



WATER TREATMENT PLANT & DISTRIBUTION SYSTEM



2011 Annual Operations Performance Report

Permit Number 1515





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1. HIGHLIGHTS

Overview

In 1999 the District of Port Hardy signed a long-term agreement with EPCOR to manage the water and wastewater systems and to build a state-of-the art water treatment plant. The new plant started official operation in May 2000 and helped change Port Hardy's reputation of poor water quality to one of the best in British Columbia.

In 2010, the plant continued to produce a very high level of treatment providing excellent water quality to the District of Port Hardy, with no water quality violations.

Permit to Operate

The Port Hardy water treatment plant is a Level III facility as deemed by the Environmental Operators Certification Program (EOCP), certification number 529. The distribution system is a Level III system with a certification number of 155.

Certified Operators

The Vancouver Island Health Authority Operational Permit requires that EPCOR have a certified operator to match the Water Treatment Plant Certification, which is a level III plant. EPCOR now has two WT Level II Operators on staff and one WT Level III.

Operator	Title	EOCP Certification
Dennis Dugas	Capital Projects Coordinator	WT III, WD IV, WC I, WWT II, CH
Sean Mercer	Foreman	WD III, CCT
Kenn Oliver	Operator	WT III, WWT III, CH
Joe Jewell	Foreman	WT III, WWT II, WD II, CCT, CH
Justin Reusch	Operator	WT II, WD I, WWT I
Roland Le Fort	Operator	WWT II
Cory Henschke	Operator	WWT I
<i>WT – Water Treatment, WWT – Wastewater Treatment, WD – Water Distribution, WC – Wastewater Collection, OIT – Operator in Training, CCT – Cross Connection Tester, CH – Chlorine Handler</i>		



Operational Highlights

Water Treatment Plant

Throughout the course of 2010, there were times where due to heavy rains and high river colour events, that the water treatment process was upset. In these events, the plant is taken offline and no water is pumped to the reservoir. Water is only pumped to the reservoirs once the treatment plant's process quality is restored. This will result in lower than desired reservoir levels but quality will not be compromised.

In March, the lime pump failed beyond repair. A new pump was needed and ordered. Because a new pump was used, suction and discharge plumbing was also redone. The new pump came on line in May and has been slightly problematic. There are inherent issues with pumping abrasive lime slurry into a high pressure line.

Water Treatment Plant Capital Highlights

In 2011, the following capital projects were completed:

- A second sodium hypochlorite pump was plumbed and installed. The new pump is an exact match to the pump that was installed in 2010. There have been no issues with the sodium hypochlorite pump this year and residuals have been maintained
- A new sodium hypochlorite tank was installed. The new tank's plumbing was also modified with flexible couplings to allow for the tank's expansion and contraction. A second sodium hypochlorite will be budgeted for later in 2012
- The existing sodium hypochlorite flow meter was replaced as part of the upgrade project. By doing this, more accurate dosing will be possible



Water Distribution System Highlights

The Port Hardy water distribution system functioned well in 2011 with the exception of some main breaks

- On May 23rd, the 8 inch mainline that serves Hardy Bay Road broke. A large section of pavement had to be cut to make the repair. The leak recorded a reservoir effluent flow over 700 m³/hr.
- On June 11th, another main break occurred on the 12 inch water line that supplies the Storey's Beach side of town. The leak recorded a reservoir effluent flow of over 900 m³/hr. Crews worked from 3:30 am to 8:30 pm to make the repairs and restore services.

Coliform sampling over the course of the year were excellent.

Cross Connection Control

A formal Cross Connection Control program was adopted by the District of Port Hardy in late 2010. This system was created by Maintenance Tracking Systems Inc (MTS). Currently, backflow preventers are installed in all treatment plants in areas that may be a possible risk. These assemblies are tested annually. In 2008, all sewage liftstations with wash down hose bibs were upgraded with backflow preventers.

Water Wise Program Continuation

A total of 126 meters are being read including commercial users and multi-family dwellings. All new homes and constructions will be metered as part of this program. Continuing public education around proposed metering/rate changes and general information on water wise initiatives was conducted and will be ongoing until all users are metered.



Violations of Permit to Operate

Violation	Determined By	January – December 2011
Low Chlorine Residual (Reservoir)	<0.2 mg/L	0
Low Chlorine Residual (Distribution)	<0.05 mg/L	0
Low Log Removal	<3.0	0
High Turbidity (Filter)	>1 (5%)* or >2 NTU	0
High Turbidity (Reservoir Effluent)	>0.5 (5%)* NTU	0
High Coliforms	TC >0 (10%)** or >10 CFU/100ml	0
	FC >0 cfu/100ml	0

* - Allowed to exceed limit in the percentage amount of time shown (based on daily averages each month).

** - Allowed to exceed limit in the percentage amount of samples tested each month.

Variations based on EPCOR control limits

Variations (within EPCOR operational limits)	Determined By	January – December 2011
Low Chlorine Residual (Reservoir)	<0.3 mg/L	0
Low Chlorine Residual (Distribution)	<0.1 mg/L	0
Low Log Removal	<3.5	0
High Turbidity (Filter)	>0.3 NTU	0
High Turbidity (Reservoir)	>0.5 NTU	0
High Turbidity (Distribution)	>5 NTU	0
High Average Particle Counts	>50/mL >2µm	0
High Coliforms	TC >0 cfu/100ml	0
Reservoir Effluent pH	<7.0 or >8.0	113
Low CCPP	<-10 or >5	84
Colour	>5 TCU	0

Note: The treated reservoir effluent pH was less than 6.0 on December 22nd to 24th due to testing of the new Carbon Dioxide system. Testing was suspended over the holidays and will continue in 2011.

