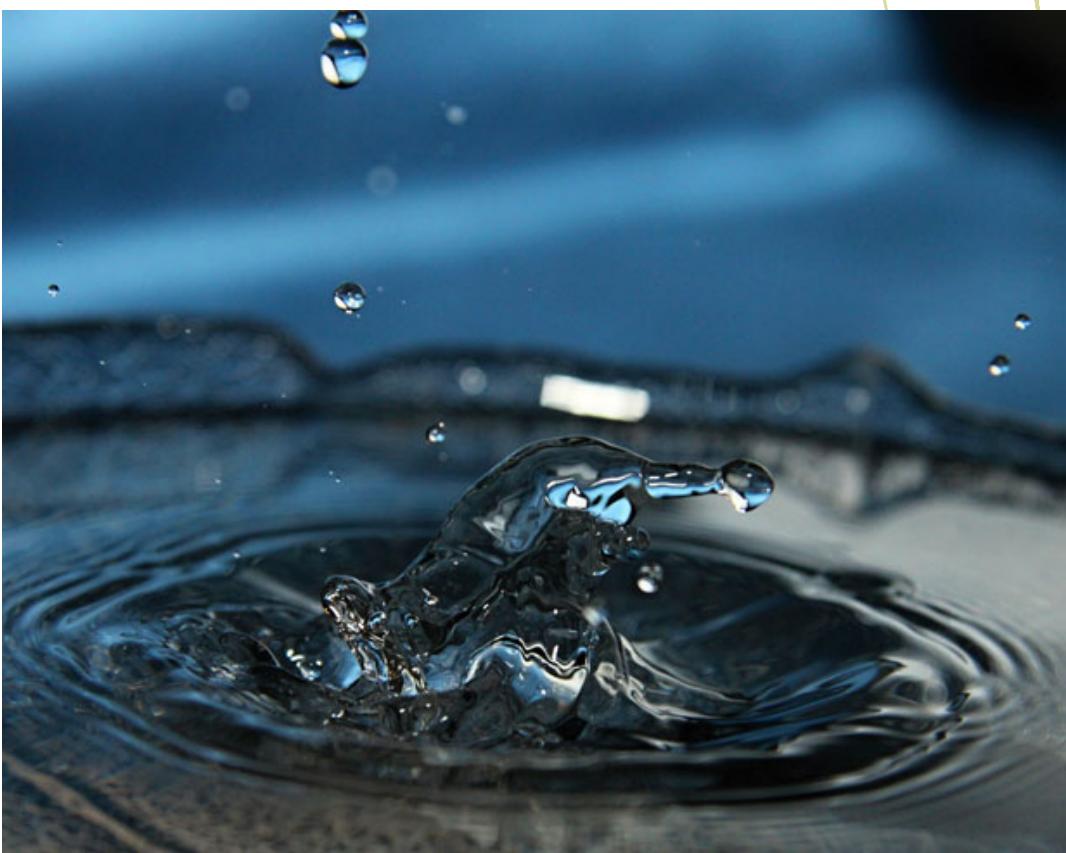


# Drinking Water Quality Report

## 2018



# **DRINKING WATER QUALITY REPORT 2018**

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## **1.0 EXECUTIVE SUMMARY**

The City of Pitt Meadows holds a permit to operate its water utility from the Fraser Health Authority (FHA). In 2018, the city was mainly supplied by the Coquitlam watershed and treated by Metro Vancouver.

In accordance with the requirements of the *Drinking Water Protection Act* and the *Drinking Water Protection Regulation*, the city's operations department takes weekly water samples from nine stations which are sent to the Metro Vancouver laboratory for testing. Results are returned to the city on a weekly basis as documented in this annual public report.

The *Drinking Water Protection Regulation* establishes requirements for drinking water quality to ensure water quality standards are in compliance for public safety.

In 2018, the City of Pitt Meadows water system met all regulatory requirements for drinking water quality as set out by the BC Drinking Water Protection Act. All water quality objectives suggested by Health Canada were also met:

- Six chlorine residual tests fell below the minimum level of 0.2 ppm.
- No samples tested positive for E. coli.
- 99% of the samples had 0 Total Coliform per 100 mL. The problem sample site passed on a subsequent re-test.
- The annual average Total Trihalomethane results ranged between 31 and 50 parts per billion (ppb), less than the Health Canada guidelines of 100 ppb.
- The annual average Total Haloacetic acid results ranged from 40 to 57 ppb, less than Health Canada's guidelines of 80 ppb.

