

Your Project #: VIHA LIST  
Your C.O.C. #: 08429800

**Attention: Don Buchner**

Qualicum Bay Horne Lake Waterworks District  
234 Lions Way  
Qualicum Beach, BC  
Canada V9K 2E2

**Report Date: 2016/11/28**  
Report #: R2307445  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6A3568**

**Received: 2016/11/18, 11:00**

Sample Matrix: Water  
# Samples Received: 3

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Alkalinity - Water (1)	3	2016/11/19	2016/11/19	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry (1)	3	N/A	2016/11/21	BBY6SOP-00011	SM 22 4500-Cl- E m
Colour (True) by Kone Lab (1)	3	N/A	2016/11/19	BBY6SOP-00057	SM 22 2120 C m
Color Apparent (1)	3	N/A	2016/11/19	BBY6SOP-00021	SM 22 2120 B m
Total Coliforms & E.coli Potable W- MF (1)	3	N/A	2016/11/18	BBY4SOP-00001	SM 22 9222 m
Conductance - water (1)	3	N/A	2016/11/19	BBY6SOP-00026	SM 22 2510 B m
Fluoride (1)	3	N/A	2016/11/22	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3) (1)	1	N/A	2016/11/22	BBY WI-00033	Auto Calc
Hardness Total (calculated as CaCO3) (1)	2	N/A	2016/11/23	BBY WI-00033	Auto Calc
Heterotropic Plate Count (MF) Potable W (1)	3	N/A	2016/11/18	BBY4SOP-00003	SM 22 9215
Iron Related Bacteria (1, 2)	3	N/A	2016/11/18	BBY4SOP-00004	SM 22 9240 D
Na, K, Ca, Mg, S by CRC ICPMS (total) (1)	1	2016/11/18	2016/11/22	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total) (1)	2	2016/11/18	2016/11/23	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (total) (1)	1	2016/11/21	2016/11/22	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Elements by CRC ICPMS (total) (1)	2	2016/11/22	2016/11/23	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Nitrogen (Total) (1)	3	2016/11/22	2016/11/22	BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Preserved) (1)	3	N/A	2016/11/22	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate + Nitrite (N) (1)	3	N/A	2016/11/19	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) by CFA (1)	3	N/A	2016/11/19	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N) (1)	3	N/A	2016/11/22	BBY6SOP-00010	SM 22 4500-NO3 I m
Nitrogen (Organic) (Cal. TKN, NH4,N/N) (1)	3	N/A	2016/11/24	BBY WI-00033	Auto Calc
pH Water (1, 3)	3	N/A	2016/11/19	BBY6SOP-00026	SM 22 4500-H+ B m
Sat. pH and Langelier Index (@ 4.4C) (1)	1	N/A	2016/11/22	BBY WI-00033	Auto Calc
Sat. pH and Langelier Index (@ 4.4C) (1)	2	N/A	2016/11/23	BBY WI-00033	Auto Calc
Sat. pH and Langelier Index (@ 60C) (1)	1	N/A	2016/11/22	BBY WI-00033	Auto Calc
Sat. pH and Langelier Index (@ 60C) (1)	2	N/A	2016/11/23	BBY WI-00033	Auto Calc
Sulphate by Automated Colourimetry (1)	3	N/A	2016/11/21	BBY6SOP-00017	SM 22 4500-SO42- E m
Sulphate Reducing Bacteria (1, 2)	3	N/A	2016/11/18	BBY4SOP-00004	SM 22 9240 D
Sulphide - total (1)	3	N/A	2016/11/21	BBY6SOP-00006	SM 22 4500-S2- D m
Total Dissolved Solids (Filt. Residue) (1)	3	2016/11/23	2016/11/24	BBY6SOP-00033	SM 22 2540 C m
Carbon (Total Organic) (1, 4)	3	N/A	2016/11/21	BBY6SOP-00003	SM 22 5310 C m

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**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6A3568**

**Received: 2016/11/18, 11:00**

Sample Matrix: Water  
# Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Turbidity (1)	3	N/A	2016/11/19	BBY6SOP-00027	SM 22 2130 B m

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 Maxxam Vancouver
- (2) Presence/Absence Method. Number is an estimate.
- (3) The BC-MOE and APHA Standard Method require 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 BC-MOE/APHA Standard Method holding time.
- (4) TOC present in the sample should be considered as non-purgeable TOC.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
BC Env Customer Service, BC Environmental Customer Service  
Email: Enviro.CS.BC@maxxam.ca  
Phone# (250) 338 7786

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This report has been generated and distributed using a secure automated process.  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6A3568  
Report Date: 2016/11/28

