B290301
Total Beryllium (Be)	ug/L	<0.10	0.10	B290301
Total Bismuth (Bi)	ug/L	<1.0	1.0	B290301
Total Boron (B)	ug/L	<50	50	B290301
Total Cadmium (Cd)	ug/L	0.031	0.010	B290301
Total Chromium (Cr)	ug/L	<1.0	1.0	B290301
Total Cobalt (Co)	ug/L	<0,20	0.20	B290301
Total Copper (Cu)	ug/L	2,30	0.20	B290301
Total Iron (Fe)	ug/L	9220	5.0	B290301
Total Lead (Pb)	ug/L	0.20	0.20	B290301
Total Manganese (Mn)	ug/L	202	1.0	B290301
Total Molybdenum (Mo)	ug/L	<1.0	1.0	B290301
Total Nickel (Ni)	ug/L	<1.0	1.0	B290301
Total Selenium (Se)	ug/L	<0.10	0.10	B290301
Total Silicon (Si)	ug/L	17200	100	B290301
Total Silver (Ag)	ug/L	<0.020	0.020	B290301
Total Strontium (Sr)	ug/L	25.5	1.0	B290301
Total Thallium (Tl)	ug/L	<0.010	0.010	B290301
Total Tin (Sn)	ug/L	<5.0	5.0	B290301
Total Titanium (Ti)	ug/L	<5.0	5.0	B290301
Total Uranium (U)	ug/L	<0.10	0.10	B290301
Total Vanadium (V)	ug/L	<5.0	5.0	B290301
Total Zinc (Zn)	ug/L	41.9	5.0	B290301
Total Zirconium (Zr)	ug/L	<0.10	0.10	B290301
Total Calcium (Ca)	mg/L	7.86	0.050	B285820
Total Magnesium (Mg)	mg/L	2.74	0.050	B285820
Total Potassium (K)	mg/L	0.786	0.050	B285820
Total Sodium (Na)	mg/L	6.47	0.050	B285820

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Bureau Veritas Burnaby: 4606 Canana Way V56 1K5 Telephone(604) 734-7276 Fax(604) 731-2386



HY-GEO CONSULTING Client Project #: TOTANGI

VIHA PKG, WELLS/SPRINGS - BURNABY (WATER)

Bureau Veritas ID		CJG147	i)
Sampling Date	1.001	2024/02/15 08:20		
COC Number		WI034487	1.11	1
	UNITS	JORDAN R. WELL	RDL	QC Batch
Total Sulphur (S)	mg/L	<3.0	3.0	B285820
Microbiological Param.				
Heterotrophic Plate Count	CFU/mL	<1	1	B287355
Iron Bacteria	CFU/mL	25	25	B287353
Sulphate reducing bacteria	CFU/mL	<75	75	B287354
Total Coliforms	CFU/100mL	0	N/A	B287351
E. coli	CFU/100mL	0	N/A	B287351
Calculated Parameters			7	1000
Langelier Index (@ 4.4C)	N/A	-2.60	N/A	B286396
Langelier Index (@ 60C)	N/A	-1.82	N/A	B286397
Saturation pH (@ 4.4C)	N/A	9.06	N/A	B286396
Saturation pH (@ 60C)	N/A	8.29	N/A	B286397

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Bureau Veritas Burnaby: 4506 Canada Way V56 1K5 Telephone(604) 734-7276 Fax(604) 731-2386



HY-GEO CONSULTING Client Project #: TOTANGI

CSR D. METALS (NO CV-HG)-DISS

Bureau Veritas ID		CJG147	1	
Sampling Date		2024/02/15 08:20	1	
COC Number	1(‡	WI034487		1
	UNITS	JORDAN R. WELL	RDL	QC Batch
Calculated Parameters				
Dissolved Hardness (CaCO3)	mg/L	31.8	0.50	B285810
Dissolved Metals by ICPMS	10			
Dissolved Aluminum (Al)	ug/L	5.1	3.0	B287484
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	B287484
Dissolved Arsenic (As)	ug/L	7.78	0.10	B287484
Dissolved Barium (Ba)	ug/L	6.7	1.0	B287484
Dissolved Beryllium (Be)	ug/L	<0.10	0.10	B287484
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	B287484
Dissolved Boron (B)	ug/L	<50	50	B287484
Dissolved Cadmium (Cd)	ug/L	<0.010	0.010	B287484
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	B287484
Dissolved Cobalt (Co)	ug/L	<0.20	0.20	B287484
Dissolved Copper (Cu)	ug/L	0.81	0.20	B287484
Dissolved Iron (Fe)	ug/L	9560	5.0	B287484
Dissolved Lead (Pb)	ug/L	<0,20	0.20	B287484
Dissolved Lithium (Li)	ug/L	<2,0	2.0	B287484
Dissolved Manganese (Mn)	ug/L	198	1.0	B287484
Dissolved Molybdenum (Mo)	ug/L	<1,0	1.0	B287484
Dissolved Nickel (Ni)	ug/L	<1.0	1.0	B287484
Dissolved Selenium (Se)	ug/L	<0.10	0.10	B287484
Dissolved Silicon (Si)	ug/L	16000	100	B287484
Dissolved Silver (Ag)	ug/L	<0.020	0.020	B287484
Dissolved Strontium (Sr)	ug/L	26.6	1.0	B287484
Dissolved Thallium (TI)	ug/L	<0.010	0.010	B287484
Dissolved Tin (Sn)	ug/L	<5.0	5.0	B287484
Dissolved Titanium (Ti)	ug/L	<5.0	5.0	B287484
Dissolved Uranium (U)	ug/L	<0.10	0.10	B287484
Dissolved Vanadium (V)	ug/L	<5.0	5.0	B287484
Dissolved Zinc (Zn)	ug/L	26.9	5.0	B287484
Dissolved Zirconium (Zr)	ug/L	<0.10	0.10	B287484
Dissolved Calcium (Ca)	mg/L	8.07	0.050	B285811
Dissolved Magnesium (Mg)	mg/L	2,84	0.050	B285811

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Bureau Veritas Burnaby: 4506 Canada Way V56 1K5 Telephone(604) 734-7276 Fax(604) 731-2386