In conclusion, the water quality in the City of Pitt Meadows was quite good in 2018.

## **2.0 INTRODUCTIONS**

This is the City of Pitt Meadows (PM) annual Drinking Water Quality Report for 2018. It is prepared for the Fraser Health Authority (FHA) as well as public information.

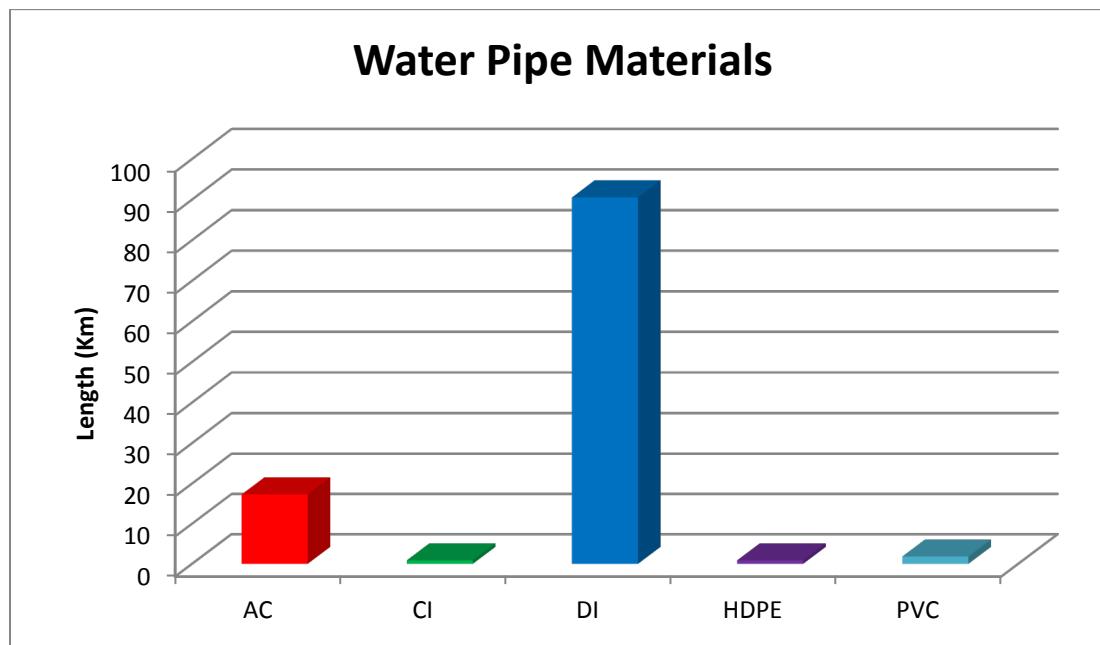
## **3.0 BACKGROUND**

### **3.1 Regulating Authorities**

PM holds a permit to operate its water distribution network from the FHA (Appendix 8) and adheres to the provisions of the Local Government Act. Water quality requirements are legislated by the *Drinking Water Protection Act (DWPA)* and *Drinking Water Protection Regulation (DWPR)*. The drinking water officer may also issue orders for non-compliance and or health concerns. The water distribution system has been classified by the EOCP as a Class II System.

### **3.2 Distribution System**

PM's water distribution network is over 111 kilometers long and serves a population of approximately 18,500 residents.



### **Water Supply**

The primary water supply source is the Coquitlam watershed. The Coquitlam source uses Ozone as a pretreatment and chlorine as a secondary disinfectant. Water supply can also come from the Metro Vancouver's other watershed sources (Capilano & Seymour). The water arrives via Haney Mains 2 and 3. Water supplied by both Haney

Main 2 and 3 is re-chlorinated as a secondary disinfectant at the Pitt River Disinfection Station prior to arriving in the municipal water distribution system.

### Maintenance

In a unidirectional fashion, using valve isolation, all water mains were effectively flushed. Dead end lines that are not looped received special attention. Sodium thiosulphate was used to ensure the absence of chlorine residual as the water being flushed was introduced into the environment. An automatic flush valve at the end of the long run on Rannie Road engages for 2 hours twice every day to ensure the presence of chlorine residual.

Unidirectional flushing has been revised further with the aid of computerized modeling and feedback from previous year's program to improve effectiveness.

