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Date Received: 04-JUL-18  
Report Date: 03-AUG-18 10:31 (MT)  
Version: FINAL REV. 2

Client Phone: 780-532-3996

## Certificate of Analysis

**Lab Work Order #:** L2123533  
**Project P.O. #:** NOT SUBMITTED  
**Job Reference:**  
**C of C Numbers:** CUSTOM  
**Legal Site Desc:**

**Comments:** ADDITIONAL 03-AUG-18 10:05  
3-AUG-2018

Wanda Chapella, B.A. Env.  
Supervisor

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# ANALYTICAL REPORT

## Physical Tests (WATER)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		
Analyte	Unit	Guide Limit #1	Guide Limit #2	TREATED WATER ENTERING THE DISTRIBUTION
Colour, Apparent	CU	15	-	<2.0 <sup>PEHT</sup>
Conductivity	umhos/cm	-	-	253
Hardness (as CaCO3)	mg/L	-	-	121
pH	pH units	7.00-10.5	-	7.72
Total Dissolved Solids	mg/L	500	-	145 <sup>DLDS</sup>
Turbidity	NTU	-	-	0.22 <sup>PEHT</sup>

### Federal Guidelines for Canadian Drinking Water Quality (FEB, 2017)

#1: GCDWQ - Aesthetic Objective/Other Value

#2: GCDWQ - Maximum Acceptable Concentrations (MACs)

## Anions and Nutrients (WATER)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		
Analyte	Unit	Guide Limit #1	Guide Limit #2	TREATED WATER ENTERING THE DISTRIBUTION
Alkalinity, Total (as CaCO3)	mg/L	-	-	97
Ammonia, Total (as N)	mg/L	-	-	0.023
Bromate	ug/L	-	10	<0.30
Chlorate	No Unit	-	-	See Attacher
Chloride (Cl)	mg/L	250	-	9.15
Chlorite	No Unit	-	-	See Attacher
Fluoride (F)	mg/L	-	1.5	0.774
Nitrate (as N)	mg/L	-	10	<0.020
Nitrite (as N)	mg/L	-	1	<0.010
Orthophosphate-Dissolved (as P)	mg/L	-	-	<0.0030
Sulfate (SO4)	mg/L	500	-	18.3
Sulphide (as S)	mg/L	-	-	0.024
Sulphide (as H2S)	mg/L	0.05	-	0.026

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## Cyanides (WATER)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		
Analyte	Unit	Guide Limit #1	Guide Limit #2	TREATED WATER ENTERING THE DISTRIBUTION
Cyanide, Total	mg/L	-	-	<0.0020

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# ANALYTICAL REPORT

## Organic / Inorganic Carbon (WATER)

				ALS ID	L2123533-1
				Sampled Date	04-JUL-18
				Sampled Time	11:00
				Sample ID	
				<b>TREATED WATER ENTERING THE DISTRIBUTION</b>	
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Total Organic Carbon	mg/L	-	-	1.29	

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## Inorganic Parameters (WATER)

				ALS ID	L2123533-1
				Sampled Date	04-JUL-18
				Sampled Time	11:00
				Sample ID	
				<b>TREATED WATER ENTERING THE DISTRIBUTION</b>	
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Chloramines	mg/L	-	3	<0.050	
Chlorine, Free	mg/L	-	-	0.810 PEHR	
Chlorine, Total	mg/L	-	-	0.860 PEHR	

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## Taxonomy (WATER)

				ALS ID	L2123533-1
				Sampled Date	04-JUL-18
				Sampled Time	11:00
				Sample ID	
				<b>TREATED WATER ENTERING THE DISTRIBUTION</b>	
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Total cyanobacterial cell count	cells/mL	-	-	<1	