HY-GEO CONSULTING Client Project #: TOTANGI

CSR D. METALS (NO CV-HG)-DISS

Bureau Veritas ID		CJG147		
Sampling Date		2024/02/15 08:20	1	$\pm \equiv 1$
COC Number		WI034487	1	1
	UNITS	JORDAN R. WELL	RDL	QC Batch
Dissolved Potassium (K)	mg/L	0.786	0.050	B285811
Dissolved Sodium (Na)	mg/L	6.32	0.050	B285811
Dissolved Sulphur (S)	mg/L	<3,0	3.0	B285811

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Bureau Veritas Burnaby: 4506 Canada Way V56 1K5 Telephone(604) 734-7276 Fax(604) 731-2386



HY-GEO CONSULTING Client Project #: TOTANGI

GENERAL COMMENTS

Sample CJG147 [JORDAN R. WELL] : Sample was analyzed past recommended hold time for Heterotropic Plate Count (MF) in Water. Sample was analyzed past recommended hold time for Iron Related Bacteria. Sample was analyzed past recommended hold time for Sulphate Reducing Bacteria. UVT Analysis: Sample received at the analyzing laboratory past the recommended holding time. Analysis performed with client's consent.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

HY-GEO CONSULTING Client Project #: TOTANG

			Matrix	Spike	Spiked	Blank	Method	Blank	RP	D
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
B287002	Turbidity	2024/02/16	1		101	80 - 120	<0.10	NTU	NC	20
8287165	True Colour	2024/02/16	F	1	103	80 - 120	<2.0	Col. Unit	NC	20
B287434	pH	2024/02/16	1		100	97 - 103		1.000	0,33	N/A
B287437	Alkalinity (PP as CaCO3)	2024/02/16	I				<1.0	mg/L	NC	20
B287437	Alkalinity (Total as CaCO3)	2024/02/16			97	80 - 120	<1.0	mg/L	0,43	20
B287437	Bicarbonate (HCO3)	2024/02/16	1		1	1	<1.0	mg/L	0.43	20
B287437	Carbonate (CO3)	2024/02/16					<1.0	mg/L	NC	20
B287437	Hydroxide (OH)	2024/02/16	1	1(1		<1.0	mg/L	NC	20
B287440	Conductivity	2024/02/16	1		100	90 - 110	<2.0	uS/cm	1	
B287484	Dissolved Aluminum (Al)	2024/02/21	104	80 - 120	106	80 - 120	<3.0	ug/L	15	20
B287484	Dissolved Antimony (Sb)	2024/02/21	103	80 - 120	104	80 - 120	<0.50	ug/L	1.4	20
B287484	Dissolved Arsenic (As)	2024/02/21	108	80 - 120	108	80 - 120	<0.10	ug/L	0.96	20
B287484	Dissolved Barium (Ba)	2024/02/21	100	80 - 120	103	80 - 120	<1.0	ug/L	0.39	20
B287484	Dissolved Beryllium (Be)	2024/02/21	105	80 - 120	105	80-120	<0.10	ug/L	NC	20
B287484	Dissolved Bismuth (Bi)	2024/02/21	99	80 - 120	101	80 - 120	<1.0	ug/L	NC.	20
B287484	Dissolved Boron (B)	2024/02/21	105	80 - 120	106	80 - 120	<50	ug/L	NC	20
B287484	Dissolved Cadmium (Cd)	2024/02/21	104	80 - 120	104	80 - 120	<0.010	ug/L	NC	20
B287484	Dissolved Chromium (Cr)	2024/02/21	101	80 - 120	1.04	80 - 120	<1.0	ug/L	NC	20
B287484	Dissolved Cobalt (Co)	2024/02/21	99	80 - 120	102	80 - 120	<0.20	ug/L	NC	20
B287484	Dissolved Copper (Cu)	2024/02/21	96	80 - 120	101	80 - 120	<0.20	ug/L	0.46	20
B287484	Dissolved Iron (Fe)	2024/02/21	105	80 - 120	105	80 - 120	<5.0	ug/L	15	20
B287484	Dissolved Lead (Pb)	2024/02/21	99	80 - 120	101	80 - 120	<0.20	ug/L	NC	20
B287484	Dissolved Lithium (Li)	2024/02/21	101	80 - 120	103	80 - 120	<2.0	ug/L	NC	20
B287484	Dissolved Manganese (Mn)	2024/02/21	99	80 - 120	102	80-120	<1.0	ug/L	0.60	20
B287484	Dissolved Molybdenum (Mo)	2024/02/21	NC	80 - 120	108	80 - 120	<1.0	ug/L	1.5	20
B287484	Dissolved Nickel (Ni)	2024/02/21	98	80 - 120	102	80-120	<1.0	ug/L	NC	20
B287484	Dissolved Selenium (Se)	2024/02/21	102	80 - 120	105	80 - 120	<0.10	ug/L	9.3	20
B287484	Dissolved Silicon (Si)	2024/02/21	NC	80 - 120	111	80 - 120	<100	ug/L	0.14	20
B287484	Dissolved Silver (Ag)	2024/02/21	103	80 - 120	103	80 - 120	<0.020	ug/L	NC	20
B287484	Dissolved Strontium (Sr)	2024/02/21	NC	80 - 120	103	80 - 120	<1.0	ug/L	2.6	20
B287484	Dissolved Thallium (TI)	2024/02/21	100	80 - 120	102	80 - 120	< 0.010	ug/L	NC	20
B287484	Dissolved Tin (Sn)	2024/02/21	102	80 - 120	104	80 - 120	<5.0	ug/L	NC	20
B287484	Dissolved Titanium (Ti)	2024/02/21	98	80 - 120	1.03	80 - 120	<5.0	ug/L	NC	20

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QUALITY ASSURANCE REPORT(CONT'D)