All City owned backflow devices and assemblies were tested and repaired as required by a certified tester. Our cross connection control program ensures backflow protection devices are installed and tested annually at all high and moderate hazard locations.

All components of the six pressure regulating stations and the single booster station were maintained on a regular basis to ensure proper operation. This maintenance included the cleaning of inline and body strainers, function of Clayton valves and pressure relief valves, air valves. Meadow Gardens PRV and Bonson PRV were replaced with new facilities in 2018.

All 482 fire hydrants owned by the City were fully maintained in 2018. The hydrants received a scheduled "A" or "B" service.

The City has 971 mainline and service valves in the distribution system that are exercised and maintained as necessary.

We currently have 6 level II and 2 level I Water Distribution Operators employed to maintain our system.

### Repairs and Upgrades

Currently asbestos cement (AC) mains are being replaced by ductile iron mains (DI) on a yearly basis with all AC mains scheduled to be replaced by 2025. The following projects were completed in 2018:

- 640 meters of AC Watermain was replaced with Ductile Iron on McKechnie Rd
- 365 meters of AC Watermain was replaced with Ductile Iron on Wildwood Cres.

## **4.0 WATER QUALITY SAMPLE SITES**

The city has 9 sampling sites that are sampled weekly. Their locations and attributes are listed in table 1 and shown on a map in Appendix 1. All 9 sample sites are tested for physical parameters and 4 are tested for chemical in one distribution zone.

**Table 1: Sample Location and Attributes**

<b>Sample Site</b>	<b>Location</b>	<b>Main Size (mm)</b>	<b>Normal Flow</b>
DmPMS-421	12188 McMyn Ave	150 DI	Low
DmPMS-422	19817 Wildwood Place	150 DI	Low
DmPMS-423	12476 Wooldridge Road	250 DI	Medium
DmPMS-424	20217 McNeil Road	250 DI	Medium
DmPMS-425	16651 Rannie Road	150 DI	Low
DmPMS-426	13657 McKechnie Road	150 DI	Medium
DmPMS-427	120B Ave Opposite 18993	150 AC	Low
DmPMS-428	100 meters west of Old Dewdney Trunk Rd PRV	300 DI	Source
DmPMS-429	North West corner of Sutton and Bonson	300 DI	Low

Samples are taken every Tuesday morning by the city's Operations Department and are then picked up by the Metro Vancouver for testing. The detailed 2018 results are in Appendix 2.

### **4.1 Bacteriological Monitoring**

Samples are analyzed for fecal coliform, total coliform and heterotrophic plate count (HPC). BCDWPR Microbiological Standards are listed in Table 2.

**Table 2: BCDWPR Microbiological Standards**

<b>Parameter</b>	<b>Occurrence</b>	<b>Standard</b>
Fecal Coliform	0	Less than 1 fecal coliform per 100 mL
Total Coliform	1	0 total coliform per 100 mL  At least 90% of samples have 0 total coliform per 100 mL and no sample has more than 10 fecal coliform per 100 mL

### Bacteriological Results

There was one sample that tested positive for coliform but a subsequent test two days later tested negative, suggesting sample contamination. Appendix 4 illustrates the bacteriological requirements were met in 2018.

## **4.2 Chemical and Physical Monitoring**

Monitoring of the City's distribution system is conducted by Metro Vancouver. Samples are screened for temperature, pH and turbidity. Monitoring of the source water and Metro Vancouver transmission system is conducted by the Metro Vancouver Water District (MVWD) and Metro Vancouver.

Temperature of water was generally acceptable, the only times that the water temperature was above the guideline was during the summer months. The excess temperatures range from 16 to 18 degrees Celsius. Temperature of water will affect the efficiency of water treatment processes. Low temperature decreases efficiency of treatment processes and high temperatures enhance the growth of nuisance organisms that could be detected by odor and taste.

Total Haloacetic Acid results account for the by-products of the disinfection process from chlorine break down when it reacts with natural occurring organisms and are within the allowable limits. Source water and Metro Vancouver improvement plans are determined by the MVWD and published in the *MVWD Quality Control Annual Report, 2018*. They are also in Appendix 6 and 7.