Qualicum Bay Horne Lake Waterworks District  
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**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID					QB5894	QB5895		QB5896		
Sampling Date					2016/11/18 08:00	2016/11/18 08:15		2016/11/18 08:30		
COC Number					08429800	08429800		08429800		
	UNITS	MAC	AO	OG	WELL 1	WELL 2	QC Batch	WELL 3	RDL	QC Batch
<b>ANIONS</b>										
Nitrite (N)	mg/L	1	-	-	<0.0050	<0.0050	8480845	<0.0050	0.0050	8480845
<b>Calculated Parameters</b>										
Nitrate (N)	mg/L	10	-	-	<0.020	<0.020	8476297	<0.020	0.020	8476297
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	1.5	-	-	0.050	0.052	8481726	0.050	0.010	8481726
Alkalinity (Total as CaCO <sub>3</sub> )	mg/L	-	-	-	75.1	73.2	8477460	70.7	0.50	8477460
Total Organic Carbon (C)	mg/L	-	-	-	1.57	0.70	8479199	<0.50	0.50	8479200
Alkalinity (PP as CaCO <sub>3</sub> )	mg/L	-	-	-	<0.50	<0.50	8477460	<0.50	0.50	8477460
Bicarbonate (HCO <sub>3</sub> )	mg/L	-	-	-	91.6	89.3	8477460	86.2	0.50	8477460
Carbonate (CO <sub>3</sub> )	mg/L	-	-	-	<0.50	<0.50	8477460	<0.50	0.50	8477460
Hydroxide (OH)	mg/L	-	-	-	<0.50	<0.50	8477460	<0.50	0.50	8477460
<b>Anions</b>										
Dissolved Sulphate (SO <sub>4</sub> )	mg/L	-	500	-	3.17	3.71	8479742	3.21	0.50	8479742
Dissolved Chloride (Cl)	mg/L	-	250	-	2.1	2.8	8479715	2.6	0.50	8479715
<b>MISCELLANEOUS</b>										
Apparent Colour	Col. Unit	-	-	-	5.0	5.0	8477610	<5.0	5.0	8477610
True Colour	Col. Unit	-	15	-	<5.0	<5.0	8477674	<5.0	5.0	8477674
<b>Nutrients</b>										
Total Organic Nitrogen (N)	mg/L	-	-	-	0.022	0.028	8476275	<0.020	0.020	8476275
Total Ammonia (N)	mg/L	-	-	-	0.072	0.074	8479319	0.089	0.0050	8479319
Nitrate plus Nitrite (N)	mg/L	-	-	-	<0.020	<0.020	8480844	<0.020	0.020	8480844
Total Nitrogen (N)	mg/L	-	-	-	0.095	0.102	8480769	0.099	0.020	8480769
<b>Physical Properties</b>										
Conductivity	uS/cm	-	-	-	152	151	8477459	148	1.0	8477459
pH	pH	-	6.5:8.5	-	8.11	8.07	8477449	8.02		8477449
<b>Physical Properties</b>										
Total Dissolved Solids	mg/L	-	500	-	110	102	8481532	108	10	8481532
Turbidity	NTU	see remark	see remark	see remark	<0.10	0.11	8477290	<0.10	0.10	8477290
No Fill	No Exceedance									
Grey	Exceeds 1 criteria policy/level									
Black	Exceeds both criteria/levels									
RDL = Reportable Detection Limit										

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**MICROBIOLOGY (WATER)**

Maxxam ID			QB5894	QB5895	QB5896		
Sampling Date			2016/11/18 08:00	2016/11/18 08:15	2016/11/18 08:30		
COC Number			08429800	08429800	08429800		
	UNITS	MAC	WELL 1	WELL 2	WELL 3	RDL	QC Batch
<b>Microbiological Param.</b>							
Heterotrophic Plate Count	CFU/mL	-	<1.0	<1.0	<1.0	1.0	8476946
Iron Bacteria	CFU/mL	-	<25	<25	<25	25	8476947
Sulphate reducing bacteria	CFU/mL	-	<75	<75	<75	75	8476948
Total Coliforms	CFU/100mL	<1	<1	<1	<1	1	8476945
E. coli	CFU/100mL	<1	<1	<1	<1	1	8476945
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit							

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**CALCULATED PARAMETERS (WATER)**

Maxxam ID		QB5894	QB5895	QB5896	
Sampling Date		2016/11/18 08:00	2016/11/18 08:15	2016/11/18 08:30	
COC Number		08429800	08429800	08429800	
	<b>UNITS</b>	<b>WELL 1</b>	<b>WELL 2</b>	<b>WELL 3</b>	<b>QC Batch</b>
<b>Parameter</b>					
Langelier Index (@ 4.4C)	N/A	-0.655	-0.711	-0.770	8476318
Langelier Index (@ 60C)	N/A	0.386	0.330	0.271	8476319
Saturation pH (@ 4.4C)	N/A	8.77	8.78	8.79	8476318
Saturation pH (@ 60C)	N/A	7.72	7.74	7.75	8476319

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**MISCELLANEOUS (WATER)**

Maxxam ID			QB5894	QB5895	QB5896		
Sampling Date			2016/11/18 08:00	2016/11/18 08:15	2016/11/18 08:30		
COC Number			08429800	08429800	08429800		
	<b>UNITS</b>	<b>AO</b>	<b>WELL 1</b>	<b>WELL 2</b>	<b>WELL 3</b>	<b>RDL</b>	<b>QC Batch</b>
<b>MISCELLANEOUS</b>							
Total Sulphide	mg/L	0.05	<0.0050	0.0054	0.0086	0.0050	8478482
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit							

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**CSR TOTAL METALS IN WATER WITH CV HG (WATER)**