HY-GEO CONSULTING Client Project #: TOTANG

			Matrix	Spike	Spiked	Blank	Method	Blank	RP	D
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
B287484	Dissolved Uranium (U)	2024/02/21	103	80 - 120	102	80 - 120	<0,10	ug/L	0,33	20
B287484	Dissolved Vanadium (V)	2024/02/21	102	80 - 120	103	80 - 120	<5.0	ug/L	NC	20
B287484	Dissolved Zinc (Zn)	2024/02/21	99	80 - 120	103	80 - 120	<5.0	ug/L	NC	20
B287484	Dissolved Zirconium (Zr)	2024/02/21	101	80 - 120	97	80 - 120	<0,10	ug/L	NC	20
B287581	Total Mercury (Hg)	2024/02/16	87	80 - 120	91	80 - 120	<0.0019	ug/L	NC	20
B287592	Nitrate plus Nitrite (N)	2024/02/16	113	80 - 120	106	80 - 120	<0.020	mg/L	NC	25
B287596	Nitrite (N)	2024/02/16	106	80 - 120	1,05	80 - 120	<0.0050	mg/L	NC	20
B287657	Total Organic Carbon (C)	2024/02/16	I		105	80 - 120	<0.50	mg/L	1	
B289796	Total Sulphide	2024/02/21	97	80 - 120	94	80 - 120	<0.0018	mg/L	NC	20
B290280	Dissolved Fluoride (F)	2024/02/21	105	80 - 120	102	80 - 120	<0.050	mg/L	NC	20
B290301	Total Aluminum (Al)	2024/02/21	99	80 - 120	103	80 - 120	<3.0	ug/L	4.2	20
B290301	Total Antimony (Sb)	2024/02/21	103	80 - 120	103	80 - 120	<0,50	ug/L	NC	20
B290301	Total Arsenic (As)	2024/02/21	106	80 - 120	109	80-120	<0,10	ug/L	0.24	20
B290301	Total Barium (Ba)	2024/02/21	100	80 - 120	102	80-120	<1.0	ug/L	NC	20
B290301	Total Beryllium (Be)	2024/02/21	97	80 - 120	100	80 - 120	<0.10	ug/L	NC	20
B290301	Total Bismuth (Bi)	2024/02/21	95	80 - 120	103	80 - 120	<1.0	ug/L	NC	20
B290301	Total Boron (B)	2024/02/21	110	80 - 120	112	80 - 120	<50	ug/L	3.5	20
B290301	Total Cadmium (Cd)	2024/02/21	100	80 - 120	1.03	80 - 120	<0.010	ug/L	7.6	20
B290301	Total Chromium (Cr)	2024/02/21	96	80 - 120	101	80 - 120	<1.0	ug/L	NC	20
B290301	Total Cobalt (Co)	2024/02/21	97	80 - 120	100	80 - 120	<0.20	ug/L	NC	20
B290301	Total Copper (Cu)	2024/02/21	93	80 - 120	100	80 - 120	<0.20	ug/L	1.6	20
B290301	Total Iron (Fe)	2024/02/21	100	80 - 120	104	80 - 120	<5.0	ug/L	0.66	20
B290301	Total Lead (Pb)	2024/02/21	97	80 - 120	102	80 - 120	<0.20	ug/L	0.90	20
B290301	Total Manganese (Mn)	2024/02/21	94	80 - 120	98	80-120	<1.0	ug/L	0.28	20
B290301	Total Molybdenum (Mo)	2024/02/21	108	80 - 120	105	80 - 120	<1.0	ug/L	0.031	20
B290301	Total Nickel (Ni)	2024/02/21	95	80 - 120	101	80-120	<1.0	ug/L	NC	20
B290301	Total Selenium (Se)	2024/02/21	100	80 - 120	104	80 - 120	<0.10	ug/L	NC	20
B290301	Total Silicon (Si)	2024/02/21	NC	80 - 120	116	80 - 120	<100	ug/L	0.48	20
B290301	Total Silver (Ag)	2024/02/21	99	80 - 120	103	80 - 120	<0.020	ug/L	NC	20
B290301	Total Strontium (Sr)	2024/02/21	NC	80 - 120	98	80 - 120	<1.0	ug/L	1.3	20
B290301	Total Thallium (TI)	2024/02/21	99	80 - 120	104	80 - 120	<0.010	ug/L	NC	20
8290301	Total Tin (Sn)	2024/02/21	102	80 - 120	105	80 - 120	<5.0	ug/L	NC	20
B290301	Total Titanium (Ti)	2024/02/21	100	80 - 120	1.02	80 - 120	<5.0	ug/L	NC	20

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QUALITY ASSURANCE REPORT(CONT'D)

HY-GEO CONSULTING Client Project #: TOTANG

QC Batch			Matrix	Spike	Spiked	Blank	Method	Blank	RP	D
	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
B290301	Total Uranium (U)	2024/02/21	103	80 - 120	1,05	80 - 120	<0,10	ug/L	3.5	20
8290301	Total Vanadium (V)	2024/02/21	98	80 - 120	99	80 - 120	<5.0	ug/L	NC	20
B290301	Total Zinc (Zn)	2024/02/21	95	80 - 120	1,02	80 - 120	<5.0	ug/L	0.40	20
B290301	Total Zirconium (Zr)	2024/02/21	106	80 - 120	103	80 - 120	<0,10	ug/L	NC	20
B290418	Total Nitrogen (N)	2024/02/22	1	L	103	80 - 120	<0.020	mg/L	NC	20
B290422	Total Dissolved Solids	2024/02/22	103	80 - 120	101	80 - 120	<10	mg/L	3.0	20
B290458	Total Ammonia (N)	2024/02/21	105	80 - 120	100	80 - 120	<0.015	mg/L	1.7	20
B290536	Chloride (Cl)	2024/02/21	107	80 - 120	100	80 - 120	<1.0	mg/L	3.4	20
B290536	Sulphate (SO4)	2024/02/21	92	80 - 120	99	80 - 120	<1.0	mg/L	NC	20
B293309	Transmittance at 254nm	2024/02/23	1 14		99	97 - 103		1.2 1	1.5	25

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy,

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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HY-GEO CONSULTING Client Project #: TOTANGI

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Anastassia Hamanov, Scientific Specialist

n0.

Suwan (Sze Yeung) Fock, B.Sc., Scientific Specialist



Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Raphael Kwan, Senior Manager, BC and Yukon Regions responsible for British Columbia Environmental laboratory operations.

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Re: <u>Preliminary Groundwater Assessment for Wildwood Terrace Neighbourhood</u> <u>Commercial Zone, C-1A at Jordan River</u>

As requested, Hy-Geo Consulting has completed a desktop assessment of the feasibility of obtaining a sufficient supply of potable groundwater involving up to 10 individual water supply wells for the proposed subject property development at Jordan River (Figure 1). Potential impacts of the proposed groundwater use on neighbouring properties and existing water sources including wells and nearby streams has also been assessed. My understanding is that drilling and testing of an initial production well for a proposed brewery on one of the proposed parcels is currently being planned.