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# ANALYTICAL REPORT

## Total Metals (WATER)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		<b>TREATED WATER</b>
Analyte	Unit	Guide Limit #1	Guide Limit #2	<b>ENTERING THE DISTRIBUTION</b>
Aluminum (Al)	ug/L	100	-	77
Antimony (Sb)	ug/L	-	6	<0.60
Arsenic (As)	ug/L	-	10	<1.0
Barium (Ba)	ug/L	-	1000	78
Beryllium (Be)	ug/L	-	-	<0.50
Bismuth (Bi)	ug/L	-	-	<1.0
Boron (B)	ug/L	-	5000	<50
Cadmium (Cd)	ug/L	-	5	<0.10
Calcium (Ca)	mg/L	-	-	35.8
Chromium (Cr)	ug/L	-	50	<1.0
Cobalt (Co)	ug/L	-	-	<0.50
Copper (Cu)	ug/L	1000	2000	<1.0
Iron (Fe)	ug/L	300	-	<50
Lead (Pb)	ug/L	-	10	<1.0
Lithium (Li)	ug/L	-	-	<100
Magnesium (Mg)	mg/L	-	-	7.71
Manganese (Mn)	mg/L	0.05	-	<0.0010
Molybdenum (Mo)	ug/L	-	-	0.68
Nickel (Ni)	ug/L	-	-	<1.0
Phosphorus (P)	mg/L	-	-	<0.050
Potassium (K)	mg/L	-	-	<1.0
Selenium (Se)	ug/L	-	50	<1.0
Silicon (Si)	ug/L	-	-	1200
Silver (Ag)	ug/L	-	-	<0.050
Sodium (Na)	mg/L	200	-	2.33
Strontium (Sr)	ug/L	-	-	130
Sulfur (S)	ug/L	-	-	5830
Thallium (Tl)	ug/L	-	-	<0.060
Tin (Sn)	ug/L	-	-	<1.0
Titanium (Ti)	ug/L	-	-	<2.0
Tungsten (W)	ug/L	-	-	<6.0
Uranium (U)	ug/L	-	20	<2.0
Vanadium (V)	ug/L	-	-	<0.50

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# ANALYTICAL REPORT

## Total Metals (WATER)

		ALS ID	L2123533-1	
		Sampled Date	04-JUL-18	
		Sampled Time	11:00	
		Sample ID		
		<b>TREATED WATER ENTERING THE DISTRIBUTION</b>		
Analyte	Unit	Guide Limit #1	Guide Limit #2	
Zinc (Zn)	ug/L	5000	-	<3.0
Zirconium (Zr)	ug/L	-	-	<0.80

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# ANALYTICAL REPORT

## Dissolved Metals (WATER)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		
Analyte	Unit	Guide Limit #1	Guide Limit #2	TREATED WATER ENTERING THE DISTRIBUTION
Dissolved Metals Filtration Location	No Unit	-	-	LAB
Aluminum (Al)-Dissolved	mg/L	0.1	-	0.067
Antimony (Sb)-Dissolved	mg/L	-	0.006	<0.0050
Arsenic (As)-Dissolved	mg/L	-	0.01	<0.0010
Barium (Ba)-Dissolved	mg/L	-	1	0.076
Beryllium (Be)-Dissolved	mg/L	-	-	<0.0010
Bismuth (Bi)-Dissolved	mg/L	-	-	<0.0010
Boron (B)-Dissolved	mg/L	-	5	<0.050
Cadmium (Cd)-Dissolved	mg/L	-	0.005	<0.000090
Calcium (Ca)-Dissolved	mg/L	-	-	34.5
Chromium (Cr)-Dissolved	mg/L	-	0.05	<0.00050
Cobalt (Co)-Dissolved	mg/L	-	-	<0.00050
Copper (Cu)-Dissolved	mg/L	1	2	<0.0010
Iron (Fe)-Dissolved	mg/L	0.3	-	<0.050
Lead (Pb)-Dissolved	mg/L	-	0.01	<0.0010
Magnesium (Mg)-Dissolved	mg/L	-	-	8.45
Manganese (Mn)-Dissolved	mg/L	0.05	-	<0.0010
Molybdenum (Mo)-Dissolved	mg/L	-	-	<0.0010
Nickel (Ni)-Dissolved	mg/L	-	-	<0.0020
Phosphorus (P)-Dissolved	mg/L	-	-	<0.050
Potassium (K)-Dissolved	mg/L	-	-	<1.0
Selenium (Se)-Dissolved	mg/L	-	0.05	0.00042
Silicon (Si)-Dissolved	mg/L	-	-	1.2
Silver (Ag)-Dissolved	mg/L	-	-	<0.00010
Sodium (Na)-Dissolved	mg/L	200	-	2.59
Strontium (Sr)-Dissolved	mg/L	-	-	0.133
Thallium (Tl)-Dissolved	mg/L	-	-	<0.00030
Tin (Sn)-Dissolved	mg/L	-	-	<0.0010
Titanium (Ti)-Dissolved	mg/L	-	-	<0.0020
Tungsten (W)-Dissolved	mg/L	-	-	<0.010
Uranium (U)-Dissolved	mg/L	-	0.02	<0.0050
Vanadium (V)-Dissolved	mg/L	-	-	<0.0010
Zinc (Zn)-Dissolved	mg/L	5	-	<0.0030
Zirconium (Zr)-Dissolved	mg/L	-	-	<0.0040