Maxxam ID					QB5894	QB5895		QB5896		
Sampling Date					2016/11/18 08:00	2016/11/18 08:15		2016/11/18 08:30		
COC Number					08429800	08429800		08429800		
	UNITS	MAC	AO	OG	WELL 1	WELL 2	QC Batch	WELL 3	RDL	QC Batch
<b>Calculated Parameters</b>										
Total Hardness (CaCO3)	mg/L	-	-	-	66.4	65.0	8475896	64.1	0.50	8475896
<b>Total Metals by ICPMS</b>										
Total Aluminum (Al)	ug/L	-	-	100	<3.0	<3.0	8480044	<3.0	3.0	8479206
Total Antimony (Sb)	ug/L	6	-	-	<0.50	<0.50	8480044	<0.50	0.50	8479206
Total Arsenic (As)	ug/L	10	-	-	1.76	1.86	8480044	1.73	0.10	8479206
Total Barium (Ba)	ug/L	1000	-	-	3.6	3.9	8480044	2.5	1.0	8479206
Total Beryllium (Be)	ug/L	-	-	-	<0.10	<0.10	8480044	<0.10	0.10	8479206
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	<1.0	8480044	<1.0	1.0	8479206
Total Boron (B)	ug/L	5000	-	-	<50	<50	8480044	<50	50	8479206
Total Cadmium (Cd)	ug/L	5	-	-	<0.010	<0.010	8480044	<0.010	0.010	8479206
Total Chromium (Cr)	ug/L	50	-	-	<1.0	<1.0	8480044	<1.0	1.0	8479206
Total Cobalt (Co)	ug/L	-	-	-	<0.50	<0.50	8480044	<0.50	0.50	8479206
Total Copper (Cu)	ug/L	-	1000	-	2.68	<0.50	8480044	<0.50	0.50	8479206
Total Iron (Fe)	ug/L	-	300	-	<10	<10	8480044	<10	10	8479206
Total Lead (Pb)	ug/L	10	-	-	<0.20	<0.20	8480044	<0.20	0.20	8479206
Total Lithium (Li)	ug/L	-	-	-	<5.0	<5.0	8480044	<5.0	5.0	8479206
Total Manganese (Mn)	ug/L	-	50	-	<b>130</b>	<b>115</b>	8480044	<b>98.0</b>	1.0	8479206
Total Molybdenum (Mo)	ug/L	-	-	-	<1.0	<1.0	8480044	<1.0	1.0	8479206
Total Nickel (Ni)	ug/L	-	-	-	<1.0	<1.0	8480044	<1.0	1.0	8479206
Total Selenium (Se)	ug/L	50	-	-	<0.10	<0.10	8480044	<0.10	0.10	8479206
Total Silicon (Si)	ug/L	-	-	-	9180	9370	8480044	8330	100	8479206
Total Silver (Ag)	ug/L	-	-	-	<0.020	<0.020	8480044	<0.020	0.020	8479206
Total Strontium (Sr)	ug/L	-	-	-	38.8	39.0	8480044	39.5	1.0	8479206
Total Thallium (Tl)	ug/L	-	-	-	<0.050	<0.050	8480044	<0.050	0.050	8479206
Total Tin (Sn)	ug/L	-	-	-	<5.0	<5.0	8480044	<5.0	5.0	8479206
Total Titanium (Ti)	ug/L	-	-	-	<5.0	<5.0	8480044	<5.0	5.0	8479206
Total Uranium (U)	ug/L	20	-	-	<0.10	<0.10	8480044	<0.10	0.10	8479206
Total Vanadium (V)	ug/L	-	-	-	<5.0	<5.0	8480044	<5.0	5.0	8479206
Total Zinc (Zn)	ug/L	-	5000	-	8.3	<5.0	8480044	<5.0	5.0	8479206
Total Zirconium (Zr)	ug/L	-	-	-	<0.50	<0.50	8480044	<0.50	0.50	8479206
Total Calcium (Ca)	mg/L	-	-	-	18.3	18.0	8476223	18.3	0.050	8476223
Total Magnesium (Mg)	mg/L	-	-	-	5.01	4.89	8476223	4.46	0.050	8476223
Total Potassium (K)	mg/L	-	-	-	1.15	1.14	8476223	1.27	0.050	8476223
No Fill	No Exceedance									
Grey	Exceeds 1 criteria policy/level									
Black	Exceeds both criteria/levels									
RDL = Reportable Detection Limit										

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Report Date: 2016/11/28

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Client Project #: VIHA LIST

**CSR TOTAL METALS IN WATER WITH CV HG (WATER)**

Maxxam ID					QB5894	QB5895		QB5896		
Sampling Date					2016/11/18 08:00	2016/11/18 08:15		2016/11/18 08:30		
COC Number					08429800	08429800		08429800		
	UNITS	MAC	AO	OG	WELL 1	WELL 2	QC Batch	WELL 3	RDL	QC Batch
Total Sodium (Na)	mg/L	-	200	-	3.78	3.72	8476223	3.90	0.050	8476223
Total Sulphur (S)	mg/L	-	-	-	<3.0	<3.0	8476223	<3.0	3.0	8476223
No Fill	No Exceedance									
Grey	Exceeds 1 criteria policy/level									
Black	Exceeds both criteria/levels									
RDL = Reportable Detection Limit										



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### GENERAL COMMENTS

MAC,AO,OG: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, October 2014.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)  
It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

**Turbidity Guidelines:**

1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.