Site Location

The subject property is situated along the north side of the West Coast Road at Jordan River (Figure 1) and currently zoned as Wildwood Terrace Neighbourhood Commercial Zone, C-1A under Bylaw No. 2040, "Juan de Fuca Land Use Bylaw, 1992" (CRD, 2023a). In 2021 an amendment to Bylaw No. 2040 under Bylaw No. 4381 included added potential water uses for food and beverage processing and country market (CRD, 2021). The current proposal for the property includes 10 commercial use parcels ranging in size from 0.20 to 0.46 hectares in size (Figure 2). There are numerous existing wells in the general region directly south and west of the property (Figure 3). First Creek lies approximately 175 m (574 feet) west of the western boundary of the property. The site is situated at an elevation of about 55 m (180.4 feet) on a glacial-fluvial terrace that slopes gently southwesterly towards the ocean. Towards the southeast, elevations drop abruptly from the site towards the mouth of the Jordan River.

Climate

The region is situated in the *Coastal Western Hemlock Biogeoclimatic Zone* with long, mild, and wet winters, and relatively sunny and dry summers. While a long-term climate station for Jordan River is not available, monthly normal precipitation for the Sooke Lake North climate weather station for the 1981-2010 period has been reported

by the Government of Canada (2023) for climate station 1017563 as shown in Figure 4. The region receives about 1497 mm of precipitation on an annual basis (Government of Canada, 2023). Precipitation normally follows a seasonal cycle, with highest rainfall during the fall, winter and early spring months while the summer months are subject to drought conditions.



Figure 1. Location of subject property at Jordan River. Basemap from Province of British Columbia (2022a).

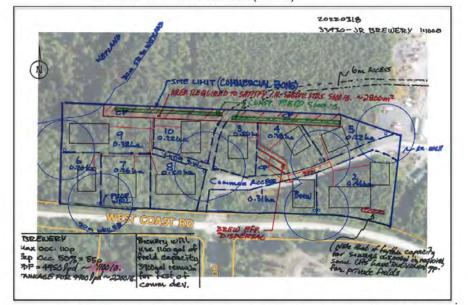


Figure 2. Draft proposed parcel plan for property. Figure from Totangi Properties Ltd., July 14, 2022.



Figure 3. Location of neighbouring water wells and streams. Basemap from CRD (2022b).

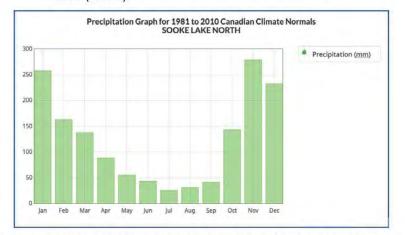


Figure 4. Graph of monthly normal precipitation for Sooke Lake North station (Climate ID. 1017563). Graph from Government of Canada (2023).

Geology and Hydrogeological Setting

The subject property is underlain by a confined glacio-fluvial sand and gravel aquifer system, designated Aquifer 944 under the *BC Aquifer Classification System* (Bernardinucci and Ronneseth, 2002). The aquifer is also classified as a moderately productive and moderately vulnerable IIB aquifer. More detailed descriptions of the aquifer can be found at the *British Columbia Water Resources Atlas* (Province of British Columbia, 2022a).

The *British Columbia Water Resources Atlas* also shows a fractured crystalline aquifer, (Aquifer 943) comprised of igneous intrusive or metamorphic, meta-sedimentary, and meta-volcanic rocks underlying the unconsolidated deposits of Aquifer 944.

Examination of drilling records in the region carried out under this assessment also indicated descriptions of sedimentary sandstone, conglomerate and siltstone underlying the unconsolidated deposits locally. These latter bedrock units may belong to the Sooke Formation that has been reported to be comprised of cross-bedded sandstone, interbedded with lesser amounts of siltstone, and conglomerate containing cemented pebble to boulder sized clasts (Massey, 1994; Yorath and Nasmith, 1995).

Groundwater occurs within the pore spaces of the unconsolidated deposits and in open fractures in the underlying bedrock as they are encountered during drilling of water wells. Groundwater is likely recharged by infiltration of precipitation and runoff from the upland area north of the aquifer with groundwater moving southerly towards lower elevations and ultimately discharging to the ocean.

Reported Wells

Figure 5 shows the location of reported wells in the vicinity of the subject property. The majority of these are situated south and west of the property. A summary of the wells shown in Figure 5 is provided in Table 1. Wells are identified with a unique, computer generated WTN (well tag number) in the provincial WELLS database (Province of British Columbia, 2022a and 2022b). The wells shown do not necessarily comprise all existing wells in the area and all well locations have not been necessarily verified in the field.

Well records for the region shown in Figure 5 indicate that the unconsolidated deposits comprise a heterogeneous array of materials ranging from glacial till, cobbles and boulders, fine sand and silt to coarse-grained gravels. The unconsolidated deposits range from 33 to 418 feet (10.06 to 127.41 m) in thickness. Most wells are completed in sand and gravel units with or without well screens. Reported well yields range from 2 to 80 USgpm (7.57 to 302.83 L/min) with a median of 10 USgpm (37.85 L/min). About 20 percent of the wells shown in Figure 5 are completed in bedrock at depths ranging from 280 to 598 feet (85.34 to 182.27 m) with well yields in the range 1 to 7 USgpm (3.78 to 26.50 l/min) with a median of 5 USgpm (18.93 L/min).

Groundwater Prospects on the Subject Property

Based on the records of wells situated closest to the subject property (Figure 6), the geologic conditions appear very favourable for constructing relatively shallow wells within the unconsolidated aquifer unit. Figure 7 shows that there may be up to 10 m (32.81 feet) of saturated sand and gravel underlying the site with individual wells potentially yielding 5 to 10 USgpm (18.93 to 37.85 L/min) each.

Potential Water Demands for Future Commercial Uses

CRD Bylaws No. 2040 and Bylaw No. 4381 permit the following principle land uses in the commercial zoned property namely:

(a) Convenience Store;

(b) Retail Store, excluding gas bars, gas stations or bulk fuel sales, auto repair or car wash, or any use for which a permit is required under the *Environmental Management Act or Regulation*;

(c) Civic Uses;

(d) Food and beverage processing;

(e) Country Market.