Total Number of Tests

Parameters	Total Tests	
	Raw Water	Treated Water
Colour	365	365
E. coli	12	132
Flow	Continuous	Continuous
Free Chlorine	n/a	Continuous
Total Chlorine	n/a	365
Turbidity	Continuous	365
pH	365	365
Temperature	365	365
Haloacetic Acid (HAA)	4	4
Trihalomethane (THM)	4	4

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1. RAW WATER PRODUCTION AND QUALITY

Month	Raw Production		Dam Height (m)	pH	Turbidity (NTU)	Conductivity μS/cm	Colour (TCU)	Alkalinity (mg/L as CaCO ₃)	Temperature (°C)	Rain (mm) Total/Month
	(ML/day)	Total/Month								
Jan	5	153	0.43	6.5	0.8	17.5	71	4	2.4	210
Feb	5	140	0.36	6.5	0.6	16.9	69	4	2.7	156
Mar	5	146	0.42	6.5	0.7	18.0	61	3	2.8	150
Apr	4	132	0.34	6.6	0.6	17.4	61	5	5.3	76
May	5	145	0.26	6.7	0.5	18.4	64	5	8.7	55
Jun	5	150	0.18	6.9	0.4	22.0	53	6	12.1	44
Jul	5	152	0.25	6.7	0.4	20.6	74	6	13.4	63
Aug	6	171	0.23	6.8	0.3	22.4	57	6	14.5	50
Sep	5	147	0.36	6.7	0.9	24.6	73	6	13.0	228
Oct	4	130	0.40	6.4	0.9	21.9	104	6	8.9	152
Nov	4	123	0.50	6.3	1.3	21.1	90	5	5.3	355
Dec	4	123	0.45	6.3	0.9	19.1	79	4	3.6	215
Minimum	4	123	0.18	6.3	0.3	16.9	53	3	2.4	44
Maximum	6	171	0.50	6.9	1.3	24.6	104	6	14.5	355
Average	5	143	0.35	6.6	0.7	20.0	71	5	7.7	146
Total		1711								1754

All lab testing performed by plant operators.

Note: Values in this table are a monthly average with the exception of raw production totals.

2. TREATED WATER QUALITY

Month	Clearwell Flow	pH	Turbidity (NTU)	Conductivity μS/cm	Colour (TCU)	Total Hardness (mg/L as CaCO ₃)	Alkalinity (mg/L as CaCO ₃)	Temperature (°C)
	Total/Month							
Jan	149	7.6	0.1	61.7	0.9	11	11	3.2
Feb	137	7.7	0.1	61.6	0.6	10	12	3.4
Mar	139	7.5	0.1	65.0	0.5	13	14	3.7
Apr	125	6.8	0.1	50.7	0.6	7	9	6.3
May	136	7.0	0.1	63.7	0.7	10	14	9.6
Jun	146	7.2	0.1	73.6	0.8	16	20	12.8
Jul	144	7.2	0.1	74.3	0.9	10	14	14.1
Aug	161	7.3	0.1	74.0	0.9	15	17	15.1
Sep	142	7.1	0.1	71.6	0.8	13	15	13.9
Oct	123	7.5	0.1	89.1	0.8	18	19	9.8
Nov	120	7.5	0.1	80.9	0.8	12	16	6.0
Dec	118	7.6	0.1	87.9	0.9	18	21	4.7
Minimum	118	6.8	0.1	50.7	0.5	7	9	3.2
Maximum	161	7.7	0.1	89.1	0.9	18	21	15.1
Average	137	7.3	0.1	71.2	0.7	13	15	8.6
Total	1,640							

All lab testing performed by plant operators.

Note: Values in this table are a monthly average with the exception of treated production totals.

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3. FILTERED WATER QUALITY

Month	Filter #1		Filter #2		Filter #3		Filter #4		Combined Filter Effluent	
	Turbidity (NTU)		Turbidity (NTU)		Turbidity (NTU)		Turbidity (NTU)		Particle Counts (#/mL)	
	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.
Jan	0.03	0.07	0.03	0.07	0.03	0.09	0.04	0.08	16	109
Feb	0.03	0.11	0.04	0.12	0.04	0.14	0.05	0.15	33	279
Mar	0.03	0.10	0.03	0.09	0.04	0.11	0.05	0.12	18	166
Apr	0.03	0.08	0.03	0.09	0.04	0.10	0.05	0.07	19	121
May	0.03	0.07	0.03	0.07	0.03	0.08	0.04	0.08	21	91
Jun	0.02	0.05	0.03	0.06	0.03	0.06	0.04	0.06	15	66
Jul	0.02	0.05	0.03	0.07	0.03	0.07	0.04	0.08	17	83
Aug	0.02	0.06	0.03	0.08	0.03	0.08	0.04	0.09	31	169
Sep	0.02	0.05	0.03	0.06	0.03	0.07	0.04	0.07	33	62
Oct	0.02	0.05	0.03	0.08	0.03	0.07	0.04	0.08	44	137
Nov	0.02	0.05	0.03	0.07	0.03	0.08	0.03	0.06	45	134
Dec	0.02	0.06	0.03	0.07	0.03	0.08	0.03	0.07	52	186
Minimum	0.02	0.05	0.03	0.06	0.03	0.06	0.03	0.06	15	62
Maximum	0.03	0.11	0.04	0.12	0.04	0.14	0.05	0.15	52	279
Average	0.02	0.07	0.03	0.08	0.03	0.08	0.04	0.08	29	134

The table displays the monthly averages and maximum monthly values.
Maximum particle count value stored by the system is 750.

Particle counts were higher than normal in the month of December. This was due to the particle counter failing. All other tests indicate that the water quality is consistent with the rest of the year. The meter cannot be serviced and will need to be returned to factory for service.

4. CHLORINE, LOG REMOVAL & CCPP

Month	Reservoir Influent	Reservoir Effluent		Log Reduction of <i>Giardia</i> (Disinfection)	Log Reduction of <i>Giardia</i> (Total)	CCPP
	Average Free Chlorine (mg/L)	Free Chlorine (mg/L)	Total Chlorine (mg/L)			
Jan	0.7	1.1	1.2	2.2	4.7	-6.1
Feb	0.6	1.1	1.1	2.0	4.5	-6.1
Mar	0.6	1.1	1.2	2.5	5.0	-6.9
Apr	0.5	0.9	1.0	3.4	5.9	-10.6
May	0.6	0.9	0.9	3.5	6.0	-10.7
Jun	0.7	0.9	1.0	4.0	6.5	-10.6
Jul	1.4	0.9	1.0	4.3	6.8	-8.5
Aug	1.7	0.9	1.0	4.0	6.5	-7.7
Sep	1.8	1.0	1.0	5.0	7.5	-9.5
Oct	1.8	1.0	1.0	3.7	6.2	-6.5
Nov	1.5	0.9	1.0	3.1	5.6	-7.3
Dec	1.3	0.9	1.0	2.7	5.2	-6.4
Minimum	0.5	0.9	0.9	2.0	4.5	-10.7
Maximum	1.8	1.1	1.2	5.0	7.5	-6.1
Average	1.12	1.0	1.0	3.4	5.9	-8.1

The table displays the monthly averages.
CCPP – Calcium Carbonate Precipitation Potential
Lab tests performed by plant operators.