**Results relate only to the items tested.**

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Qualicum Bay Horne Lake Waterworks District  
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**QUALITY ASSURANCE REPORT**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8477290	CGP	Spiked Blank	Turbidity	2016/11/19		101	%	80 - 120
8477290	CGP	Method Blank	Turbidity	2016/11/19	<0.10		NTU	
8477290	CGP	RPD	Turbidity	2016/11/19	3.7		%	20
8477449	MM3	Spiked Blank	pH	2016/11/19		102	%	97 - 103
8477459	MM3	Spiked Blank	Conductivity	2016/11/19		99	%	80 - 120
8477459	MM3	Method Blank	Conductivity	2016/11/19	<1.0		uS/cm	
8477459	MM3	RPD [QB5895-01]	Conductivity	2016/11/19	0.34		%	20
8477460	MM3	Matrix Spike [QB5895-01]	Alkalinity (Total as CaCO3)	2016/11/19		NC	%	80 - 120
8477460	MM3	Spiked Blank	Alkalinity (Total as CaCO3)	2016/11/19		99	%	80 - 120
8477460	MM3	Method Blank	Alkalinity (Total as CaCO3)	2016/11/19	<0.50		mg/L	
			Alkalinity (PP as CaCO3)	2016/11/19	<0.50		mg/L	
			Bicarbonate (HCO3)	2016/11/19	<0.50		mg/L	
			Carbonate (CO3)	2016/11/19	<0.50		mg/L	
			Hydroxide (OH)	2016/11/19	<0.50		mg/L	
8477460	MM3	RPD [QB5895-01]	Alkalinity (Total as CaCO3)	2016/11/19	0.50		%	20
			Alkalinity (PP as CaCO3)	2016/11/19	NC		%	20
			Bicarbonate (HCO3)	2016/11/19	0.50		%	20
			Carbonate (CO3)	2016/11/19	NC		%	20
			Hydroxide (OH)	2016/11/19	NC		%	20
8477610	IW1	Method Blank	Apparent Colour	2016/11/19	<5.0		Col. Unit	
8477610	IW1	RPD	Apparent Colour	2016/11/19	0		%	20
8477674	BO3	Spiked Blank	True Colour	2016/11/19		111	%	80 - 120
8477674	BO3	Method Blank	True Colour	2016/11/19	<5.0		Col. Unit	
8477674	BO3	RPD [QB5895-01]	True Colour	2016/11/19	NC		%	20
8478482	JSG	Matrix Spike [QB5895-05]	Total Sulphide	2016/11/21		104	%	80 - 120
8478482	JSG	Spiked Blank	Total Sulphide	2016/11/21		108	%	80 - 120
8478482	JSG	Method Blank	Total Sulphide	2016/11/21	0.0084, RDL=0.0050		mg/L	
8478482	JSG	RPD [QB5894-05]	Total Sulphide	2016/11/21	NC		%	20
8479199	IC4	Matrix Spike	Total Organic Carbon (C)	2016/11/21		NC	%	80 - 120
8479199	IC4	Spiked Blank	Total Organic Carbon (C)	2016/11/21		111	%	80 - 120
8479199	IC4	Method Blank	Total Organic Carbon (C)	2016/11/21	<0.50		mg/L	
8479199	IC4	RPD	Total Organic Carbon (C)	2016/11/21	0.19		%	20
8479200	IC4	Matrix Spike	Total Organic Carbon (C)	2016/11/21		NC	%	80 - 120
8479200	IC4	Spiked Blank	Total Organic Carbon (C)	2016/11/21		114	%	80 - 120
8479200	IC4	Method Blank	Total Organic Carbon (C)	2016/11/21	<0.50		mg/L	
8479200	IC4	RPD	Total Organic Carbon (C)	2016/11/21	5.6		%	20
8479206	AD5	Matrix Spike	Total Aluminum (Al)	2016/11/22		NC	%	80 - 120
			Total Antimony (Sb)	2016/11/22		99	%	80 - 120
			Total Arsenic (As)	2016/11/22		97	%	80 - 120
			Total Barium (Ba)	2016/11/22		NC	%	80 - 120
			Total Beryllium (Be)	2016/11/22		110	%	80 - 120
			Total Bismuth (Bi)	2016/11/22		95	%	80 - 120
			Total Boron (B)	2016/11/22		108	%	80 - 120
			Total Cadmium (Cd)	2016/11/22		98	%	80 - 120
			Total Chromium (Cr)	2016/11/22		94	%	80 - 120
			Total Cobalt (Co)	2016/11/22		95	%	80 - 120
			Total Copper (Cu)	2016/11/22		93	%	80 - 120
			Total Iron (Fe)	2016/11/22		NC	%	80 - 120
			Total Lead (Pb)	2016/11/22		96	%	80 - 120
			Total Lithium (Li)	2016/11/22		112	%	80 - 120
			Total Manganese (Mn)	2016/11/22		NC	%	80 - 120
			Total Molybdenum (Mo)	2016/11/22		101	%	80 - 120
			Total Nickel (Ni)	2016/11/22		100	%	80 - 120
			Total Selenium (Se)	2016/11/22		99	%	80 - 120