It is estimated that the proposed brewery for the subject property would initially need 350,000 L/year (959 L/day) of potable water potentially growing to 2,000,00 L/year (5480 L/day) after 5 years (Totangi Properties, 2023). This would be equivalent to an initial well production rate of 0.18 USgpm growing to 1.01 USgpm, from a well on the property. Other parcels at the site would unlikely require as much water for their needs compared to the brewery requirements. While the specific individual business water needs are not currently known, the maximum total potential water use from 10 wells on the site would not likely be more than 3 to 5 USgpm (11.36 to 18.93 L/min). Geological and groundwater conditions based on neighbouring wells indicates this quantity of water could be readily obtained from properly designed and constructed wells on the subject property.

Potential Impacts on Neighbouring Wells and Surface Water Sources

Based on a relatively low, continuous water demand of 3 to 5 USgpm (11.36 to 18.93 L/min) from the commercial site, it is unlikely that groundwater use at this rate would have any significant effect on neighbouring wells or the flows of First Creek. Potential wells used for commercial purposes would also need to be adequately tested to support an application for a water licence under the *Water Sustainability Act* and meet provincial guidelines for testing and monitoring (Todd *et al.*, 2016 and 2020) to assess any potential impacts on neighbouring wells or nearby surface water sources.



Figure 5. Reported wells in the vicinity of the subject property. Well locations and basemap from Province of British Columbia (2022a).