**Federal Guidelines for Canadian Drinking Water Quality (FEB, 2017)**

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## Extractable Metals (WATER)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		
Analyte	Unit	Guide Limit #1	Guide Limit #2	TREATED WATER ENTERING THE DISTRIBUTION
Mercury	ug/L	-	1	<0.10

**Federal Guidelines for Canadian Drinking Water Quality (FEB, 2017)**

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# ANALYTICAL REPORT

## Volatile Organic Compounds (WATER)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		<b>TREATED WATER</b>
Analyte	Unit	Guide Limit #1	Guide Limit #2	<b>ENTERING THE DISTRIBUTION</b>
Acetone	ug/L	-	-	<20
Benzene	ug/L	-	5	<0.50
Bromodichloromethane	ug/L	-	-	<1.0
Bromoform	ug/L	-	-	<1.0
Bromomethane	ug/L	-	-	<0.50
Carbon Disulfide	ug/L	-	-	<1.0
Carbon tetrachloride	ug/L	-	5	<0.50
Chlorobenzene	ug/L	30	80	<0.50
Dibromochloromethane	ug/L	-	-	<1.0
Chloroethane	ug/L	-	-	<1.0
Chloroform	ug/L	-	-	24.0
Chloromethane	ug/L	-	-	<1.2 <small>DLQ</small>
1,2-Dibromoethane	ug/L	-	-	<0.20
1,2-Dichlorobenzene	ug/L	3	200	<0.50
1,3-Dichlorobenzene	ug/L	-	-	<0.50
1,4-Dichlorobenzene	ug/L	1	5	<0.50
Dichlorodifluoromethane	ug/L	-	-	<1.0
1,1-Dichloroethane	ug/L	-	-	<0.50
1,2-Dichloroethane	ug/L	-	5	<0.50
1,1-Dichloroethylene	ug/L	-	14	<0.50
cis-1,2-Dichloroethylene	ug/L	-	-	<0.50
trans-1,2-Dichloroethylene	ug/L	-	-	<0.50
Dichloromethane	ug/L	-	50	<2.0
1,2-Dichloropropane	ug/L	-	-	<0.50
cis-1,3-Dichloropropene	ug/L	-	-	<0.50
trans-1,3-Dichloropropene	ug/L	-	-	<0.50
Ethylbenzene	ug/L	1.6	140	<0.50
n-Hexane	ug/L	-	-	<0.50
2-Hexanone	ug/L	-	-	<20
Methyl Ethyl Ketone	ug/L	-	-	<20
Methyl Isobutyl Ketone	ug/L	-	-	<20
MTBE	ug/L	15	-	<0.50
Styrene	ug/L	-	-	<0.50

**Federal Guidelines for Canadian Drinking Water Quality (FEB, 2017)**

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# ANALYTICAL REPORT

## Volatile Organic Compounds (WATER)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		
Analyte	Unit	Guide Limit #1	Guide Limit #2	TREATED WATER ENTERING THE DISTRIBUTION
1,1,1,2-Tetrachloroethane	ug/L	-	-	<0.50
1,1,2,2-Tetrachloroethane	ug/L	-	-	<0.50
Tetrachloroethylene	ug/L	-	10	<0.50
Toluene	ug/L	24	60	<0.50
1,1,1-Trichloroethane	ug/L	-	-	<0.50
1,1,2-Trichloroethane	ug/L	-	-	<0.50
Trichloroethylene	ug/L	-	5	<0.50
Trichlorofluoromethane	ug/L	-	-	<1.0
Vinyl chloride	ug/L	-	2	<0.50
o-Xylene	ug/L	-	-	<0.50
m+p-Xylenes	ug/L	-	-	<1.0
Xylenes (Total)	ug/L	20	90	<1.1
Surrogate: 4-Bromofluorobenzene	%	-	-	100.3
Surrogate: 1,4-Difluorobenzene	%	-	-	103.7