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**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Silver (Ag)	2016/11/22		87	%	80 - 120
			Total Strontium (Sr)	2016/11/22		NC	%	80 - 120
			Total Thallium (Tl)	2016/11/22		73 (1)	%	80 - 120
			Total Tin (Sn)	2016/11/22		98	%	80 - 120
			Total Titanium (Ti)	2016/11/22		105	%	80 - 120
			Total Uranium (U)	2016/11/22		103	%	80 - 120
			Total Vanadium (V)	2016/11/22		99	%	80 - 120
			Total Zinc (Zn)	2016/11/22		97	%	80 - 120
8479206	AD5	Spiked Blank	Total Aluminum (Al)	2016/11/22		104	%	80 - 120
			Total Antimony (Sb)	2016/11/22		98	%	80 - 120
			Total Arsenic (As)	2016/11/22		96	%	80 - 120
			Total Barium (Ba)	2016/11/22		98	%	80 - 120
			Total Beryllium (Be)	2016/11/22		106	%	80 - 120
			Total Bismuth (Bi)	2016/11/22		92	%	80 - 120
			Total Boron (B)	2016/11/22		103	%	80 - 120
			Total Cadmium (Cd)	2016/11/22		97	%	80 - 120
			Total Chromium (Cr)	2016/11/22		94	%	80 - 120
			Total Cobalt (Co)	2016/11/22		94	%	80 - 120
			Total Copper (Cu)	2016/11/22		94	%	80 - 120
			Total Iron (Fe)	2016/11/22		97	%	80 - 120
			Total Lead (Pb)	2016/11/22		95	%	80 - 120
			Total Lithium (Li)	2016/11/22		107	%	80 - 120
			Total Manganese (Mn)	2016/11/22		93	%	80 - 120
			Total Molybdenum (Mo)	2016/11/22		102	%	80 - 120
			Total Nickel (Ni)	2016/11/22		97	%	80 - 120
			Total Selenium (Se)	2016/11/22		100	%	80 - 120
			Total Silver (Ag)	2016/11/22		94	%	80 - 120
			Total Strontium (Sr)	2016/11/22		87	%	80 - 120
			Total Thallium (Tl)	2016/11/22		93	%	80 - 120
			Total Tin (Sn)	2016/11/22		99	%	80 - 120
			Total Titanium (Ti)	2016/11/22		94	%	80 - 120
			Total Uranium (U)	2016/11/22		101	%	80 - 120
			Total Vanadium (V)	2016/11/22		96	%	80 - 120
			Total Zinc (Zn)	2016/11/22		100	%	80 - 120
8479206	AD5	Method Blank	Total Aluminum (Al)	2016/11/22	<3.0		ug/L	
			Total Antimony (Sb)	2016/11/22	<0.50		ug/L	
			Total Arsenic (As)	2016/11/22	<0.10		ug/L	
			Total Barium (Ba)	2016/11/22	<1.0		ug/L	
			Total Beryllium (Be)	2016/11/22	<0.10		ug/L	
			Total Bismuth (Bi)	2016/11/22	<1.0		ug/L	
			Total Boron (B)	2016/11/22	<50		ug/L	
			Total Cadmium (Cd)	2016/11/22	<0.010		ug/L	
			Total Chromium (Cr)	2016/11/22	<1.0		ug/L	
			Total Cobalt (Co)	2016/11/22	<0.50		ug/L	
			Total Copper (Cu)	2016/11/22	<0.50		ug/L	
			Total Iron (Fe)	2016/11/22	<10		ug/L	
			Total Lead (Pb)	2016/11/22	<0.20		ug/L	
			Total Lithium (Li)	2016/11/22	<5.0		ug/L	
			Total Manganese (Mn)	2016/11/22	<1.0		ug/L	
			Total Molybdenum (Mo)	2016/11/22	<1.0		ug/L	
			Total Nickel (Ni)	2016/11/22	<1.0		ug/L	
			Total Selenium (Se)	2016/11/22	<0.10		ug/L	
			Total Silicon (Si)	2016/11/22	<100		ug/L	
			Total Silver (Ag)	2016/11/22	<0.020		ug/L	
			Total Strontium (Sr)	2016/11/22	<1.0		ug/L	