	39 280 280 50.5	11.89 85.34 85.34	6	15.24 15.24	Usapmi 3	14				Date	1	Lot					
	280 50.5	85.34	264	15.24	-		4.27	39	11.89	03/29/2005	5.5 inch screen set 34.3 to 39 ft, 18 skd, sand and gravel			1	4		Private Domestic
	50.5		6		5	165	50.29	40	12.19	04/13/2005	sandstone 40-70 fL conglomenate 70 to 280 fL 1 grm at 240, 3 grm at 260 and 6 grm at 280 ft		1.11	2	-		Private Domestic
				15.24	6	174	53.04	40	12.19	04/04/2005	sandstone 40-73 ft, conglomerate 73 to 280 ft, 0.5 gpm at 220, 2 gpm at 240 and 4 gpm at 260 ft, 6 gpm at 260 ft.			3	4		Private Domestic
		15.39	6	15.24	5	28	8.53			04/01/2005	5.5 inch screen set 43 10" to 50.5 A, 10 slot, sand and gravel			4	4		Private Domestic
	280	85.34	6	15,24	5	150	45.72	35	10.67	03/30/2005	sandstone 35 -85 ft, congiomerate 55 to 290 ft, 0.5 gem at 220, 2 gpm at 240 and 4 gpm at 250 ft, 5 gpm at 210 ft			5			Private Domestic
	280	85.34	6	15.24	5	187	57.00	33	10.05	04/12/2005	candistone 33 .65 h, congiomerate t5 to 280 h, 0.75 gpm at 220, 1.5 gpm at 240 and 4 gpm at 260 h, 6 gpm at 280 h		-	1	4		Private Domestic
	285	86.87	6	15.24	3	213	64.92	54	16.46	04/08/2005	sandstone 64 -72 ft, congiomerate 72 to 285 ft	1.00		7	4		Private Domesti
	280	85.34	6	15.24	7	200	60.96	42	12.80	04/07/2005	sandstone 54 -75 ft, congiomerate 75 to 280 ft, 0.5 gpm at 240, 3 gpm at 250 and 7 gpm at 250 ft			9	4		Private Domestic
	300	91.44	6	15.24	6	160	48.77	33	10.06	03/23/2005	tandistone 33 -70 ft, shale 70 - 98, mudalone? 95-130, conglomerate 130 to 240 ft, sandstone 240-275, conglomerate 275-300, 1.5 gpm et 240, 2 gpm at 260, 5 et 280, and 6 at 300 feet			11	4	-	Privale Domenia
-	200	85.34	6	15.24	6	150	45.72	34	10.36	03/28/2005	sandstone 34.00 ft, conglomerate 50 to 06 ft, sandstone 95-120, conglomerate 120-260, 1.5 gpm at 240, 4 gpm at 250, 15 at 260		-	12	4		Private Domesti
	-14	13.41	6	15.24	10	19	5.79			03/22/2005	delied to fi2 teet, sand and gravel with boulders, open bottom			14	4	1	Private Domesti
18003	130	39.62	6	15,24	2	70	21.34			10/17/2006	drilled to 137 ft, sand with little gravel, screen set 123.5 to 130 ft, 18 slot		68644	21	4		Private Domesti
16064	120	36.58	6	15,24	15	-85	26.82			12/07/2006	gravel and sand, screen set 113.5 to 120 ft, 25 slot		60544	45	4		Private Domesti
10009	120	36.58	6	15.24	10	80	26.82	1000 B	-	12/20/2006	gravel with boulders, open hole		68644	36	4		Unknown Well Un
18161	100	30.48	6	15.24	10	69	21.03	-		12/11/2005	gravel with boulders, open hole		68544	46	4		Private Domesti
18070	134.5	41.00	6	15.24	15	-91	27.74		1.00	12/06/2006	gravel and sand, screen set 128 to134.5 ft, 18 slot		68644	41	- 4		Unknown Well Un
18002	154.9	47.21	6	15.24	3	125	38.10			10/21/2006	sand and gravel, serven set 540 to 154.0 k, 26 slot		60544	62	4		Private Domesti
18007	151	46.02	6	15.24	2	115	35.05			10/19/2006	sand and gravel, screen set 144.25 to 181, 18 skot		68644	20	4		Private Domesti
18157	.518	157 89	6	15,24	2			418	127,41	08/23/2006	completed in sandstone, overtain by silty sand, till and clay		68644	6	4	-	Private Domesti
18006	132	40.23	6	15.24	5	70	21.34	1.5		10/11/2006	gravel with sand, screen set 125.25 to 13 tt2, 12 slot		68644	10	4		Private Domestic
18196	153	46.63	6	15.24	2	134	40.04	-	1	10/24/2006	sand with gravel, open hole	1	68644	18	4		Private Domesti
18067	129	39.32	6	15.24	10	17	23.47						68644	33	4		Private Domesti
18158	1.162	0.0201	6	1.1.1.1	2	100	C. C.		9 - N		nixi			26	4	9	Private Domestic
18159			6		7	105		314	95.71			-	68644	23	4	-	Private Domestic Private Domestic
10 10 10 10 10 10 10	064 069 1161 002 007 1157 006 1196 067 1158	280 200 200 44 003 130 004 120 009 120 161 100 017 134 007 154 157 518 006 132 158 153 006 153 007 153 159 153	280 85.34 300 81.44 200 85.34 44 13.41 0003 13.0 306 11.00 306 12.0 306 12.0 300 15.54 440 13.41 0003 13.00 161 1000 1001 36.56 0070 15.45 1000 15.54 0071 15.14 0007 15.14 1100 30.46 0006 13.22 1527 51.61 157 51.61 157 51.61 157 51.61 157 15.23 153 44.02 153 45.02 153 14.02 153 14.02 154 44.74 150 14.97 150 14.97	280 85.4 6 200 91.44 6 200 91.44 6 200 91.44 6 200 91.44 6 44 12.41 6 003 130 39.62 6 004 120 36.56 6 007 150 36.56 6 007 150 36.56 6 007 154 41.00 9 007 154 42.71 6 006 132 40.23 6 157 518 157.00 6 006 132 49.23 6 158 147 44.81 6 159 149 93.25 6	280 85.34 6 15.34 300 61.44 6 15.24 280 65.34 6 15.24 44 13.41 6 15.24 003 130 39.62 6 15.24 004 120 39.62 6 15.24 005 130 39.62 6 15.24 006 120 39.62 6 15.24 007 134.5 10.06 6 15.24 008 120 39.62 6 15.24 007 134.5 10.06 6 15.24 007 154.5 41.00 6 15.24 007 154.5 41.00 6 15.24 007 154 45.29 6 15.24 007 154 45.29 6 15.24 007 154 45.29 6 15.24 007 154 45.29 6	280 8534 6 15.34 7 300 9144 6 15.24 6 280 85.34 6 15.24 6 280 85.34 6 15.24 6 44 12.41 6 15.24 6 44 12.41 6 15.24 10 003 130 39.62 6 15.24 12 004 120 36.50 0 15.24 10 070 134.5 41.00 8 15.24 10 070 134.5 47.00 6 15.24 10 070 134.5 41.00 8 15.24 13 007 151 46.02 6 15.24 2 152 516 157.80 6 15.24 2 006 132 40.23 6 15.24 2 057 516 157.80 6 15.24 2<	280 85.34 6 15.34 7 200 300 61.44 6 15.24 6 160 280 65.34 6 15.24 6 160 44 13.44 6 15.24 6 150 44 13.44 6 15.24 10 19 003 130 39.62 6 15.24 10 19 004 120 39.52 6 15.24 10 08 006 120 39.52 6 15.24 10 08 0070 134.5 4100 6 15.24 10 99 0070 154.5 157 6 15.24 2 115 157 516 15789 6 15.24 2 115 157 516 15789 6 15.24 2 115 157 516 15789 6 15.24 2 115	280 85.34 6 15.34 7 200 60.36 300 61.44 6 15.24 6 160 48.77 280 65.34 6 15.24 6 150 48.77 44 13.41 6 15.24 6 150 45.77 003 130 39.62 6 15.24 2 70 2134 004 120 36.56 6 15.24 10 09 26.02 064 120 36.56 6 15.24 10 09 26.02 0604 120 36.56 6 15.24 10 09 26.02 0700 134.5 10.00 6 15.24 10 09 21.03 0701 134.5 10.00 6 15.24 2 115 35.12 31.10 0701 134.5 10.00 6 15.24 2 115 35.55 31.57	280 85.34 6 15.34 7 200 80.36 42 300 91.44 6 15.24 7 200 60.36 42 200 85.34 6 15.24 6 160 48.77 33 200 85.34 6 15.24 6 150 45.72 34 44 13.41 6 15.24 10 19 5.79 0031 130 39.62 6 15.24 10 60 28.62 0041 120 36.56 6 15.24 10 60 28.62 0070 134.5 41.00 8 15.24 10 60 28.62 0070 134.5 41.00 8 15.24 10 60 28.62 0071 134.5 41.00 8 15.24 152 315 310 0071 151 46.02 6 15.24 2 115 3	280 85.34 6 15.34 7 200 60.36 42 12.80 300 61.44 6 15.24 6 160 48.77 33 10.06 200 65.34 6 15.24 6 160 48.77 33 10.06 44 13.41 6 15.24 6 150 45.72 34 10.36 644 13.41 6 15.24 2 70 21.34 2 100 19 5.79 2 100 10 35.91 6 15.24 2 70 21.34 2 100 100 30.42 6 15.24 10 90 26.02 100 100 30.42 10 90 26.02 100 100 30.42 10 100 30.42 10 100 100.12 100 100 100.12 100 100 100.12 100 100 100.12 100 100 100	280 85.34 6 15.34 7 200 60.36 42 12.80 04072005 300 61.44 6 15.24 6 160 48.77 33 10.06 03232005 200 65.34 6 15.24 6 150 45.77 33 10.06 03232005 44 13.41 0 15.24 10 19 5.79 0 0322005 003 130 39.62 6 15.24 10 19 5.79 0 0322005 004 120 36.58 6 15.24 10 19 5.79 0 0322005 004 120 36.58 6 15.24 10 08 26.12 12070506 006 120 36.58 6 15.24 10 08 26.12 12070506 0070 134.54 10.0 60 26.02 12070506 12070506 0071 134.	200 61.37 6 15.24 3 210 41.04 61.04 72.00 60.92 72.00 60.92 72.00 60.92 72.00 60.92 72.00 60.92 72.00 60.92 72.00 60.96 422 12.00 94.070005 substants 43.176. substants 73.02 72.00 60.96 422 12.00 94.070005 substants 43.176. substants 73.02 72.00 72.00 72.00 60.96 422 12.00 94.070005 substants 43.176. substants 73.00 72.00	285 91.57 6 15.24 21 64.2 12.00 64.97/2005 sensitive K1.25. complementer 72 to 246.8 280 95.34 6 15.24 7 200 60.56 42 12.00 64.90/2005 sensitive K1.25. complementer 72 to 246.8 300 91.44 6 15.24 7 200 65.77 33 10.06 62/23/2005 sensitive K1.25. complementer 72 to 246.8 300 91.44 6 15.24 6 160 42.77 33 10.06 62/23/2005 sensitive K1.25.8 complementer 72 to 246.8 200 65.34 6 150 45.72 34 10.26 GS210/2005 sensitive 33.79.6 +///2004.01.0 sensitive 72 to 246.8 201 65.34 6 15.04 5.77 20.4 10.27.20 Sensitive 72 to 246.8 Sensito 247 to 246.8 Sensitive 72 to 246.8 <td>200 61.37 6 15.24 21 64.12 64.16 64.0000005 Summaries 64.738, anglements 732-3814 280 65.34 6 15.24 7 200 60.96 42 12.00 64.000005 50.00 13.00<td>200 61.57 6 15.24 210 64.02 64.11 64.000000000000000000000000000000000000</td><td>200 05.54 0. 1.23 04.52 1.20 0.04 to gram 2.00 to</td><td>200 65.97 6 15.24 32 210 41.84 41.84 42.85 analysis analysi</td></td>	200 61.37 6 15.24 21 64.12 64.16 64.0000005 Summaries 64.738, anglements 732-3814 280 65.34 6 15.24 7 200 60.96 42 12.00 64.000005 50.00 13.00 <td>200 61.57 6 15.24 210 64.02 64.11 64.000000000000000000000000000000000000</td> <td>200 05.54 0. 1.23 04.52 1.20 0.04 to gram 2.00 to</td> <td>200 65.97 6 15.24 32 210 41.84 41.84 42.85 analysis analysi</td>	200 61.57 6 15.24 210 64.02 64.11 64.000000000000000000000000000000000000	200 05.54 0. 1.23 04.52 1.20 0.04 to gram 2.00 to	200 65.97 6 15.24 32 210 41.84 41.84 42.85 analysis analysi