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## Polycyclic Aromatic Hydrocarbons (WATER)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		
Analyte	Unit	Guide Limit #1	Guide Limit #2	TREATED WATER ENTERING THE DISTRIBUTION
Benzo(a)pyrene	ug/L	-	0.04	<0.0050
Surrogate: d14-Terphenyl	%	-	-	78.4

**Federal Guidelines for Canadian Drinking Water Quality (FEB, 2017)**

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## Haloacetic Acids (WATER)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		
Analyte	Unit	Guide Limit #1	Guide Limit #2	TREATED WATER ENTERING THE DISTRIBUTION
Dibromoacetic Acid	ug/L	-	-	<0.50
Dichloroacetic Acid	ug/L	-	-	8.17
Total Haloacetic Acids 5	ug/L	-	80	18.5
Bromoacetic Acid	ug/L	-	-	<0.50
Chloroacetic acid	ug/L	-	-	<1.0
Trichloroacetic Acid	ug/L	-	-	10.3

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**Semi-Volatile Organics (WATER)**

		ALS ID	L2123533-1	
		Sampled Date	04-JUL-18	
		Sampled Time	11:00	
		Sample ID		
		<b>TREATED WATER ENTERING THE DISTRIBUTION</b>		
Analyte	Unit	Guide Limit #1	Guide Limit #2	
N-Nitrosodimethylamine	ug/L	-	0.04	<0.050

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# ANALYTICAL REPORT

## Organochlorine Pesticides (WATER)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		
Analyte	Unit	Guide Limit #1	Guide Limit #2	TREATED WATER ENTERING THE DISTRIBUTION
Aldrin	ug/L	-	-	<0.010
Aldrin + Dieldrin	ug/L	-	-	<0.020
alpha-BHC	ug/L	-	-	<0.010
beta-BHC	ug/L	-	-	<0.010
gamma-hexachlorocyclohexane	ug/L	-	-	<0.010
delta-BHC	ug/L	-	-	<0.010
a-chlordane	ug/L	-	-	<0.010
Chlordane (Total)	ug/L	-	-	<0.030
g-chlordane	ug/L	-	-	<0.010
op-DDD	ug/L	-	-	<0.010
pp-DDD	ug/L	-	-	<0.010
o,p-DDE	ug/L	-	-	<0.010
pp-DDE	ug/L	-	-	<0.010
op-DDT	ug/L	-	-	<0.010
pp-DDT	ug/L	-	-	<0.010
DDT + metabolites	ug/L	-	-	<0.040
Dieldrin	ug/L	-	-	<0.010
alpha-Endosulfan	ug/L	-	-	<0.010
beta-Endosulfan	ug/L	-	-	<0.010
Endosulfan Sulfate	ug/L	-	-	<0.010
Endrin	ug/L	-	-	<0.010
Endrin Aldehyde	ug/L	-	-	<0.010
Heptachlor	ug/L	-	-	<0.010
Heptachlor Epoxide	ug/L	-	-	<0.010
Hexachlorobenzene	ug/L	-	-	<0.010
Methoxychlor	ug/L	-	-	<0.010
Mirex	ug/L	-	-	<0.010
Oxychlordane	ug/L	-	-	<0.010
Surrogate: 2-Fluorobiphenyl	%	-	-	83.7
Surrogate: d14-Terphenyl	%	-	-	75.9

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# ANALYTICAL REPORT

## Herbicides (WATER)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		
Analyte	Unit	Guide Limit #1	Guide Limit #2	TREATED WATER ENTERING THE DISTRIBUTION
Bromoxynil	ug/L	-	5	<0.50
2,4-D	ug/L	-	100	<10
Dicamba	ug/L	-	120	<12
Dinoseb	ug/L	-	-	<1.0
Glyphosate	ug/L	-	280	<50 <sup>SRU</sup>
MCPA	ug/L	-	100	<0.50
Picloram	ug/L	-	190	<19
2,4,5-T	ug/L	-	-	<28
Surrogate: 2,4-Dichlorophenylacetic Acid	%	-	-	96.9