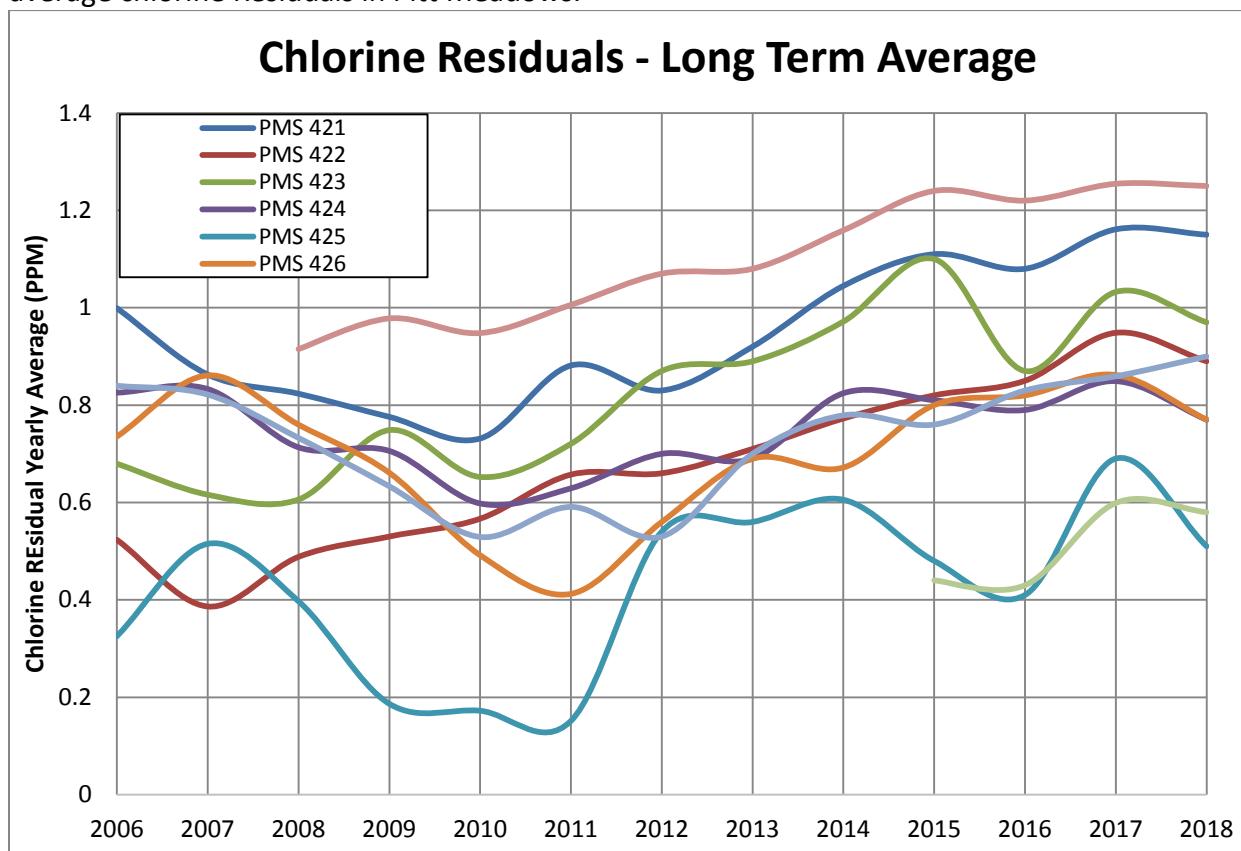
### 4.3 Chlorine Residual Levels

**Table 4: Chlorine Levels at Each Sample Site in 2017**

Sample Site	Number of Samples Taken	Number of Samples with <0.2ppm Chlorine Residual	Percent of Samples with <0.2ppm Chlorine Residual
DmPMS-421	51	0	0%
DmPMS-422	52	0	0%
DmPMS-423	47	0	0%
DmPMS-424	51	0	0%
DmPMS-425	50	5	10%
DmPMS-426	50	1	2%
DmPMS-427	51	0	0%
DmPMS-428	51	0	0%
DmPMS-429	51	0	0%

#### Chlorine Residual Improvement Plan

Chlorine Residuals have improved over the past several years due to significant improvements to our unidirectional flushing program. The minor downturn in averages will be monitored through 2019. The following graph illustrates the long term yearly average chlorine Residuals in Pitt Meadows.



## **5.0 EMERGENCY RESPONSE PLAN**

The City of Pitt Meadows *Water Response Plan* is a document that contains detailed information for all stakeholders in the event of an emergency related to the City's water distribution system.

The plan has been developed to ensure the safe and effective delivery of water is maintained and lessen the impacts of emergency situations.