Veli Tag No. (WTN)	Well Identification Plate No. (WID)	Depth Drilled or Dug (heat)	Depth Well Drilled (m)	Diameter (inches)	Diameter (cm)	Driller's Estimated Yield Value(Usgpm)	Water Depth (feet)	Water Depth (m)	Depth to Bedrock (feet)	Depth to Bedrock (m)	Construction Completion Date	General Remarks	Legal District Lot	Legal Plan	Lot No.	Section	Owner When Constructed	Well Purpose
86100	18001	305	92.96	6	15.24	6	160	48.77			11/01/2006	sand, screen set 298.5 to 305 ft, 18 slot		68644	1	4		Private Domestic
86127	18162	149	45.42	6	15.24	0	111	33.83			10/06/2006	sand and gravel, screen set 142.25 to 149 # 20 slot		60644	7	4		Private Domestic
86128	10199	590	102.27	6	15.24	1	150	45.72	408	124.36	10/04/2006	sandstone bedrock, 0.75 gpm at 520 ft, 1 gpm at 598 ft		60644	Û	4		Private Domestic
86129	18198	427	130.15	6	15.24	10	150	45.72		-	09/27/2006	sand and gravel, open hole		68644	9	4		Private Domestic
86130	10004	219	66.75	6	15.24	20	154	46.94		-	09/04/2006	gravel and sand, open hole		68644	15	4		Private Domestic
86145	18195	150	45.72	6	15,24	10	121	36.08			09/14/2006	gravel, open hole		60644	4	4		Private Domestic
86146	18109	157	47.85	0	15.24	0	100	30.48	_		09/12/2006	gravel and sand, sity, screen set 150.3 to 157 ft, 25 slot		60644	3	4		Private Domestic
86147	18197	187	57.00	.6	15.24	10	144	43.09	_	-	09/10/2006	sandy gravel, open hole		60644	5	4		Private Domestic
86150	18200	310	94,49	0	15.24	25+	150	45.72	1.00	2.00	09/11/2006	sand and gravel, screen set 303,3 to 310 8, 20 slot	11.11	60644	2	4		Private Domestic
87054		60	18,29	6	15,24	80 to 100					02/08/2005	sand with gravel, soreen set 56 to 60 ft, 12 size		4194	6	2	1	Unknown Well Use
80329	10055	56	17.07	6	15,24	10	20	6,10			01/16/2007	boulders and gravel, open hole		60644	47	4		Private Domestic
80322	10049	121	36.80	6	15,24	12	- 55	16,76			01/05/2007	gravel and sand, open hole		60544	38	4		Private Domestic
90202	18081	- 96	29.26	6	15.24	10	45	13.72		1	01/03/2007	sand and gravel, open hole		68644	29	4	1.0	Unknown Well Use
90203	16062	127	38.71	6	15.24	10	68	20.73			01/04/2007	gravel, open hole		60644	28	4		Unknown Well Use
90204	18084	118	35.97	6	15.24	8	n	23.47			01/11/2007	sand, ittle gravel, screen set 111.5 to 118, 12 slot	1	60644	30	4		Unknown Well Use
90205	16066	59	17.98	6	15.24	10	16	4.88			01/15/2007	gravel, open hole		60644	50	4		Unknown Well Use
90207	18087	59	17.96	6	15.24	10	16	5.49			01/16/2007	coarse gravel, open hole		60544	48	4		Unknown Well Use
90532	18572	138	42.06	5.625	16.83	12					12/21/2006	coarse gravel, open hole		VID83339	34	2		Private Domestic
90536	18570	110	33.53	6,625	16.03	12	55	16.76			12/20/2006	coarse gravel, open hole		VID83339	32	2		Private Domestic
90541	18592	238	72.54	6.625	16.83	30	35	10.67	-		12/16/2006	gravel, open hole		VID83339	35	2	-	Private Domestic
90544	18561	146	44.50	6.625	16.83	6	112	34.14			12/09/2006	gravel and sand, open hole		VID83339	40	2		Private Domestic
90546	18580	155	47.24	6.625	16.83	20	110	33.53			12/06/2006	coame gravel, open hole		VID83339	39	2	-	Private Domestic
90548	18562	154	46.94	6.625	16.83	19	109	33.22			12/08/2006	gravel and sand, open hole		VID83339	43	2	_	Private Domestic
90553	18581	150	45.72	6.625	16.83	6	87	26.52			11/14/2006	coarse sand and gravel, soreen set 146 to 150, 10 slot		VID63339	22	2		Private Domestic
90554	18598	149	45.42	6.625	16.83	10	78	23.77		-	11/10/2006	coarse sand and gravel, open hole		VID63339	24	2		Private Domestic
90555	18588	134	40.84	6.625	16.83	8	86	26.21	-	-	11/08/2005	coarse sand and gravel, open hole		VID83339	25	2	_	Private Domestic
90557	18597	142	43.28	6.625	16.83	18	87	26.52	-	-	11/02/2006	gravel, coarse sand, open hole		VID83339	11	2		Private Domestic
90558	16596	157	47.85	6.625	16.83	6	117	35.66			10/31/2006	gravel and sand, open hole		VID83339	17	2		Private Domestic
90560	18509	119	36.27	6.625	16.83	4	92	28.04	-		10/26/2006	gravel and sand, screen set 115 to 119, 20 slot		VID63330	14	2		Private Domestic
90561	18560	70	21.34	8.625	16.83	20					10/25/2006	gravel and sand, screen set 65 to 70, 18 slot.		VID83339	13	2		Private Domestic
90628	18579	154	46.94	6.625	16.83	5	112	34.14	1		12/09/2006	gravel and sand, open hole		VID83339	44	2		Private Domestic
93815	18595	113	34.44	6.625	16.83	6			-		11/15/2005	gravel and sand		VID83339	27	2	_	Private Domestic
95646	18153	114	34.75	6	15.24	10	71	21.64	-		07/19/2006	gravel , open hole		427R, 23875		4		Private Domestic
104168	19818	120	36.58	6.125	15.56	15	50	29.07	-	-	04/16/2010	gravel and sand, open hole		23015	36			Private Domestic
112330	34474	300	91.44	6.125	15.56	3		and the	170	51.82	10/29/2014	sitstone, open hole 178.5 to 300 ft		VIPEREI	40			Private Domestic
113801	\$2111	96	29.26	6	15.24	4	71	23.47	-		10/20/2017	coarse sand with boulders, water-bearing 78 to 96 feet		427 R				Private Domestic
114734	52180	280	85.34	4	10.16	2.5	166	50.60	35	10.67	03/01/2018	gray rock, fracture at 262 feet, perforated liner from 180 to 280 feet		VIP79213	7	4		Private Domestic
118154	53508	114	34.75	6	15.24	10	85	25.91	-	-	08/22/2019	gravel, screen set 105 to 114 ft, 40 slot		VIP83894	43	4		Private Domestic