CCPP has been less than desired due to issues with the lime pump failure and the commissioning of the CO₂ injection system. A new sample and injection point for the CO₂ has been plumbed in to better control the dosing. An instrument technician will also be on site in 2012 to help adjust programming in the controller.

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5. DISTRIBUTION WATER QUALITY

Month	Eagle View Elementary			G & N School			Airport WWTP		
	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Free Chlorine (mg/L)	Turbidity (NTU)	pH
Jan	0.8	0.3	9.0	0.9	0.4	7.6	0.8	0.2	7.6
Feb	0.7	0.4	9.2	0.7	0.4	7.9	0.8	0.3	8.0
Mar	0.5	0.3	9.3	0.8	0.3	7.7	0.8	0.4	7.7
Apr	0.4	0.4	7.7	0.5	0.5	7.0	0.6	0.3	6.9
May	0.2	0.3	7.6	0.5	0.3	6.9	0.5	0.3	7.2
Jun	0.2	0.3	7.4	0.6	0.2	7.1	0.5	1.4	7.1
Jul	0.3	0.2	7.6	0.5	0.5	7.2	0.5	0.2	7.4
Aug	0.5	0.1	7.7	0.5	1.9	7.3	0.5	0.2	7.5
Sep	0.1	0.3	8.5	0.4	0.3	7.1	0.5	0.2	7.2
Oct	0.1	0.2	8.4	0.5	0.4	7.8	0.5	0.2	7.9
Nov	0.3	0.2	8.4	0.6	0.3	7.3	0.6	0.4	8.0
Dec	0.2	0.3	8.7	0.6	0.5	7.8	0.7	0.2	7.6
Minimum	0.1	0.1	7.4	0.4	0.2	6.9	0.5	0.2	6.9
Maximum	0.8	0.4	9.3	0.9	1.9	7.9	0.8	1.4	8.0
Average	0.4	0.3	8.3	0.6	0.5	7.4	0.6	0.3	7.5

The table displays the monthly averages.
Lab tests performed by plant operators.

5B. DISTRIBUTION WATER QUALITY (CONTINUED)

Month	Bear Cove Tank			Ferry Terminal			Pioneer Inn		
	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Free Chlorine (mg/L)	Turbidity (NTU)	pH
Jan	0.9	0.3	7.5	0.9	0.1	7.5	0.8	0.2	7.6
Feb	0.9	0.3	7.6	0.8	0.2	7.6	0.8	0.1	8.4
Mar	0.9	0.1	7.4	0.8	0.2	7.7	0.8	0.1	7.7
Apr	0.7	0.3	6.9	0.6	0.2	6.8	0.7	0.1	6.7
May	0.6	0.2	6.8	0.5	0.2	6.9	0.7	0.1	6.7
Jun	0.7	0.2	7.3	0.6	0.1	7.1	0.5	0.1	6.7
Jul	0.5	0.1	7.2	0.6	0.2	7.2	0.5	0.1	7.4
Aug	0.6	0.1	7.3	0.6	0.2	7.3	0.7	0.1	6.7
Sep	0.6	0.2	7.0	0.6	0.2	6.9	0.6	0.1	7.4
Oct	0.6	0.1	7.7	0.3	0.2	8.0	0.9	0.2	7.7
Nov	0.7	0.2	7.2	0.5	0.1	7.3	0.7	0.1	7.0
Dec	0.7	0.2	7.3	0.4	0.2	7.3	0.6	0.1	7.2
Minimum	0.5	0.1	6.8	0.3	0.1	6.8	0.5	0.1	6.7
Maximum	0.9	0.3	7.7	0.9	0.2	8.0	0.9	0.2	8.4
Average	0.7	0.2	7.3	0.6	0.2	7.3	0.7	0.1	7.3

The table displays the monthly averages.
Lab tests performed by plant operators.

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5c. DISTRIBUTION WATER QUALITY (CONTINUED)

Month	Jokerville			Chatham Ave			Airport Reservoir (MOT)		
	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Free Chlorine (mg/L)	Turbidity (NTU)	pH
Jan	0.6	0.3	7.4	0.8	0.2	8.7	0.5	0.7	7.8
Feb	0.7	0.3	7.8	0.7	0.2	8.8	0.5	0.6	7.9
Mar	0.7	0.3	7.8	0.7	0.2	8.7	0.5	0.4	7.8
Apr	0.4	0.3	6.9	0.5	0.2	7.9	0.6	0.4	7.3
May	0.4	0.3	7.0	0.4	0.2	7.8	0.5	0.4	7.3
Jun	0.4	0.7	6.9	0.5	1.1	7.2	0.5	0.4	7.3
Jul	0.3	0.3	7.1	0.4	0.2	7.5	0.7	0.8	7.6
Aug	0.3	0.2	7.3	0.3	0.2	7.9	0.4	0.4	7.8
Sep	0.3	0.2	7.1	0.3	0.2	7.7	1.0	0.5	8.3
Oct	0.4	0.2	7.5	0.4	0.2	8.3	0.8	0.6	8.2
Nov	0.4	0.2	7.5	0.5	0.2	8.2	0.3	0.6	7.8
Dec	0.6	0.3	7.4	0.6	0.2	8.3	0.4	0.7	7.8
Minimum	0.3	0.2	6.9	0.3	0.2	7.2	0.3	0.4	7.3
Maximum	0.7	0.7	7.8	0.8	1.1	8.8	1.0	0.8	8.3
Average	0.4	0.3	7.3	0.5	0.3	8.0	0.6	0.5	7.7

The table displays the monthly averages.
Lab tests performed by plant operators.