## **6.0 WATER FLUSHING MESSAGE FROM FRASER HEALTH**

A public health message from the Fraser Health Authority



Anytime the water in a particular faucet has not been used for six hours or longer, "flush" your cold-water pipes by running the water until you notice a change in temperature. (This could take as little as five to thirty seconds if there has been recent heavy water use such as showering or toilet flushing. Otherwise, it could take two minutes or longer.) The more time water has been sitting in your home's pipes, the more lead it may contain.

Use only water from the cold-tap for drinking, cooking, and especially making baby formula. Hot water is likely to contain higher levels of lead.

The two actions recommended above are very important to the health of your family. They will probably be effective in reducing lead levels because most of the lead in household water usually comes from the plumbing in your house, not from the local water supply.

Conserving water is still important. Rather than just running the water down the drain you could use the water for things such as watering your plants.

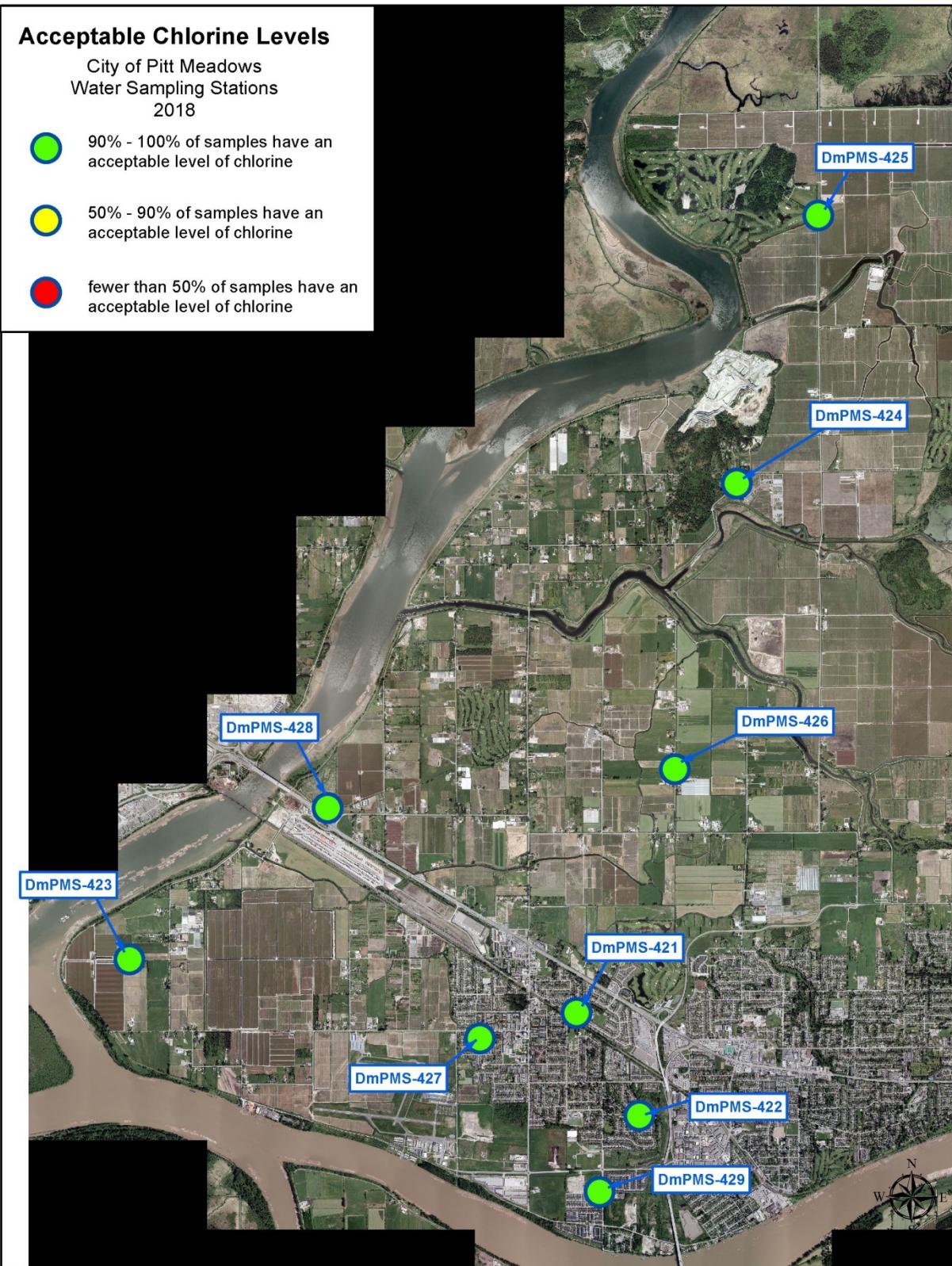
## **APPENDIX – I**

### **ACCEPTABLE CHLORINE LEVELS AND SAMPLE SITE LOCATIONS**

## Acceptable Chlorine Levels

City of Pitt Meadows  
Water Sampling Stations  
2018

- 90% - 100% of samples have an acceptable level of chlorine
- 50% - 90% of samples have an acceptable level of chlorine
- fewer than 50% of samples have an acceptable level of chlorine