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**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Thallium (Tl)	2016/11/22	<0.050		ug/L	
			Total Tin (Sn)	2016/11/22	<5.0		ug/L	
			Total Titanium (Ti)	2016/11/22	<5.0		ug/L	
			Total Uranium (U)	2016/11/22	<0.10		ug/L	
			Total Vanadium (V)	2016/11/22	<5.0		ug/L	
			Total Zinc (Zn)	2016/11/22	<5.0		ug/L	
			Total Zirconium (Zr)	2016/11/22	<0.50		ug/L	
8479206	AD5	RPD	Total Aluminum (Al)	2016/11/22	0.64		%	20
			Total Antimony (Sb)	2016/11/22	NC		%	20
			Total Arsenic (As)	2016/11/22	NC		%	20
			Total Barium (Ba)	2016/11/22	0.32		%	20
			Total Beryllium (Be)	2016/11/22	NC		%	20
			Total Bismuth (Bi)	2016/11/22	NC		%	20
			Total Boron (B)	2016/11/22	NC		%	20
			Total Cadmium (Cd)	2016/11/22	NC		%	20
			Total Chromium (Cr)	2016/11/22	NC		%	20
			Total Cobalt (Co)	2016/11/22	NC		%	20
			Total Copper (Cu)	2016/11/22	NC		%	20
			Total Iron (Fe)	2016/11/22	0.61		%	20
			Total Lead (Pb)	2016/11/22	NC		%	20
			Total Lithium (Li)	2016/11/22	NC		%	20
			Total Manganese (Mn)	2016/11/22	1.1		%	20
			Total Molybdenum (Mo)	2016/11/22	NC		%	20
			Total Nickel (Ni)	2016/11/22	NC		%	20
			Total Selenium (Se)	2016/11/22	NC		%	20
			Total Silicon (Si)	2016/11/22	0.61		%	20
			Total Silver (Ag)	2016/11/22	NC		%	20
			Total Strontium (Sr)	2016/11/22	4.0		%	20
			Total Thallium (Tl)	2016/11/22	NC		%	20
			Total Tin (Sn)	2016/11/22	NC		%	20
			Total Titanium (Ti)	2016/11/22	NC		%	20
			Total Uranium (U)	2016/11/22	NC		%	20
			Total Vanadium (V)	2016/11/22	NC		%	20
			Total Zinc (Zn)	2016/11/22	NC		%	20
			Total Zirconium (Zr)	2016/11/22	NC		%	20
8479319	CK	Matrix Spike	Total Ammonia (N)	2016/11/22		NC	%	80 - 120
8479319	CK	Spiked Blank	Total Ammonia (N)	2016/11/22		103	%	80 - 120
8479319	CK	Method Blank	Total Ammonia (N)	2016/11/22	<0.0050		mg/L	
8479319	CK	RPD	Total Ammonia (N)	2016/11/22	0.20		%	20
8479715	BB3	Matrix Spike	Dissolved Chloride (Cl)	2016/11/21		NC	%	80 - 120
8479715	BB3	Spiked Blank	Dissolved Chloride (Cl)	2016/11/21		96	%	80 - 120
8479715	BB3	Method Blank	Dissolved Chloride (Cl)	2016/11/21	<0.50		mg/L	
8479715	BB3	RPD	Dissolved Chloride (Cl)	2016/11/21	0.58		%	20
8479742	BB3	Matrix Spike	Dissolved Sulphate (SO4)	2016/11/21		106	%	80 - 120
8479742	BB3	Spiked Blank	Dissolved Sulphate (SO4)	2016/11/21		92	%	80 - 120
8479742	BB3	Method Blank	Dissolved Sulphate (SO4)	2016/11/21	<0.50		mg/L	
8479742	BB3	RPD	Dissolved Sulphate (SO4)	2016/11/21	0.29		%	20
			Dissolved Sulphate (SO4)	2016/11/21	2.6		%	20
8480044	AD5	Matrix Spike	Total Aluminum (Al)	2016/11/23		105	%	80 - 120
			Total Antimony (Sb)	2016/11/23		NC	%	80 - 120
			Total Arsenic (As)	2016/11/23		102	%	80 - 120
			Total Barium (Ba)	2016/11/23		NC	%	80 - 120
			Total Beryllium (Be)	2016/11/23		103	%	80 - 120
			Total Bismuth (Bi)	2016/11/23		94	%	80 - 120
			Total Boron (B)	2016/11/23		101	%	80 - 120