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## Carbamate Pesticides (WATER)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		
Analyte	Unit	Guide Limit #1	Guide Limit #2	TREATED WATER ENTERING THE DISTRIBUTION
Aldicarb	ug/L	-	-	<0.90 <sup>SRU</sup>

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## Pesticides (WATER)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		<b>TREATED WATER</b>
Analyte	Unit	Guide Limit #1	Guide Limit #2	<b>ENTERING THE DISTRIBUTION</b>
Alachlor	ug/L	-	-	<0.10
Ametryn	ug/L	-	-	<0.10
Atrazine	ug/L	-	-	<0.10
Atrazine+N-Dealkylated Metabolites	ug/L	-	5	<0.20
Azinphos-methyl	ug/L	-	20	<0.10
Bendiocarb	ug/L	-	-	<0.50
Benzo(a)pyrene	ug/L	-	0.04	<0.010
Carbaryl	ug/L	-	90	<0.50
Carbofuran	ug/L	-	90	<0.50
Chlorpyrifos	ug/L	-	90	<0.10
Cyanazine	ug/L	-	-	<0.10
Diazinon	ug/L	-	20	<0.10
2,4-Dichlorophenol	ug/L	0.3	900	<0.30
Dimethoate	ug/L	-	20	<0.10
Diquat	ug/L	-	70	<1.0 SRU
Diuron	ug/L	-	150	<15 SRU
Atrazine Desethyl	ug/L	-	-	<0.10
Parathion	ug/L	-	50	<0.10
Malathion	ug/L	-	190	<0.10
Diclofop-methyl	ug/L	-	9	<0.10
Methyl Parathion	ug/L	-	-	<0.10
Metolachlor	ug/L	-	50	<0.10
Metribuzin	ug/L	-	80	<1.0
Paraquat	ug/L	-	7	<1.0 SRU
Pentachlorophenol	ug/L	30	60	<6.0
Phorate	ug/L	-	2	<0.10
Prometon	ug/L	-	-	<0.10
Prometryne	ug/L	-	-	<0.10
Propazine	ug/L	-	-	<0.10
Simazine	ug/L	-	10	<0.10
Temephos	ug/L	-	-	<1.0
Terbufos	ug/L	-	1	<0.10
Terbutryn	ug/L	-	-	<0.10

**Federal Guidelines for Canadian Drinking Water Quality (FEB, 2017)**

**#1: GCDWQ - Aesthetic Objective/Other Value**

**#2: GCDWQ - Maximum Acceptable Concentrations (MACs)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.

Analytical result for this parameter exceeds Guide Limit listed on this report.

\* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Pesticides (WATER)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		
Analyte	Unit	Guide Limit #1	Guide Limit #2	TREATED WATER ENTERING THE DISTRIBUTION
2,3,4,6-Tetrachlorophenol	ug/L	1	100	<1.0
Triallate	ug/L	-	-	<0.10
2,4,6-Trichlorophenol	ug/L	2	5	<0.50
Trifluralin	ug/L	-	45	<0.10
Surrogate: 2-Fluorobiphenyl	%	-	-	79.8
Surrogate: d14-Terphenyl	%	-	-	76.9
Surrogate: 2,4,6-Tribromophenol	%	-	-	77.8

**Federal Guidelines for Canadian Drinking Water Quality (FEB, 2017)**

#1: GCDWQ - Aesthetic Objective/Other Value

#2: GCDWQ - Maximum Acceptable Concentrations (MACs)

## Organic Parameters (WATER)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		
Analyte	Unit	Guide Limit #1	Guide Limit #2	TREATED WATER ENTERING THE DISTRIBUTION
Microcystin	ug/L	-	1.5	<0.20
Nitritotriacetic Acid (NTA)	mg/L	-	0.4	<0.20

**Federal Guidelines for Canadian Drinking Water Quality (FEB, 2017)**

#1: GCDWQ - Aesthetic Objective/Other Value

#2: GCDWQ - Maximum Acceptable Concentrations (MACs)

## Miscellaneous (MISC.)

		ALS ID		L2123533-1
		Sampled Date		04-JUL-18
		Sampled Time		11:00
		Sample ID		
Analyte	Unit	Guide Limit #1	Guide Limit #2	TREATED WATER ENTERING THE DISTRIBUTION
Special Request	No Unit	-	-	See Attacher

**Federal Guidelines for Canadian Drinking Water Quality (FEB, 2017)**

#1: GCDWQ - Aesthetic Objective/Other Value

#2: GCDWQ - Maximum Acceptable Concentrations (MACs)

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.