5d. DISTRIBUTION WATER QUALITY (CONTINUED)

Month	Hospital			Glenlyon Inn			Airport Inn		
	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Free Chlorine (mg/L)	Turbidity (NTU)	pH
Jan	0.6	0.2	7.7	0.8	0.2	7.2	0.7	0.2	7.7
Feb	0.8	0.2	8.5	1.0	0.1	8.5	0.6	0.1	8.8
Mar	0.9	0.3	8.1	0.8	0.2	7.6	0.8	0.2	7.8
Apr	0.5	0.3	6.9	0.5	0.5	7.0	0.5	0.4	6.8
May	0.5	0.2	6.9	0.5	0.1	6.9	0.5	0.2	6.8
Jun	0.5	0.2	6.8	0.7	0.1	7.0	0.6	0.2	6.9
Jul	0.5	0.3	7.5	0.6	0.1	6.9	0.4	0.1	7.5
Aug	0.4	0.2	7.3	0.2	0.1	6.9	0.6	0.3	7.1
Sep	0.5	0.1	7.5	0.5	0.3	7.4	0.7	0.1	7.0
Oct	0.8	0.2	7.6	0.7	0.1	7.7	0.7	0.1	7.7
Nov	0.8	0.2	7.2	0.8	0.1	6.9	0.6	0.2	7.3
Dec	0.7	0.1	7.4	0.8	0.1	7.5	0.6	0.2	7.5
Minimum	0.4	0.1	6.8	0.2	0.1	6.9	0.4	0.1	6.8
Maximum	0.9	0.3	8.5	1.0	0.5	8.5	0.8	0.4	8.8
Average	0.6	0.2	7.4	0.7	0.2	7.3	0.6	0.2	7.4

The table displays the monthly averages.
Lab tests performed by plant operators.

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6. CHEMICAL USE

Month	ISOPAC 6		Soda Ash	
	Total (kg)	Dose (mg/L)	Total (kg)	Dose (mg/L)
Jan	4331	28	2296	15
Feb	4061	29	2309	16
Mar	3132	22	2050	14
Apr	3240	25	2094	16
May	4454	30	2705	19
Jun	4063	26	2332	15
Jul	5935	40	3166	21
Aug	5432	32	2608	15
Sep	4927	34	2212	15
Oct	5814	44	3090	24
Nov	5036	41	3075	25
Dec	4024	33	2344	19
Minimum	3132	22	2050	14
Maximum	5935	44	3166	25
Average	4537	32	2524	18
Total	54448		30283	

Note: The table displays the monthly totals except for the average Annual Total.

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6B. CHEMICAL USE (CONTINUED)

Month	Filter Polymer		Lime		Carbon Dioxide		Chlorine	
	Total (kg)	Dose (mg/L)	Total (kg)	Dose (mg/L)	Total (kg)	Dose (mg/L)	Total (kg)	Dose (mg/L)
Jan	1.152	0.008	411	3.8	0	0	103	0.70
Feb	1.029	0.007	355	3.6	0	0	88	0.64
Mar	1.482	0.010	857	10.5	911	0	85	0.60
Apr	0.903	0.007	0	0.0	0	0	68	0.55
May	1.392	0.010	353	3.4	847	6	84	0.60
Jun	1.098	0.007	899	8.6	1261	0	102	0.70
Jul	1.221	0.008	1193	10.5	400	0	215	1.43
Aug	1.020	0.006	1896	15.5	1106	0	285	1.71
Sep	1.110	0.008	806	12.1	546	0	259	1.83
Oct	1.077	0.008	614	6.6	1957	0	235	1.85
Nov	0.921	0.008	1007	11.4	578	0	183	1.52
Dec	0.927	0.008	2658	28.6	762	0	159	1.31
Minimum	0.903	0.006	0	0.0	0	0	68	0.55
Maximum	1.482	0.010	2658	28.6	1957	6	285	1.85
Average	1.111	0.008	921	9.5	697	1	156	1.12
Total	13.332		11050		8368		1867	

Note: The table displays the monthly totals except for the average annual total.

Filter Polymer – LT 20 is the type used.



7. BACTERIOLOGICAL DATA

Routine bacteriological tests were performed by BC Centre for Disease Control (BCCDC) Laboratory Services in Vancouver.

Month	No. of Samples Analyzed		No. of Positive Results		
	Raw	Treated	Violations	Positive TC	Positive EC
January	1	11	0	0	0
February	1	11	0	0	0
March	1	11	0	0	0
April	1	11	0	0	0
May	1	11	0	0	0
June	1	11	0	0	0
July	1	11	0	0	0
August	1	11	0	0	0
September	1	11	0	0	0
October	1	11	0	0	0
November	1	11	0	0	0
December	1	11	0	0	0

Total Coliform (TC) and Fecal Coliform (FC) Tests are the routine monthly bacteriological tests performed on samples collected throughout the distribution system.

QUALITY ASSURANCE LABORATORY ANALYTICAL REPORT



Mail:
 6th Floor, Capital Square
 10065 Jasper Avenue
 Edmonton, Alberta
 T5J 3B1

Location:
 Water Laboratory
 Rossdale Water Treatment Plant
 9469 Rossdale Road
 Edmonton, Alberta
 T5K 0A5

Tel: (780) 412-7614
 Fax: (780) 412-7717

Submission: 2011-06-01-015

Date Logged: 1-Jun-2011 15:24

Results To: D. DUGAS/K. OLIVER

Sample Condition: See Notes Below

Address: EPCOR WATER SERVICES
 8900 PARK DRIVE BOX 06
 PORT HARDY, BC
 V0N 2P0

Tel: (250)902-2200
Fax:
Customer PO: 91-095-000000-2405-736-5250
Project ID: PORT HARDY
Receiving Temp (Deg Cel): 10

Report ID: VRS CRCBS6 08-Jun-2011 12:22

Sample Id	Sample Date	Client ID	Location	Sample Point	Method	Test	Result	Units	Entry Date	Analyst	MDL
BA47008	Sample Condition: COLD,SAMPLE INTACT, DOCUMENTED										

BA47008	30-May-2011	09:17	RAW	RAW WATER WTP	97714	Cryptosporidium	<1.6	oocysts/100L	6-Jun-11	KFOO	1.6
BA47008	30-May-2011	09:17	RAW	RAW WATER WTP	97713	Giardia	<1.6	cysts/100L	6-Jun-11	KFOO	1.6

Sample Condition: COLD,SAMPLE INTACT, DOCUMENTED

Sample Notes:

BA47009	30-May-2011	05:20	TREATED	TREATED RES WTP	97714	Cryptosporidium	<0.2	oocysts/100L	6-Jun-11	KFOO	0.2
BA47009	30-May-2011	05:20	TREATED	TREATED RES WTP	97713	Giardia	<0.2	cysts/100L	6-Jun-11	KFOO	0.2

Other Services:

Sample Id	Sample Date	Client ID	Location	Sample Point	Method	Test	Result	Units	Entry Date	Analyst	MDL
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The results relate only to the samples tested. This report should not be reproduced except in full, without written approval of the laboratory.