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**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Cadmium (Cd)	2016/11/23		98	%	80 - 120
			Total Chromium (Cr)	2016/11/23		99	%	80 - 120
			Total Cobalt (Co)	2016/11/23		93	%	80 - 120
			Total Copper (Cu)	2016/11/23		92	%	80 - 120
			Total Iron (Fe)	2016/11/23		106	%	80 - 120
			Total Lead (Pb)	2016/11/23		97	%	80 - 120
			Total Lithium (Li)	2016/11/23		103	%	80 - 120
			Total Manganese (Mn)	2016/11/23		98	%	80 - 120
			Total Molybdenum (Mo)	2016/11/23		NC	%	80 - 120
			Total Nickel (Ni)	2016/11/23		99	%	80 - 120
			Total Selenium (Se)	2016/11/23		103	%	80 - 120
			Total Silver (Ag)	2016/11/23		92	%	80 - 120
			Total Strontium (Sr)	2016/11/23		NC	%	80 - 120
			Total Thallium (Tl)	2016/11/23		80	%	80 - 120
			Total Tin (Sn)	2016/11/23		99	%	80 - 120
			Total Titanium (Ti)	2016/11/23		101	%	80 - 120
			Total Uranium (U)	2016/11/23		99	%	80 - 120
			Total Vanadium (V)	2016/11/23		103	%	80 - 120
			Total Zinc (Zn)	2016/11/23		104	%	80 - 120
8480044	AD5	Spiked Blank	Total Aluminum (Al)	2016/11/23		102	%	80 - 120
			Total Antimony (Sb)	2016/11/23		98	%	80 - 120
			Total Arsenic (As)	2016/11/23		99	%	80 - 120
			Total Barium (Ba)	2016/11/23		101	%	80 - 120
			Total Beryllium (Be)	2016/11/23		100	%	80 - 120
			Total Bismuth (Bi)	2016/11/23		94	%	80 - 120
			Total Boron (B)	2016/11/23		100	%	80 - 120
			Total Cadmium (Cd)	2016/11/23		101	%	80 - 120
			Total Chromium (Cr)	2016/11/23		100	%	80 - 120
			Total Cobalt (Co)	2016/11/23		96	%	80 - 120
			Total Copper (Cu)	2016/11/23		97	%	80 - 120
			Total Iron (Fe)	2016/11/23		102	%	80 - 120
			Total Lead (Pb)	2016/11/23		96	%	80 - 120
			Total Lithium (Li)	2016/11/23		102	%	80 - 120
			Total Manganese (Mn)	2016/11/23		102	%	80 - 120
			Total Molybdenum (Mo)	2016/11/23		104	%	80 - 120
			Total Nickel (Ni)	2016/11/23		102	%	80 - 120
			Total Selenium (Se)	2016/11/23		104	%	80 - 120
			Total Silver (Ag)	2016/11/23		100	%	80 - 120
			Total Strontium (Sr)	2016/11/23		98	%	80 - 120
			Total Thallium (Tl)	2016/11/23		91	%	80 - 120
			Total Tin (Sn)	2016/11/23		100	%	80 - 120
			Total Titanium (Ti)	2016/11/23		98	%	80 - 120
			Total Uranium (U)	2016/11/23		96	%	80 - 120
			Total Vanadium (V)	2016/11/23		101	%	80 - 120
			Total Zinc (Zn)	2016/11/23		101	%	80 - 120
8480044	AD5	Method Blank	Total Aluminum (Al)	2016/11/23	<3.0		ug/L	
			Total Antimony (Sb)	2016/11/23	<0.50		ug/L	
			Total Arsenic (As)	2016/11/23	<0.10		ug/L	
			Total Barium (Ba)	2016/11/23	<1.0		ug/L	
			Total Beryllium (Be)	2016/11/23	<0.10		ug/L	
			Total Bismuth (Bi)	2016/11/23	<1.0		ug/L	
			Total Boron (B)	2016/11/23	<50		ug/L	
			Total Cadmium (Cd)	2016/11/23	<0.010		ug/L	
			Total Chromium (Cr)	2016/11/23	<1.0		ug/L	
			Total Cobalt (Co)	2016/11/23	<0.50		ug/L	

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**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Copper (Cu)	2016/11/23	<0.50		ug/L	
			Total Iron (Fe)	2016/11/23	<10		ug/L	
			Total Lead (Pb)	2016/11/23	<0.20		ug/L	
			Total Lithium (Li)	2016/11/23	<5.0		ug/L	
			Total Manganese (Mn)	2016/11/23	<1.0		ug/L	
			Total Molybdenum (Mo)	2016/11/23	<1.0		ug/L	
			Total Nickel (Ni)	2016/11/23	<1.0		ug/L	
			Total Selenium (Se)	2016/11/23	<0.10		ug/L	
			Total Silicon (Si)	2016/11/23	<100		ug/L	
			Total Silver (Ag)	2016/11/23	<0.020		ug/L	
			Total Strontium (Sr)	2016/11/23	<1.0		ug/L	
			Total Thallium (Tl)	2016/11/23	<0.050		ug/L	
			Total Tin (Sn)	2016/11/23	<5.0		ug/L	
			Total Titanium (Ti)	2016/11/23	<5.0		ug/L	
			Total Uranium (U)	2016/11/23	<0.10		ug/L	
			Total Vanadium (V)	2016/11/23	<5.0		ug/L	
			Total Zinc (Zn)	2016/11/23	<5.0		ug/L	
			Total Zirconium (Zr)	2016/11/23	<0.50		ug/L	
8480044	AD5	RPD	Total Chromium (Cr)	2016/11/23	NC		%	20
8480769	DC6	Matrix Spike	Total Nitrogen (N)	2016/11/22		99	%	80 - 120
8480769	DC6	Spiked Blank	Total Nitrogen (N)	2016/11/22		99	%	80 - 120
8480769	DC6	Method Blank	Total Nitrogen (N)	2016/11/22	<0.020		mg/L	
8480769	DC6	RPD	Total Nitrogen (N)	2016/11/22	15		%	20
8480844	IW1	Matrix Spike	Nitrate plus Nitrite (N)	2016/11/19		NC	%	80 - 120
8480844	IW1	Spiked Blank	Nitrate plus Nitrite (N)	2016/11/19		106	%	80 - 120
8480844	IW1	Method Blank	Nitrate plus Nitrite (N)	2016/11/19	<0.020		mg/L	
8480844	IW1	RPD	Nitrate plus Nitrite (N)	2016/11/19	2.1		%	25
8480845	IW1	Matrix Spike	Nitrite (N)	2016/11/19		96	%	80 - 120
8480845	IW1	Spiked Blank	Nitrite (N)	2016/11/19		96	%	80 - 120
8480845	IW1	Method Blank	Nitrite (N)	2016/11/19	<0.0050		mg/L	
8480845	IW1	RPD	Nitrite (N)	2016/11/19	NC		%	20
8481532	CGP	Matrix Spike [QB5895-01]	Total Dissolved Solids	2016/11/24		101	%	80 - 120
8481532	CGP	Spiked Blank	Total Dissolved Solids	2016/11/24		106	%	80 - 120
8481532	CGP	Method Blank	Total Dissolved Solids	2016/11/24	<10		mg/L	
8481532	CGP	RPD	Total Dissolved Solids	2016/11/24	1.1		%	20
8481726	IW1	Matrix Spike	Fluoride (F)	2016/11/22		97	%	80 - 120
8481726	IW1	Spiked Blank	Fluoride (F)	2016/11/22		98	%	80 - 120
8481726	IW1	Method Blank	Fluoride (F)	2016/11/22	0.014, RDL=0.010		mg/L	
8481726	IW1	RPD	Fluoride (F)	2016/11/22	NC		%	20

