Maxxam
A Bureau Veritas Group Company

Success Through Science®

Your C.O.C. #: WI004937

Attention:LEONA ADAMS

C. R. ENVIRONMENTAL COMMITTEE
2353 DOLLY VARDEN RD
CAMPBELL RIVER, BC
Canada

Report Date: 2017/02/07
Report #: R2342562
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B707115
Received: 2017/01/31, 14:20

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Chloride by Automated Colourimetry (1)	1	N/A	2017/02/02	BBY6SOP-00011	SM 22 4500-Cl- E m
Coliforms & E.coli by Quantitray (MPN)	1	N/A	2017/01/31	CTYSOP-00002	Based on SM-9223
Fluoride (1)	1	N/A	2017/02/02	BBY6SOP-00048	SM 22 4500-F C m
Sulphide (as H2S) Calculation - total (1)	1	N/A	2017/02/03	BBY6SOP-00006	SM 22 4500-S2-D m
Hardness Total (calculated as CaCO3) (1)	1	N/A	2017/02/02	BBY WI-00033	Auto Calc
EPH in Water when PAH required (1)	1	2017/02/03	2017/02/06	BBY8SOP-00029	BCMOE EPH w 12/00 m
Na, K, Ca, Mg, S by CRC ICPMS (total) (1)	1	2017/01/31	2017/02/02	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (total) (1)	1	2017/02/02	2017/02/02	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Ammonia-N (Preserved) (1)	1	N/A	2017/02/02	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate + Nitrite (N) (1)	1	N/A	2017/02/02	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) by CFA (1)	1	N/A	2017/02/02	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N) (1)	1	N/A	2017/02/03	BBY6SOP-00010	SM 22 4500-NO3 I m
PAH in Water by GC/MS (SIM) (1)	1	2017/02/03	2017/02/03	BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc (1)	1	N/A	2017/02/06	BBY WI-00033	Auto Calc
pH Water (1, 2)	1	N/A	2017/02/01	BBY6SOP-00026	SM 22 4500-H+ B m
Sulphate by Automated Colourimetry (1)	1	N/A	2017/02/02	BBY6SOP-00017	SM 22 4500-SO42- E m
Sulphide - total (1)	1	N/A	2017/02/03	BBY6SOP-00006	SM 22 4500-S2- D m
Total Dissolved Solids (Filt. Residue) (1)	1	2017/02/02	2017/02/03	BBY6SOP-00033	SM 22 2540 C m
EPH less PAH in Water by GC/FID (1)	1	N/A	2017/02/07	BBY WI-00033	Auto Calc

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) 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.

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Encryption Key

Melissa McIntosh
Project Manager
07 Feb 2017 13:46:05

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa McIntosh, Project Manager
Email: MMcIntosh@maxxam.ca
Phone# (250) 338 7786

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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.

Maxxam Job #: B707115
Report Date: 2017/02/07

C. R. ENVIRONMENTAL COMMITTEE

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		QM2028		
Sampling Date		2017/01/31 13:50		
COC Number		WI004937		
	UNITS	**RICO**	**RDL**	**QC Batch**
Nutrients				
Total Ammonia (N)	mg/L	0.026	0.0050	8543484
RDL = Reportable Detection Limit				

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C. R. ENVIRONMENTAL COMMITTEE

MISCELLANEOUS (WATER)

Maxxam ID			QM2028		
Sampling Date			2017/01/31 13:50		
COC Number			WI004937		
	UNITS	AO	RICO	RDL	QC Batch
MISCELLANEOUS					
Total Sulphide	mg/L	0.05	0.0054	0.0050	8544098
Total Sulphide (as H2S)	mg/L	0.05	0.0060	0.0050	8541870

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: 2017/02/07

C. R. ENVIRONMENTAL COMMITTEE

HOME SAFETY SCAN (WATER)

Maxxam ID					QM2028		
Sampling Date					2017/01/31 13:50		
COC Number					WI004937		
	UNITS	MAC	AO	OG	RICO	RDL	QC Batch
ANIONS							
Nitrite (N)	mg/L	1	-	-	<0.0050	0.0050	8544533
Calculated Parameters							
Total Hardness (CaCO3)	mg/L	-	-	-	15.7	0.50	8541339
Nitrate (N)	mg/L	10	-	-	0.100	0.020	8541096
Misc. Inorganics							
Fluoride (F)	mg/L	1.5	-	-	0.015	0.010	8544734
Anions							
Dissolved Sulphate (SO4)	mg/L	-	500	-	4.91	0.50	8544111
Dissolved Chloride (Cl)	mg/L	-	250	-	9.2	0.50	8544109
Nutrients							
Nitrate plus Nitrite (N)	mg/L	-	-	-	0.100	0.020	8544531
Physical Properties							
pH	pH	-	6.5:8.5	-	7.18		8542898
Physical Properties							
Total Dissolved Solids	mg/L	-	500	-	34	10	8543569
Total Metals by ICPMS							
Total Aluminum (Al)	ug/L	-	-	100	**145**	3.0	8543483
Total Antimony (Sb)	ug/L	6	-	-	<0.50	0.50	8543483
Total Arsenic (As)	ug/L	10	-	-	<0.10	0.10	8543483
Total Barium (Ba)	ug/L	1000	-	-	1.5	1.0	8543483
Total Beryllium (Be)	ug/L	-	-	-	<0.10	0.10	8543483
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	8543483
Total Boron (B)	ug/L	5000	-	-	<50	50	8543483
Total Cadmium (Cd)	ug/L	5	-	-	<0.010	0.010	8543483
Total Chromium (Cr)	ug/L	50	-	-	<1.0	1.0	8543483
Total Cobalt (Co)	ug/L	-	-	-	<0.50	0.50	8543483
Total Copper (Cu)	ug/L	-	1000	-	1.32	0.50	8543483
Total Iron (Fe)	ug/L	-	300	-	153	10	8543483
Total Lead (Pb)	ug/L	10	-	-	0.22	0.20	8543483
Total Lithium (Li)	ug/L	-	-	-	<5.0	5.0	8543483
Total Manganese (Mn)	ug/L	-	50	-	4.6	1.0	8543483
Total Molybdenum (Mo)	ug/L	-	-	-	<1.0	1.0	8543483
Total Nickel (Ni)	ug/L	-	-	-	<1.0	1.0	8543483
Total Phosphorus (P)	ug/L	-	-	-	<10	10	8543483