Notes:

REPORT DATE: July 7, 2011

CERTIFIED BY:



Rajendra Kothavade / Microbiologist



Cryptosporidium/Giardia

Spike Recovery Report

Test Method: *Cryptosporidium* in water by Filtration/IMS/FA

Reference: EPA Method 1623: *Cryptosporidium* and *Giardia* in Water by Filtration/IMS/FA
EPA-815-R-05-002, December 2005

Test Organism:

Test Species: *Cryptosporidium*

Culture Source: BTF Precise Microbiology

Reagent Water: Reverse Osmosis

Acceptance Criteria: 22% - 100% Recovery

BA46908	Mth Blk for <i>Cryptosporidium</i>	0	oocysts/100L	Passed
BA46908	Recovery for <i>Cryptosporidium</i>	68.0	%	Passed

Test Method: *Giardia* in water by Filtration/IMS/FA

Reference: EPA Method 1623: *Cryptosporidium* and *Giardia* in Water by Filtration/IMS/FA
EPA-815-R-05-002, December 2005

Test Organism:

Test Species: *Giardia*

Culture Source: BTF Precise Microbiology

Reagent Water: Reverse Osmosis

Acceptance Criteria: 14% - 100% Recovery

BA46908	Mth Blk for <i>Giardia</i>	0	cysts/100L	Passed
BA46908	Recovery for <i>Giardia</i>	63.0	%	Passed

REPORT DATE:

June 6, 2011

Authorized by

Rajendra Kothavade / Microbiologist

QUALITY ASSURANCE LABORATORY ANALYTICAL REPORT

Mail:
 6th Floor, Capital Square
 10065 Jasper Avenue
 Edmonton, Alberta
 T5J 3B1

Location:
 Water Laboratory
 Rosedale Water Treatment Plant
 9469 Rosedale Road
 Edmonton, Alberta
 T5K 0A5

Tel: (780) 412-7614
 Fax: (780) 412-7717

Submission: 2011-06-01-016

Date Logged: 1-Jun-2011 15:39

Results To: D. DUGAS/K. OLIVER

Sample Condition: See Notes Below

Address: EPCOR WATER SERVICES
 8900 PARK DRIVE BOX 06
 PORT HARDY, BC
 V0N 2P0

Tel: (250)902-2200
Fax:
Customer PO: 91-095-000000-2405-736-5250
Project ID: PORT HARDY
Receiving Temp (Deg Cel): 10

Report ID: VRS CRCBS6 15-Jun-2011 16:37

Sample Id	Sample Date	Client ID	Location	Sample Point	Method	Test	Result	Units	Entry Date	Analyst	MDL
BA47010	30-May-2011	05:45RAWWATER	RAW WATER	RAW WATER	Analysis Code: NWL_METALS(TW22)						
					100275	Aluminum	0.161	mg/L	14-Jun-11	EXOVA	0.005
					100276	Antimony	<0.0002	mg/L	14-Jun-11	EXOVA	0.0002
					100000	Arsenic	<0.0002	mg/L	14-Jun-11	EXOVA	0.0002
					99969	Barium	<0.001	mg/L	14-Jun-11	EXOVA	0.001
					99820	Boron	0.007	mg/L	14-Jun-11	EXOVA	0.002
					99973	Cadmium	<0.00001	mg/L	14-Jun-11	EXOVA	0.00001
					99974	Calcium	1.8	mg/L	14-Jun-11	EXOVA	0.2
					99975	Chromium	<0.0005	mg/L	14-Jun-11	EXOVA	0.0005
					99977	Copper	0.002	mg/L	14-Jun-11	EXOVA	0.001
					99978	Iron	0.23	mg/L	14-Jun-11	EXOVA	0.05
					99979	Lead	0.0001	mg/L	14-Jun-11	EXOVA	0.0001
					99981	Magnesium	0.40	mg/L	14-Jun-11	EXOVA	0.1
					99982	Manganese	<0.005	mg/L	14-Jun-11	EXOVA	0.005
					99984	Nickel	<0.0005	mg/L	14-Jun-11	EXOVA	0.0005
					99986	Potassium	<0.4	mg/L	14-Jun-11	EXOVA	0.4
					99987	Selenium	<0.0002	mg/L	14-Jun-11	EXOVA	0.0002
					99988	Silicon	1.16	mg/L	14-Jun-11	EXOVA	0.05
					99832	Silver	0.00007	mg/L	14-Jun-11	EXOVA	0.00001
					99990	Sodium	1.4	mg/L	14-Jun-11	EXOVA	0.4
					99837	Uranium	<0.0005	mg/L	14-Jun-11	EXOVA	0.0005
					99998	Zinc	0.002	mg/L	14-Jun-11	EXOVA	0.001
BA47010	30-May-2011	05:45RAWWATER	RAW WATER	RAW WATER	10103	Alkalinity, total	9	mg CaCO3/L	2-Jun-11	SLU	3