Analytical result for this parameter exceeds Guide Limit listed on this report.

\* Please refer to the Reference Information section for an explanation of any qualifiers noted.

## Reference Information

## Additional Comments for Sample Listed:

Samplenum	Matrix	Report Remarks	Sample Comment:
L2123533-1	Water	Note: No cyanobacteria observed.	

## Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLQ	Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.
PEHT	Parameter Exceeded Recommended Holding Time Prior to Analysis
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
SRU	Sample Received Unpreserved. Results may be biased low for indicated parameter(s)

## Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDS-ONT-DW-WT</b>	Water	O.Reg 170/03 Acids	SW846 8270

Pesticides are extracted from an aqueous sample using separate aliquots of solvent, extracts are concentrated down to a certain volume and analyzed on the GC/MSD.

<b>ALDICARB-WT</b>	Water	Aldicarb	SW846 8270
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An aliquot of water sample is diluted 1:1 using acetonitrile and analyzed using LC/MS/MS

<b>ALGAE-CYANO-BACT-WP</b>	Water	Enumeration of blue green algae cells	APHA 10200 C & F
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Samples are prepared by sedimentation/settling and examined using a compound phase contrast inverted microscope. Cyanobacteria (also known as blue-green algae) are identified to genus and the cells are enumerated. The total cyanobacteria count is also reported.

<b>ALK-WT</b>	Water	Alkalinity, Total (as CaCO <sub>3</sub> )	EPA 310.2
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This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

<b>BAP-WT</b>	Water	Benzo(a)pyrene	SW486 8270
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Sample is extracted at neutral pH using separate aliquots of dichloromethane with a modified separatory funnel technique, extracts are then concentrated and analyzed by GC/MSD.

<b>BROMATE-ONT-DW-WT</b>	Water	Bromate in Water by LC/MS-MS	EPA 6850
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An aliquot of sample is spiked with 18O-BrO<sub>3</sub> internal standard and analyzed by LC/MS/MS.

This test procedure does not incorporate EDA preservation for bromate. Unpreserved bromate in water is stable for at least the 28 day recommended hold time, but samples that contain free chlorine or ozone could form additional bromate after the time of sampling (EPA 300.0 and 300.1).

<b>CHLORATE-EC</b>	Water	Chlorate analysis in water	EPA 300.1 - Ion Chromatography
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<b>CHLORITE-EC</b>	Water	Chlorite analysis in water	EPA 300.1 - Ion Chromatography
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<b>CL-IC-N-WT</b>	Water	Chloride by IC	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

<b>CL2-FREE-WT</b>	Water	Free Chlorine	SM 4500-CL G, EPA 330.5
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<b>CL2-TOTAL-WT</b>	Water	Total Residual Chlorine	APHA 4500-CL G
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<b>CN-TOT-WT</b>	Water	Cyanide, Total	ISO 14403-2
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Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference

<b>COLOUR-APPARENT-WT</b>	Water	Colour	APHA 2120
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Apparent Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method after sample decanting. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