## **APPENDIX – 2**

### **WEEKLY SAMPLE METRO VANCOUVER LAB RESULTS DMPMS 421 – 429**

**PMS-421**

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
Jan 16, 2018 11:45:00 AM	1.41	<1	2	5	<1	0.43
Jan 30, 2018 10:20:00 AM	1.16	<1	<2	5	<1	0.50
Feb 06, 2018 9:15:00 AM	1.12	<1	2	6	<1	0.69
Feb 13, 2018 10:30:00 AM	1.23	<1	<2	5	<1	0.67
Feb 20, 2018 10:20:00 AM	1.14	<1	4	5	<1	0.42
Feb 27, 2018 9:05:00 AM	1.16	<1	<2	5	<1	0.38
Mar 06, 2018 9:04:00 AM	1.02	<1	<2	5	<1	0.34
Mar 13, 2018 11:33:00 AM	1.13	<1	<2	7	<1	0.41
Mar 20, 2018 9:00:00 AM	1.15	<1	<2	6	<1	0.30
Mar 27, 2018 9:18:00 AM	1.03	<1	<2	6	<1	0.47
Apr 03, 2018 8:56:00 AM	1.07	<1	<2	6	<1	0.36
Apr 10, 2018 8:55:00 AM	1.08	<1	<2	7	<1	0.36
Apr 17, 2018 9:55:00 AM	1.11	<1	<2	8	<1	0.39
Apr 24, 2018 11:07:00 AM	1.14	<1	6	8	<1	0.39
May 01, 2018 8:52:00 AM	1.15	<1	6	8	<1	0.31
May 08, 2018 1:25:00 PM	1.17	<1	2	9.5	<1	0.33
May 15, 2018 9:01:00 AM	1.12	<1	<2	9	<1	0.28
May 22, 2018 9:00:00 AM	1.00	<1	<2	10	<1	0.29
May 29, 2018 9:03:00 AM	1.18	<1	10	11	<1	0.29
Jun 05, 2018 8:56:00 AM	1.20	<1	38	12	<1	0.23
Jun 12, 2018 9:41:00 AM	1.09	<1	4	10	<1	0.28
Jun 19, 2018 9:13:00 AM	1.27	<1	20	11	<1	0.29
Jun 26, 2018 8:55:00 AM	0.84	<1	18	13	<1	0.18
Jul 03, 2018 9:11:00 AM	1.16	<1	280	12.5	<1	0.34
Jul 10, 2018 11:13:00 AM	1.17	<1	10	13	<1	0.24
Jul 17, 2018 9:10:00 AM	1.16	<1	38	14	<1	0.49
Jul 24, 2018 10:44:00 AM	1.27	<1	14	14	<1	0.36
Jul 31, 2018 10:25:00 AM	1.19	<1	18	15	<1	0.28
Aug 07, 2018 9:15:00 AM	1.08	<1	56	14	<1	0.21
Aug 14, 2018 9:20:00 AM	1.17	<1	90	14	<1	0.31
Aug 21, 2018 11:20:00 AM	1.41	<1	18	16	<1	0.30
Aug 28, 2018 9:10:00 AM	1.26	<1	34	16	<1	0.36
Sep 04, 2018 9:00:00 AM	1.26	<1	8	16	<1	0.32