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

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HOME SAFETY SCAN (WATER)

Maxxam ID					QM2028		
Sampling Date					2017/01/31 13:50		
COC Number					WI004937		
	UNITS	**MAC**	**AO**	**OG**	**RICO**	**RDL**	**QC Batch**
Total Selenium (Se)	ug/L	50	-	-	<0.10	0.10	8543483
Total Silicon (Si)	ug/L	-	-	-	2110	100	8543483
Total Silver (Ag)	ug/L	-	-	-	<0.020	0.020	8543483
Total Strontium (Sr)	ug/L	-	-	-	12.8	1.0	8543483
Total Thallium (Tl)	ug/L	-	-	-	<0.010	0.010	8543483
Total Tin (Sn)	ug/L	-	-	-	<5.0	5.0	8543483
Total Titanium (Ti)	ug/L	-	-	-	7.5	5.0	8543483
Total Uranium (U)	ug/L	20	-	-	<0.10	0.10	8543483
Total Vanadium (V)	ug/L	-	-	-	<5.0	5.0	8543483
Total Zinc (Zn)	ug/L	-	5000	-	<5.0	5.0	8543483
Total Zirconium (Zr)	ug/L	-	-	-	<0.50	0.50	8543483
Total Calcium (Ca)	mg/L	-	-	-	4.51	0.050	8541338
Total Magnesium (Mg)	mg/L	-	-	-	1.08	0.050	8541338
Total Potassium (K)	mg/L	-	-	-	0.154	0.050	8541338
Total Sodium (Na)	mg/L	-	200	-	6.51	0.050	8541338
Total Sulphur (S)	mg/L	-	-	-	<3.0	3.0	8541338
Microbiological Param.							
Total Coliforms	MPN/100mL	<1	-	-	200.5	1	8542865
E. coli	MPN/100mL	<1	-	-	<1	1	8542865

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

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C. R. ENVIRONMENTAL COMMITTEE

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID			QM2028		
Sampling Date			2017/01/31 13:50		
COC Number			WI004937		
	UNITS	MAC	RICO	RDL	QC Batch
Polycyclic Aromatics					
Low Molecular Weight PAH`s	ug/L	-	<0.10	0.10	8541507
High Molecular Weight PAH`s	ug/L	-	<0.050	0.050	8541507
Total PAH	ug/L	-	<0.10	0.10	8541507
Naphthalene	ug/L	-	<0.10	0.10	8544627
2-Methylnaphthalene	ug/L	-	<0.10	0.10	8544627
1-Methylnaphthalene	ug/L	-	<0.050	0.050	8544627
Quinoline	ug/L	-	<0.040	0.040	8544627
Acenaphthylene	ug/L	-	<0.050	0.050	8544627
Acenaphthene	ug/L	-	<0.050	0.050	8544627
Fluorene	ug/L	-	<0.050	0.050	8544627
Phenanthrene	ug/L	-	<0.050	0.050	8544627
Anthracene	ug/L	-	<0.010	0.010	8544627
Acridine	ug/L	-	<0.050	0.050	8544627
Fluoranthene	ug/L	-	<0.020	0.020	8544627
Pyrene	ug/L	-	<0.020	0.020	8544627
Benzo(a)anthracene	ug/L	-	<0.010	0.010	8544627
Chrysene	ug/L	-	<0.050	0.050	8544627
Benzo(b&j)fluoranthene	ug/L	-	<0.050	0.050	8544627
Benzo(k)fluoranthene	ug/L	-	<0.050	0.050	8544627
Benzo(a)pyrene	ug/L	0.01	<0.0090	0.0090	8544627
Perylene	ug/L	-	<0.050	0.050	8544627
Indeno(1,2,3-cd)pyrene	ug/L	-	<0.050	0.050	8544627
Dibenz(a,h)anthracene	ug/L	-	<0.0060	0.0060	8544627
Benzo(g,h,i)perylene	ug/L	-	<0.050	0.050	8544627
Calculated Parameters					
LEPH (C10-C19 less PAH)	mg/L	-	<0.20	0.20	8541509
HEPH (C19-C32 less PAH)	mg/L	-	<0.20	0.20	8541509
Ext. Pet. Hydrocarbon					
EPH (C10-C19)	mg/L	-	<0.20	0.20	8544630
EPH (C19-C32)	mg/L	-	<0.20	0.20	8544630
Surrogate Recovery (%)					
O-TERPHENYL (sur.)	%	-	99		8544630
D10-ANTHRACENE (sur.)	%	-	99		8544627
D8-ACENAPHTHYLENE (sur.)	%	-	95		8544627

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LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID			QM2028		
Sampling Date			2017/01/31 13:50		
COC Number			WI004937		
	UNITS	MAC	RICO	RDL	QC Batch
D8-NAPHTHALENE (sur.)	%	-	75		8544627
D9-Acridine	%	-	90		8544627
TERPHENYL-D14 (sur.)	%	-	104		8544627

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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.