Sample Notes: Sample Condition: COLD, SAMPLE INTACT, DOCUMENTED

Sample Id	Sample Date	Client ID	Location	Sample Point	Method	Test	Result	Units	Entry Date	Analyst	MDL
BA47010	30-May-2011	05:45RAWWATER	RAW WATER	RAW WATER	101405	Ammonia as NH3	<0.05	mg/L	9-Jun-11	RCHIMKO	0.05
BA47010	30-May-2011	05:45RAWWATER	RAW WATER	RAW WATER	103123	Chloride, dissolved	1.89	mg/L	2-Jun-11	MFRENCH	0.05
BA47010	30-May-2011	05:45RAWWATER	RAW WATER	RAW WATER	2020	Colour	64	TCU	2-Jun-11	MF	1
BA47010	30-May-2011	05:45RAWWATER	RAW WATER	RAW WATER	100924	Conductivity	19	uS/cm	2-Jun-11	MFRENCH	0.2
BA47010	30-May-2011	05:45RAWWATER	RAW WATER	RAW WATER	101253	Cyanide, dissolved	<0.001	mg/L	14-Jun-11	EXOVA	0.001
BA47010	30-May-2011	05:45RAWWATER	RAW WATER	RAW WATER	9106	Fluoride, dissolved	0.01	mg/L	2-Jun-11	SLU	0.01
BA47010	30-May-2011	05:45RAWWATER	RAW WATER	RAW WATER	10609	Hardness, total	8	mg CaCO3/L	2-Jun-11	SLU	2
BA47010	30-May-2011	05:45RAWWATER	RAW WATER	RAW WATER	101254	Mercury	<0.0001	mg/L	14-Jun-11	EXOVA	0.0001
BA47010	30-May-2011	05:45RAWWATER	RAW WATER	RAW WATER	103127	Nitrite (as N)	<0.01	mg/L	2-Jun-11	MFRENCH	0.01
BA47010	30-May-2011	05:45RAWWATER	RAW WATER	RAW WATER	103126	Nitrate (as N)	0.02	mg/L	2-Jun-11	MFRENCH	0.01
BA47010	30-May-2011	05:45RAWWATER	RAW WATER	RAW WATER	103129	Sulphate, dissolved	0.78	mg/L	2-Jun-11	MFRENCH	0.05
BA47010	30-May-2011	05:45RAWWATER	RAW WATER	RAW WATER	99558	Total Dissolved Solids	20	mg/L	9-Jun-11	IVANBEER	10
BA47010	30-May-2011	05:45RAWWATER	RAW WATER	RAW WATER	102623	Total Organic Carbon	6.2	mg/L	3-Jun-11	PAUL JOHAL	0.1
BA47010	30-May-2011	05:45RAWWATER	RAW WATER	RAW WATER	99202	UV 254 % Transmittance	50.2	%T/cm	2-Jun-11	MF	1
<p>Sample Notes:</p> <p>Analysis Code: NWL_METALS(TW22)</p> <p>TREATED WATER 100275 Aluminum</p> <p>100276 Antimony</p> <p>100000 Arsenic</p> <p>99969 Barium</p> <p>99820 Boron</p> <p>99973 Cadmium</p> <p>99974 Calcium</p> <p>99975 Chromium</p> <p>99977 Copper</p> <p>99978 Iron</p> <p>99979 Lead</p> <p>99981 Magnesium</p> <p>99982 Manganese</p> <p>99984 Nickel</p> <p>99986 Potassium</p> <p>99987 Selenium</p>											
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER			0.038	mg/L	14-Jun-11	EXOVA	0.005
<p>Sample Condition: COLD, SAMPLE INTACT, DOCUMENTED</p>											

Sample Id	Sample Date	Client ID	Location	Sample Point	Method	Test	Result	Units	Entry Date	Analyst	MDL
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	99888	Silicon	1.02	mg/L	14-Jun-11	EXOVA	0.05
					99832	Silver	0.00014	mg/L	14-Jun-11	EXOVA	0.00001
					99990	Sodium	9.9	mg/L	14-Jun-11	EXOVA	0.4
					99837	Uranium	<0.0005	mg/L	14-Jun-11	EXOVA	0.0005
					99998	Zinc	0.005	mg/L	14-Jun-11	EXOVA	0.001
					THM_VOC						
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	103400	Benzene	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					103403	Bromodichloromethane	1.2	ug/L	3-Jun-11	TDICKSON	0.5
					103411	Bromoform	<1.0	ug/L	3-Jun-11	TDICKSON	1.0
					103399	Carbon Tetrachloride	<1.0	ug/L	3-Jun-11	TDICKSON	1.0
					103407	Chlorobenzene	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					103397	Chloroform	18.9	ug/L	3-Jun-11	TDICKSON	0.5
					103406	Dibromochloromethane	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					103414	Dichlorobenzene (1,2)	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					107886	Dichlorobenzene (1,3)	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					103413	Dichlorobenzene (1,4)	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					103393	Dichloroethylene (1,1)	<3.0	ug/L	3-Jun-11	TDICKSON	3.0
					103396	Dichloroethylene, cis (1,2)	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					103395	Dichloroethylene, trans (1,2)	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					103402	Dichloropropane (1,2)	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					103408	Ethylbenzene	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					80421	Methyl t-Butyl Ether (MTBE)	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					103394	Methylene Chloride	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					107887	MIBK	<1.0	ug/L	3-Jun-11	TDICKSON	1.0
					107888	Styrene	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					103412	Tetrachloroethane (1,1,2,2)	<1.0	ug/L	3-Jun-11	TDICKSON	1.0
					103405	Tetrachloroethylene	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					103404	Toluene	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					103417	Total Volatile Organics (NonT)	<1.0	ug/L	3-Jun-11	TDICKSON	1.0
						Total Volatile Organics (Unkn)	<1.0	ug/L	3-Jun-11	TDICKSON	1.0
					103415	Trichlorobenzene (1,2,4)	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					103398	Trichloroethane (1,1,1)	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					103401	Trichloroethylene	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					103416	Trihalomethanes	20.1	ug/L	3-Jun-11	TDICKSON	1.0
					103410	Xylene (1,2)	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
					103409	Xylene (1,4)	<0.5	ug/L	3-Jun-11	TDICKSON	0.5
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	10103	Alkalinity, total	18	mg CaCO3/L	2-Jun-11	SLU	3
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	101405	Ammonia as NH3	<0.05	mg/L	9-Jun-11	RCHIMKO	0.05
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	103123	Chloride, dissolved	16.1	mg/L	2-Jun-11	MFRENCH	0.05
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	2020	Colour	<1	TCU	2-Jun-11	MF	1

Sample Id	Sample Date	Client ID	Location	Sample Point	Method	Test	Result	Units	Entry Date	Analyst	MDL
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	100924	Conductivity	80	uS/cm	2-Jun-11	MFRENCH	0.2
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	101253	Cyanide, dissolved	<0.001	mg/L	14-Jun-11	EXOVA	0.001
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	9106	Fluoride, dissolved	<0.01	mg/L	2-Jun-11	SLU	0.01
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	10609	Hardness, total	14	mg CaCO3/L	2-Jun-11	SLU	2
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	101254	Mercury	<0.0001	mg/L	14-Jun-11	EXOVA	0.0001
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	103127	Nitrite (as N)	<0.01	mg/L	2-Jun-11	MFRENCH	0.01
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	103126	Nitrate (as N)	0.01	mg/L	2-Jun-11	MFRENCH	0.01
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	103129	Sulphate, dissolved	0.57	mg/L	2-Jun-11	MFRENCH	0.05
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	99558	Total Dissolved Solids	39	mg/L	9-Jun-11	IVANBEER	10
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	102623	Total Organic Carbon	1.3	mg/L	3-Jun-11	PAUL JOHAL	0.1
BA47011	30-May-2011	05:30 TREATED WATER	TREATED WATER	TREATED WATER	99202	UV 254 % Transmittance	95.6	%T/cm	2-Jun-11	MF	1

Other Services:

The results relate only to the samples tested. This report should not be reproduced except in full, without written approval of the laboratory.