## Reference Information

## Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
<b>DIQUAT-WT</b>	Water	Diquat by LC/MS-MS	MDS SCIEX APPLICATION: DIQUAT/PARAQUAT
Water: If the sample is not clear filter a portion of the sample using a RC filter. An aliquot of the sample is taken and internal standard is added. The sample is analyzed by LC/MS/MS.			
<b>DIURON-WT</b>	Water	Diuron by LC/MS-MS	MOE PWAUH-E3436 (MOD)
An aliquot of water sample is diluted 1:1 using acetonitrile and analyzed using LC/MS/MS			
<b>EC-WT</b>	Water	Conductivity	APHA 2510 B
Water samples can be measured directly by immersing the conductivity cell into the sample.			
<b>ETL-CHLORAMINES-WT</b>	Water	Chloramines	APHA 4500-Cl B
<b>F-IC-N-WT</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>GLYPHOSATE-ONT-DW-WT</b>	Water	Glyphosate in Drinking Water	MOE E3500
This analysis is carried out using procedures adapted from ON MOE E3500 "Glyphosate". Glyphosate is determined by direct injection by LC-MS/MS on a sample that has been derivatized.			
<b>HAA+DAL-ECD-WT</b>	Water	Haloacetic Acids - Extended EPA List	EPA 552.3
An aliquot of sample is acidified and shaken with methyl tert-butyl ether (MTBE). After extraction, the haloacetic acids partitioned into MTBE are esterified with acidic methanol and analyzed using a gas chromatograph equipped with an electron capture detector (GC-ECD).			
<b>HAA5-SUM-CALC-WT</b>	Water		CALCULATION
Total Haloacetic Acids 5 (HAA5) represents the sum of monobromoacetic acid, monochloroacetic acid, dibromoacetic acid, dichloroacetic acid and trichloroacetic acid. For the purpose of calculation, results less than the detection limit (DL) are treated as zero.			
<b>HARDNESS-CALC-WT</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-ONT-DW-WT</b>	Water	Mercury (Hg)	EPA 1631E (mod)
<b>MET-D-CCMS-WT</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
<b>MET-ONT-DW-WT</b>	Water	Drinking Water Metals	EPA 6020A
<b>MICROCYSTIN-WP</b>	Water	Microcystin	ENVIROLOGIX QUANTIPLATE KIT CAT. EP022
Total Microcystins (intracellular and extracellular) in aqueous matrices is determined by the Enzyme-Linked Immunosorbent Assay (ELISA) method.			
<b>NDMA-LOWRES-WT</b>	Water	NDMA by GC/MSD	SW846 8270/E3291
This analysis is carried out using procedures adapted from SW 846 8270 and MOECC E329. NDMA is extracted from aqueous samples with DI water and Ambersorb beads. The beads are filtered out and added to a GC vial, DCM is then added to the vial and analyzed by gas chromatography/mass spectrometry (GC/MSD).			
<b>NH3-WT</b>	Water	Ammonia, Total as N	EPA 350.1
Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.			
<b>NO2-IC-WT</b>	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-IC-WT</b>	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NTA-ONT-DW-WT</b>	Water	NTA in Drinking Water	EPA 430.1