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 spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).


(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



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Andy Lu, Ph.D., P.Chem., Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Burnaby: 4606 Canada Way, Burnaby, BC V5G 1K5. Toll Free (800) 665-8566

COC #:

Invoice Information		Report Information (if differs from invoice)		Project Information (where applicable)		Turnaround Time (TAT) Required	
Company Name: <u>Qualicum Bay Horne LK</u>		Company Name: _____		Quotation #: _____		<input type="checkbox"/> Regular TAT 5 days (Most analyses)	
Contact Name: <u>Don Buchner</u>		Contact Name: _____		P.O. #/ AFE#: <u>Drinking Water Source Approval</u>		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS	
Address: <u>330 Horne Lk Rd.</u>		Address: _____		Project #: <u>"VIHA List"</u>		Rush TAT (Surcharges will be applied)	
<u>Qualicum Bay BC PC: V9K 1Z6</u>		PC: _____		Site Location: _____		<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days	
Phone: <u>250-951-8757</u>		Phone: _____		Site #: _____		<input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days	
Email: <u>danshome@shaw.ca</u>		Email: _____		Sampled By: _____		Date Required: _____	

Regulatory Criteria		Special Instructions		Analysis Requested														Rush Confirmation #:																		
<input checked="" type="checkbox"/> Drinking Water		<input type="checkbox"/> Return Cooler		<table border="1"> <tr> <td>Total Coliform, E.coli, Heterotrophic plate count</td> <td>Iron and Sulphur Producing Bacteria</td> <td>pH, Alkalinity</td> <td>Ammonia</td> <td>Chloride, Fluoride, Sulphate</td> <td>Nitrate, Nitrite</td> <td>Colour - Apparent</td> <td>Conductivity</td> <td>Corrosiveness (Langlier's Index)</td> <td>Total Metals and Mercury</td> <td>Organic Nitrogen</td> <td>Sulphide</td> <td>TDS</td> <td>Total Organic Carbon</td> <td>Turbidity</td> <td># OF CONTAINERS SUBMITTED</td> <td>HOLD - DO NOT ANALYZE</td> </tr> </table>														Total Coliform, E.coli, Heterotrophic plate count	Iron and Sulphur Producing Bacteria	pH, Alkalinity	Ammonia	Chloride, Fluoride, Sulphate	Nitrate, Nitrite	Colour - Apparent	Conductivity	Corrosiveness (Langlier's Index)	Total Metals and Mercury	Organic Nitrogen	Sulphide	TDS	Total Organic Carbon	Turbidity	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE	LABORATORY USE ONLY	
Total Coliform, E.coli, Heterotrophic plate count	Iron and Sulphur Producing Bacteria	pH, Alkalinity	Ammonia	Chloride, Fluoride, Sulphate	Nitrate, Nitrite	Colour - Apparent	Conductivity	Corrosiveness (Langlier's Index)	Total Metals and Mercury	Organic Nitrogen	Sulphide	TDS	Total Organic Carbon	Turbidity	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE																				
Note: Bottles with vials attached. Fill bottle with sample then add preservative. Ensure preservative is noted on the label.		<input type="checkbox"/> Ship Sample Bottles (Please Specify)																CUSTODY SEAL Y / N																		
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM																		COOLER TEMPERATURES																		
																		Present Intact																		
																		5,6,6																		
																		COOLING MEDIA PRESENT Y / N																		
																		COMMENTS																		

Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	Total Coliform, E.coli, Heterotrophic plate count	Iron and Sulphur Producing Bacteria	pH, Alkalinity	Ammonia	Chloride, Fluoride, Sulphate	Nitrate, Nitrite	Colour - Apparent	Conductivity	Corrosiveness (Langlier's Index)	Total Metals and Mercury	Organic Nitrogen	Sulphide	TDS	Total Organic Carbon	Turbidity	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE
1					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
2	WELL 1	NOV/18/16	8 AM		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
3	WELL 2	NOV/18/16	8:15 AM		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
4	WELL 3	NOV/18/16	8:30 AM		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
5																					
6																					
7																					
8																					
9																					
10																					

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
<u>Don Buchner</u>	<u>Nov/18/16</u>	<u>11 AM</u>	<u>Michelle von Schilly</u>	<u>2016/11/18</u>	<u>11:00</u>

18-Nov-16 11:00  
BC Env Customer Service  
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