Notes: *Results are compliant with GC DWQ.*

REPORT DATE: 16-Jun-2011 CERTIFIED BY: *John Paran*
 John Paran / Lab Supervisor

Report Transmission Cover Page

Bill To: EPCOR
Report To: EPCOR
P.O. Box 6
8900 Park Drive
Port Hardy, BC, Canada
V0N 2P0
Attn: Joe Jewel
Sampled By:
Company:

Project:
ID:
Name:
Location:
LSD:
P.O.:
Acct code:

Lot ID: **819418**
Control Number:
Date Received: Aug 9, 2011
Date Reported: Aug 30, 2011
Report Number: 1459562

Contact & Affiliation	Address	Delivery Commitments
Joe Jewel EPCOR	8900 Park Drive, P.O. Box 6 Port Hardy, British Columbia V0N 2P0 Phone: (250) 230-0702 Fax: (250) 949-7465 Email: jjewel@epcor.ca	On [Lot Verification] send (COA) by Email - Single Report On [Report Approval] send (COC, Test Report) by Email - Merge Reports On [Lot Approval and Final Test Report Approval] send (COC, Test Report, Invoice) by Post

M

Notes To Clients:

- Sample Information Sheet was not received.
- Sampling time not provided.

Sample Custody

Bill To: EPCOR
Report To: EPCOR
P.O. Box 6
8900 Park Drive
Port Hardy, BC, Canada
V0N 2P0
Attn: Joe Jewel
Sampled By:
Company:

Project:
ID:
Name:
Location:
LSD:
P.O.:
Acct code:

Lot ID: **819418**
Control Number:
Date Received: Aug 9, 2011
Date Reported: Aug 30, 2011
Report Number: 1459562

Sample Disposal Date: September 29, 2011

All samples will be stored until this date unless other instructions are received. Please indicate other requirements below and return this form to the address or fax number on the top of this page.

Extend Sample Storage Until _____ (MM/DD/YY)

The following charges apply to extended sample storage:

Storage for an additional 30 days	\$ 2.50 per sample
Storage for an additional 60 days	\$ 5.00 per sample
Storage for an additional 90 days	\$ 7.50 per sample

Return Sample, collect, to the address below via:

Greyhound

DHL

Purolator

Other (specify) _____

Name _____

Company _____

Address _____

Phone _____

Fax _____

Signature _____

Analytical Report

Bill To: EPCOR
 Report To: EPCOR
 P.O. Box 6
 8900 Park Drive
 Port Hardy, BC, Canada
 V0N 2P0
 Attn: Joe Jewel
 Sampled By:
 Company:

Project:
 ID:
 Name:
 Location:
 LSD:
 P.O.:
 Acct code:

Lot ID: **819418**
 Control Number:
 Date Received: Aug 9, 2011
 Date Reported: Aug 30, 2011
 Report Number: 1459562

	Reference Number	819418-1	819418-2		
	Sample Date	Aug 08, 2011	Aug 08, 2011		
	Sample Time	NA	NA		
	Sample Location				
	Sample Description	Chatham Avenue	Reservoir Avenue		
	Matrix	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trihalomethanes Screen - Water					
Chloroform	mg/L	0.053	0.022		0.001
Bromodichloromethane	mg/L	0.003	0.001		0.001
Dibromochloromethane	mg/L	<0.001	<0.001		0.001
Bromoform	mg/L	<0.001	<0.001		0.001
Total Trihalomethanes	mg/L	0.056	0.023		0.001
Trihalomethanes - Surrogate Recovery					
Dibromofluoromethane	EPA Surrogate %	100	98		86-118
Toluene-d8	EPA Surrogate %	101	100		85-115
Bromofluorobenzene	EPA Surrogate %	90	89		86-115
Haloacetic Acids - Water					
Monochloroacetic Acid	ug/L	<2.0	<2.0		2
Monobromoacetic Acid	ug/L	<2.0	<2.0		2
Dichloroacetic Acid	ug/L	23.6	12.6		2
Bromochloroacetic Acid	ug/L	<2.0	<2.0		2
Dibromoacetic Acid	ug/L	<2.0	<2.0		2
Trichloroacetic Acid	ug/L	27.9	15.5		2
Total Haloacetic Acids (HAA6)	ug/L	51.5	28.1		2

Approved by: 
 Mathieu Simoneau
 Operations Manager

Methodology and Notes

Bill To: EPCOR	Project:	Lot ID: 819418
Report To: EPCOR	ID:	Control Number:
P.O. Box 6	Name:	Date Received: Aug 9, 2011
8900 Park Drive	Location:	Date Reported: Aug 30, 2011
Port Hardy, BC, Canada	LSD:	Report Number: 1459562
VON 2P0	P.O.:	
Attn: Joe Jewel	Acct code:	
Sampled By:		
Company:		

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Haloacetic Acids - Water	US EPA	* US EPA method, 552.3	30-Aug-11	Exova Accutest
THM - Water	US EPA	* US EPA method, 8260B/5035	15-Aug-11	Exova Calgary

** Reference Method Modified*

References

US EPA US Environmental Protection Agency Test Methods

Comments:

- Sample Information Sheet was not received.
- Sampling time not provided.

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

No Chain of Custody Available.

Report Transmission Cover Page

Bill To: EPCOR	Project:	Lot ID: 837553
Report To: EPCOR	ID:	Control Number:
P.O. Box 6	Name: THM & HAA Samples	Date Received: Nov 9, 2011
8900 Park Drive	Location:	Date Reported: Nov 28, 2011
Port Hardy, BC, Canada	LSD:	Report Number: 1528923
V0N 2P0	P.O.:	
Attn: Joe Jewel	Acct code:	
Sampled By:		
Company:		

Contact & Affiliation	Address	Delivery Commitments
Joe Jewel EPCOR	8900 Park Drive, P.O. Box 6 Port Hardy, British Columbia V0N 2P0 Phone: (250) 230-0702 Fax: (250) 949-7465 Email: jjewel@epcor.ca	On [Lot Verification] send (COA) by Email - Single Report On [Report Approval] send (COC, Test Report) by Email - Merge Reports On [Lot Approval and Final Test Report Approval] send (Invoice) by Email - Single Report
Jamie Matson EPCOR	8900 Park Drive, P.O. Box 6 Port Hardy, British Columbia V0N 2P0 Phone: (250) 902-2200 Fax: (250) 949-7465 Email: jmatson@epcor.ca	On [Lot Approval and Final Test Report Approval] send (Invoice) by Email - Single Report

Notes To Clients:

- Sample Information Sheet was not received.