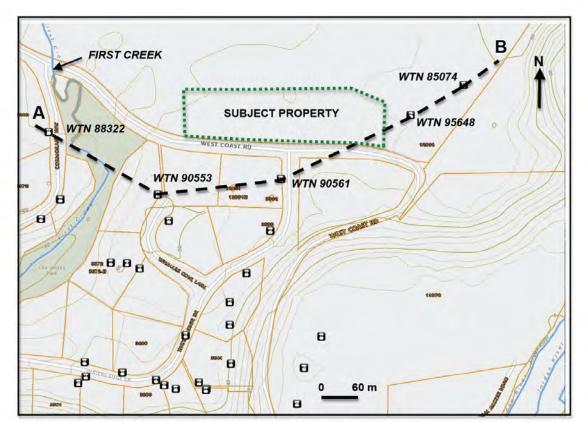


Figure 6. Location of geologic cross section A-B in relation to subject property. Basemap from CRD, 2022a.

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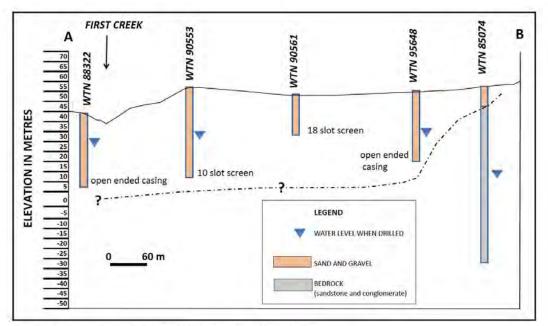


Figure 7. Geologic cross section A-B looking northerly towards subject property.

On-site waste water disposal may pose some minor risk to the aquifer and would require properly designed and constructed waste water treatment systems to minimize any potential impacts on the groundwater resource and neighbouring wells. Wells would need to be constructed in compliance with the *Groundwater Protection Regulation* under the *Water Sustainability Act.* The presence of glacial till near the surface in some wells and relatively deep water levels ranging from 55 to 87 feet (16.76 to 26.52 m) as shown in Figure 7 would minimize any potential risks of aquifer contamination.

Conclusions

Based on examination of available geological and groundwater information in the vicinity of the Wildwood Terrace Neighbourhood Commercial Zone, the prospects for constructing individual wells on each of the ten proposed land parcels are very encouraging. There may be up to 10 m (32.81 feet) of saturated sand and gravel underlying the site with individual wells potentially yielding 5 to 10 USgpm (18.93 to 37.85 L/min) each.

The maximum total water demand for ten parcels is estimated to not likely exceed 3 to 5 USgpm (11.36 to 18.94 L/min) on a continuous basis. The proposed brewery on the property would likely be the largest user of water initially at 350,000 L/year (959 L/day) increasing to 2,000,00 L/year (5480 L/day) after 5 years. It is unlikely that groundwater use at a continuous rate up to 3 to 5 USgpm (11.36 to 18.94 L/min) would have any significant effect on neighbouring wells or the flows of First Creek.

On-site waste water disposal may pose some minor risk to the aquifer and would require properly designed and constructed waste water treatment systems to minimize any potential impacts on the groundwater resource and neighbouring wells. The presence of glacial till near the surface and relatively deep water levels ranging from 55 to 87 feet (16.76 to 26.52 m) would also minimize potential risks of aquifer contamination.

Recommendations

The following recommendations are provided for consideration:

- Proceed with the design and construction of a water supply well for the proposed brewery and pump test the well to evaluate the aquifer parameters and to support a water licence application.
- Monitor water levels in a neighbouring well during the pump testing of the proposed brewery well and sample the brewery well for laboratory water quality analysis.
- Develop a Well Protection Plan for the brewery well to minimize any potential risks to water quantity depletion or water quality degradation.

Closure

This report was prepared in accordance with generally accepted engineering, hydrogeological and consulting practices. It is intended for the prime use by Totangi Properties in connection with its purpose as outlined under the scope of work for this project. This report is based on data and information available to the author from various sources at the time of its preparation and the findings of this report may therefore be subject to revision. Data and information supplied by others has not been independently confirmed or verified to be correct or accurate in all cases. The author retains full copyright of the material contained in this report. The author and Hy-Geo Consulting accepts no responsibility for damages suffered by any third party as a result of any unauthorized use of this report. Any errors, omissions or issues requiring clarification should be brought to the attention of the author.

Respectfully submitted,

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