## Reference Information

## Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
<p>NTA refers to the tri-sodium salt of nitrilotriacetic acid, N(CH<sub>2</sub>COONa)<sub>3</sub>. Zinc forms a blue-coloured complex with 2 carboxy-2-hydroxy-5-sulfoformazylbenzene (Zincon) in a solution buffered to pH 9.2. When NTA is added to the sample, the Zinc-Zincon complex is broken which reduces the absorbance in proportion to the amount of NTA present.</p>			
<b>PARAQUAT-WT</b>	Water	Paraquat in Water by LC/MS-MS	MDS SCIEX APPLICATION: DIQUAT/PARAQUAT
<p>Water: If the sample is not clear filter a portion of the sample using a RC filter. An aliquot of the sample is taken and internal standard is added. The sample is analyzed by LC/MS/MS.</p>			
<b>PEST-MISC-WT</b>	Water	Miscellaneous Pesticides	SW846 8270
<p>Pesticides are extracted from an aqueous sample using separate aliquots of solvent, extracts are concentrated down to a certain volume and analyzed on the GC/MSD.</p>			
<b>PEST-OC-LOW-WT</b>	Water	Pesticides, OC, Low level	SW846 8270
<b>PEST-PAHERB-LCMS-WT</b>	Water	Phenoxyacid Herbicides by LC-MS/MS	MOE E3552
<p>Water samples are subjected to 0.2 µM RC filtration and analyzed by direct injection without sample preparation using liquid chromatography tandem mass spectrometry (LC-MS/MS).</p>			
<b>PH-WT</b>	Water	pH	APHA 4500 H-Electrode
<p>Water samples are analyzed directly by a calibrated pH meter.</p>			
<p>Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days</p>			
<b>PO4-DO-COL-WT</b>	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
<b>S2-T&gt;H2S-CALC-WT</b>	Water	Total Sulphide Calculated as H <sub>2</sub> S	Calculation
<p>This calculation converts Total Sulphide as (S<sup>2-</sup>) and reports it as Total Sulphide as (H<sub>2</sub>S). Total Sulphide as (S<sup>2-</sup>) is determined using procedures adapted from APHA 4500-S<sub>2</sub> "Sulphide".</p>			
<b>SO4-IC-N-WT</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>SOLIDS-TDS-WT</b>	Water	Total Dissolved Solids	APHA 2540C
<p>This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.</p>			
<b>SPECIAL REQUEST-BE</b>	Misc.	Radionuclides Becquerel Labs	SEE SUBLET LAB RESULTS
<b>SULPHIDE-WT</b>	Water	Sulphide (as S)	APHA 4500S <sub>2</sub> D
<p>This analysis is carried out using procedures adapted from APHA Method 4500-S<sub>2</sub>-D "Methylene Blue Method". Sulphide is determined colourimetrically.</p>			
<b>TOC-WT</b>	Water	Total Organic Carbon	APHA 5310B
<p>Sample is injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.</p>			
<b>TURB-MET-WT</b>	Water	Turbidity on preserved metals sample	APHA 2130 B
<p>Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.</p>			
<b>TURBIDITY-WT</b>	Water	Turbidity	APHA 2130 B
<p>Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.</p>			
<b>VOC-ROU-HS-WT</b>	Water	Volatile Organic Compounds	SW846 8260
<p>Aqueous samples are analyzed by headspace-GC/MS.</p>			
<b>XYLENES-SUM-CALC-WT</b>	Water	Sum of Xylene Isomer Concentrations	CALCULATION



## Reference Information

### Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
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Total xylenes represents the sum of o-xylene and m&p-xylene.

\*\*ALS test methods may incorporate modifications from specified reference methods to improve performance.

### Chain of Custody Numbers:

CUSTOM

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
EC	EconoTech Services Ltd. - Delta, B.C., Canada
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
BE	BECQUEREL LABORATORIES INC. - MISSISSAUGA, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.



Report date: July 23, 2018  
Our ref: E181398 ENV:18:68  
Your ref: L2123533

Econotech Services Ltd  
852 Derwent Way  
Delta, BC V3M 5R1  
Canada

ALS Environmental Group  
9505-111 Street  
Grande Prairie, AB T8V 5W1

Attention: Wanda Chapella  
Cc: -

t: 604 526-4221  
800 463-5700  
toll free in Canada / USA  
f: 604 526-1898

Sample: One (1) sample  
Date: July 4, 2018

Order date: July 10, 2018

info@econotech.com  
econotech.com

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### ANALYSIS RESULTS

Residual environmental samples will be retained for a period of one month, process samples for three months, unless otherwise instructed by your company. Details of methods and dates analyzed are available on request. Results only relate to samples tested.

Please see attachment for sample results.

#### Comments:

**Chlorate & Chlorite:** determined by Ion Chromatography analyzed in accordance with APHA "Standard Methods for the Examination of Water & Wastewater".

Patricia Oikawa, BSc  
Technical Service Coordinator - Chemistry Services

/js



ALS Environmental Group  
 ENV: 18:68  
 W.O.#E181398

E181398-01

**L2123533-1**  
**Effluent**  
**Jul 4/18**

<b>Analysis</b>	<b>Unit</b>	<b>Jul 4/18</b>
Chlorate, ClO <sub>3</sub>	mg/L	<0.009
Chlorite, ClO <sub>2</sub>	mg/L	<0.018

<b>QC Data</b>	<b>Blank</b>		<b>Precision</b>		<b>Accuracy</b>		<b>Detection Limit</b>
	mg/L	limits	% rpd	limits	%	limits	mg/L
Chlorate	ND	ND	NC	10	93.2	90-110%	0.009
Chlorite	ND	ND	NC	10	95.2	90-110%	0.018

**Notes on Chlorate/Chlorite analysis:**

% rpd = relative percent difference

ND: Not detected

NC: Not calculated