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
Sep 11, 2018 10:37:00 AM	1.18	<1	26	16	<1	0.33
Sep 18, 2018 9:00:00 AM	1.17	<1	<2	15	<1	0.41
Sep 25, 2018 10:00:00 AM	1.09	<1	78	14.5	<1	0.78
Oct 02, 2018 11:15:00 AM	0.94	<1	LA	15	<1	0.43
Oct 09, 2018 11:20:00 AM	1.23	<1	20	13	<1	0.34
Oct 16, 2018 8:55:00 AM	1.22	<1	2	12.5	<1	0.28
Oct 23, 2018 11:15:00 AM	1.13	<1	8	12	<1	0.35
Oct 30, 2018 9:00:00 AM	1.16	<1	6	12	<1	0.33
Nov 06, 2018 10:20:00 AM	1.21	<1	12	11	<1	1.1
Nov 13, 2018 11:15:00 AM	1.23	<1	6	10	<1	0.78
Nov 20, 2018 10:50:00 AM	1.24	<1	14	10	<1	0.76
Nov 27, 2018 9:30:00 AM	1.20	<1	6	9	<1	0.71
Dec 04, 2018 9:20:00 AM	1.14	<1	12	8	<1	0.71
Dec 11, 2018 10:55:00 AM	1.16	<1	2	7	<1	0.57
Dec 18, 2018 10:30:00 AM	1.04	<1	NA	7	<1	0.48
Dec 27, 2018 10:55:00 AM	1.10	<1	NA	6	<1	0.35

## PMS-422

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
Jan 16, 2018 8:48:00 AM	0.91	<1	50	6	<1	0.59
Jan 30, 2018 11:20:00 AM	0.84	<1	2	7	<1	0.36
Feb 06, 2018 8:55:00 AM	0.87	<1	2	7	<1	0.75
Feb 13, 2018 11:10:00 AM	0.93	<1	4	7	<1	0.45
Feb 20, 2018 11:10:00 AM	0.91	<1	<2	7	<1	0.38
Feb 27, 2018 8:49:00 AM	0.89	<1	6	6	<1	0.37
Mar 06, 2018 8:50:00 AM	0.88	<1	2	6	<1	0.41
Mar 13, 2018 11:11:00 AM	0.97	<1	<2	7	<1	0.37
Mar 20, 2018 8:40:00 AM	0.89	<1	<2	8	<1	0.38
Mar 27, 2018 9:03:00 AM	0.93	<1	4	7.5	<1	0.73
Apr 03, 2018 8:41:00 AM	0.93	<1	<2	8	<1	0.38
Apr 10, 2018 8:40:00 AM	0.85	<1	<2	9	<1	0.34
Apr 17, 2018 9:41:00 AM	0.88	<1	<2	9	<1	0.39
Apr 24, 2018 10:45:00 AM	0.91	<1	2	9	<1	0.38

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
May 01, 2018 8:37:00 AM	1.00	<1	4	11	<1	0.28
May 08, 2018 1:05:00 PM	0.92	<1	38	11	<1	0.56
May 15, 2018 8:40:00 AM	0.98	<1	<2	12	<1	0.34
May 22, 2018 8:43:00 AM	0.95	<1	12	13	<1	0.25
May 29, 2018 8:12:00 AM	0.96	<1	6	14	<1	0.25
Jun 05, 2018 8:35:00 AM	0.95	<1	4	15	<1	0.27
Jun 12, 2018 9:30:00 AM	0.90	<1	8	14	<1	0.29
Jun 19, 2018 8:52:00 AM	1.18	<1	14	14	<1	0.22
Jun 26, 2018 8:40:00 AM	0.79	<1	16	14	<1	0.29
Jul 03, 2018 8:48:00 AM	0.64	<1	28	14	<1	0.20
Jul 10, 2018 8:55:00 AM	0.75	<1	20	16	1	0.27
Jul 12, 2018 8:30:00 AM	1.44	<1	10	14	<1	
Jul 17, 2018 8:55:00 AM	1.05	<1	380	15	<1	0.48
Jul 24, 2018 11:19:00 AM	0.99	<1	30	15	<1	0.13
Jul 31, 2018 10:15:00 AM	1.10	<1	2	16	<1	0.25
Aug 07, 2018 8:45:00 AM	0.89	<1	46	15	<1	0.25
Aug 14, 2018 9:00:00 AM	0.97	<1	14	17	<1	0.22
Aug 21, 2018 8:35:00 AM	1.12	<1	2	17	<1	0.22
Aug 28, 2018 8:45:00 AM	0.97	<1	70	16	<1	0.28
Sep 04, 2018 8:46:00 AM	1.06	<1	14	16	<1	0.22
Sep 11, 2018 9:52:00 AM	1.04	<1	32	17	<1	0.23
Sep 18, 2018 8:45:00 AM	0.73	<1	4	16	<1	0.31
Sep 25, 2018 8:40:00 AM	0.72	<1	26	15	<1	0.43
Oct 02, 2018 8:45:00 AM	0.72	<1	120	15	<1	0.28
Oct 09, 2018 10:50:00 AM	0.84	<1	28	14	<1	0.30
Oct 16, 2018 8:40:00 AM	0.69	<1	32	13	<1	0.26
Oct 23, 2018 10:45:00 AM	0.85	<1	14	13	<1	0.30
Oct 30, 2018 8:45:00 AM	0.73	<1	30	13	<1	0.26
Nov 06, 2018 11:00:00 AM	0.56	<1	18	12	<1	0.82
Nov 13, 2018 11:00:00 AM	0.86	<1	56	11	<1	0.72
Nov 20, 2018 11:25:00 AM	0.83	<1	26	10	<1	0.64
Nov 27, 2018 9:15:00 AM	0.99	<1	2	9	<1	0.61
Dec 04, 2018 8:55:00 AM	0.62	<1	610	9	<1	0.75
Dec 11, 2018 11:15:00 AM	0.72	<1	4	8	<1	0.61
Dec 18, 2018 11:15:00 AM	0.67	<1	NA	8	<1	0.44
Dec 27, 2018 10:30:00 AM	0.79	<1	NA	7	<1	0.31