Sample Custody

Bill To: EPCOR	Project:	Lot ID: 837553
Report To: EPCOR	ID:	Control Number:
P.O. Box 6	Name: THM & HAA Samples	Date Received: Nov 9, 2011
8900 Park Drive	Location:	Date Reported: Nov 28, 2011
Port Hardy, BC, Canada	LSD:	Report Number: 1528923
VON 2P0	P.O.:	
Attn: Joe Jewel	Acct code:	
Sampled By:		
Company:		

Sample Disposal Date: December 28, 2011

All samples will be stored until this date unless other instructions are received. Please indicate other requirements below and return this form to the address or fax number on the top of this page.

Extend Sample Storage Until _____ (MM/DD/YY)

The following charges apply to extended sample storage:

Storage for an additional 30 days	\$ 2.50 per sample
Storage for an additional 60 days	\$ 5.00 per sample
Storage for an additional 90 days	\$ 7.50 per sample

Return Sample, collect, to the address below via:

Greyhound

DHL

Purolator

Other (specify) _____

Name _____

Company _____

Address _____

Phone _____

Fax _____

Signature _____

Analytical Report

Bill To: EPCOR
 Report To: EPCOR
 P.O. Box 6
 8900 Park Drive
 Port Hardy, BC, Canada
 V0N 2P0
 Attn: Joe Jewel
 Sampled By:
 Company:

Project:
 ID:
 Name: THM & HAA Samples
 Location:
 LSD:
 P.O.:
 Acct code:

Lot ID: **837553**
 Control Number:
 Date Received: Nov 9, 2011
 Date Reported: Nov 28, 2011
 Report Number: 1528923

	Reference Number	837553-1	837553-2		
	Sample Date	Nov 08, 2011	Nov 08, 2011		
	Sample Time	NA	NA		
	Sample Location	Port Hardy Reservoir	Port Hardy Water		
	Sample Description		Chathan Avenue		
	Matrix	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trihalomethanes Screen - Water					
Chloroform	mg/L	0.023	0.041		0.001
Bromodichloromethane	mg/L	<0.001	0.003		0.001
Dibromochloromethane	mg/L	<0.001	<0.001		0.001
Bromoform	mg/L	<0.001	<0.001		0.001
Total Trihalomethanes	mg/L	0.023	0.044		0.001
Trihalomethanes - Surrogate Recovery					
Dibromofluoromethane	EPA Surrogate %	92	91		86-118
Toluene-d8	EPA Surrogate %	93	92		85-115
Bromofluorobenzene	EPA Surrogate %	91	97		86-115
Haloacetic Acids - Water					
Monochloroacetic Acid	ug/L	<2.0	<2.0		2
Monobromoacetic Acid	ug/L	<2.0	<2.0		2
Dichloroacetic Acid	ug/L	8.3	12.0		2
Bromochloroacetic Acid	ug/L	<2.0	<2.0		2
Dibromoacetic Acid	ug/L	<2.0	<2.0		2
Trichloroacetic Acid	ug/L	7.1	13.6		2
Total Haloacetic Acids (HAA6)	ug/L	15.4	25.6		2

Approved by: 
 Mathieu Simoneau
 Operations Manager

Methodology and Notes

Bill To: EPCOR	Project:	Lot ID: 837553
Report To: EPCOR	ID:	Control Number:
P.O. Box 6	Name: THM & HAA Samples	Date Received: Nov 9, 2011
8900 Park Drive	Location:	Date Reported: Nov 28, 2011
Port Hardy, BC, Canada	LSD:	Report Number: 1528923
VON 2P0	P.O.:	
Attn: Joe Jewel	Acct code:	
Sampled By:		
Company:		

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Haloacetic Acids - Water	US EPA	* US EPA method, 552.3	28-Nov-11	Exova Accutest
THM - Water	US EPA	* US EPA method, 8260B/5035	10-Nov-11	Exova Calgary

** Reference Method Modified*

References

US EPA US Environmental Protection Agency Test Methods

Comments:

- Sample Information Sheet was not received.

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

No Chain of Custody Available.

Exova
 #104, 19575-55 A Ave.
 Surrey, British Columbia
 V3S 8P8, Canada

T: +1 (604) 514-3322
 F: +1 (604) 514-3323
 E: Surrey@exova.com
 W: www.exova.com



Analytical Report

Bill To: EPCOR
 Report To: EPCOR
 P.O. Box 6
 8900 Park Drive
 Port Hardy, BC, Canada
 V0N 2P0
 Attn: Joe Jewel
 Sampled By:
 Company:

Project:
 ID:
 Name:
 Location:
 LSD:
 P.O.:
 Acct code:

Lot ID: **819418**
 Control Number:
 Date Received: Aug 9, 2011
 Date Reported: Aug 30, 2011
 Report Number: 1459562

	Reference Number	819418-1	819418-2		
	Sample Date	Aug 08, 2011	Aug 08, 2011		
	Sample Time	NA	NA		
	Sample Location	Chatham Avenue	Reservoir Avenue		
	Sample Description	Water	Water		
	Matrix				
Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trihalomethanes Screen - Water					
Chloroform	mg/L	0.053	0.022		0.001
Bromodichloromethane	mg/L	0.003	0.001		0.001
Dibromochloromethane	mg/L	<0.001	<0.001		0.001
Bromoform	mg/L	<0.001	<0.001		0.001
Total Trihalomethanes	mg/L	0.056	0.023		0.001
Trihalomethanes - Surrogate Recovery					
Dibromofluoromethane	EPA Surrogate %	100	98		86-118
Toluene-d8	EPA Surrogate %	101	100		85-115
Bromofluorobenzene	EPA Surrogate %	90	89		86-115
Haloacetic Acids - Water					
Monochloroacetic Acid	ug/L	<2.0	<2.0		2
Monobromoacetic Acid	ug/L	<2.0	<2.0		2
Dichloroacetic Acid	ug/L	23.6	12.6		2
Bromochloroacetic Acid	ug/L	<2.0	<2.0		2
Dibromoacetic Acid	ug/L	<2.0	<2.0		2
Trichloroacetic Acid	ug/L	27.9	15.5		2
Total Haloacetic Acids (HAA6)	ug/L	51.5	28.1		2

Approved by: *Mathieu Simoneau*
 Mathieu Simoneau
 Operations Manager