**PMS-423**

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
Jan 30, 2018 8:45:00 AM	0.87	<1	<2	5	<1	0.36
Feb 06, 2018 9:55:00 AM	0.93	<1	<2	7	<1	0.72
Feb 27, 2018 9:40:00 AM	0.96	<1	<2	5	<1	0.38
Mar 06, 2018 9:38:00 AM	0.99	<1	<2	5	<1	0.31
Mar 13, 2018 8:25:00 AM	1.06	<1	<2	6	<1	0.49
Mar 20, 2018 9:34:00 AM	0.96	<1	<2	7	<1	0.32
Mar 27, 2018 9:45:00 AM	0.97	<1	<2	6	<1	0.37
Apr 03, 2018 9:33:00 AM	0.96	<1	<2	7	<1	0.38
Apr 10, 2018 9:32:00 AM	0.95	<1	2	7	<1	0.39
Apr 17, 2018 8:25:00 AM	0.95	<1	<2	7.5	<1	0.37
Apr 24, 2018 8:25:00 AM	0.89	<1	<2	7	<1	0.97
May 01, 2018 9:26:00 AM	0.23	<1	2	9	<1	0.33
May 08, 2018 1:55:00 PM	0.93	<1	2	10	<1	0.31
May 15, 2018 9:42:00 AM	0.84	<1	<2	9.5	<1	0.35
May 22, 2018 9:33:00 AM	0.87	<1	<2	11	<1	0.24
May 29, 2018 9:40:00 AM	0.85	<1	4	11	<1	0.26
Jun 05, 2018 9:36:00 AM	0.87	<1	<2	12	<1	0.23
Jun 12, 2018 10:05:00 AM	0.76	<1	2	12	<1	0.20
Jun 19, 2018 9:45:00 AM	0.98	<1	<2	12	<1	0.23
Jun 26, 2018 9:30:00 AM	1.07	<1	<2	11	<1	0.23
Jul 03, 2018 11:15:00 AM	1.05	<1	14	12	<1	0.18
Jul 10, 2018 10:50:00 AM	0.93	<1	2	13	<1	0.38
Jul 17, 2018 10:25:00 AM	0.94	<1	8	14	<1	0.75
Jul 24, 2018 8:22:00 AM	1.03	<1	46	13	<1	0.29
Jul 31, 2018 8:55:00 AM	1.08	<1	2	14	<1	0.24
Aug 07, 2018 11:18:00 AM	0.26	<1	96	15	<1	0.20
Aug 14, 2018 11:25:00 AM	0.90	<1	54	16	<1	0.29
Aug 21, 2018 9:05:00 AM	1.04	<1	4	16	<1	0.25
Aug 28, 2018 11:15:00 AM	1.18	<1	2	15	<1	0.48
Sep 04, 2018 9:33:00 AM	0.96	<1	2	15	<1	0.24
Sep 11, 2018 8:50:00 AM	1.06	<1	<2	15	<1	0.28
Sep 18, 2018 9:35:00 AM	1.07	<1	<2	14	<1	0.40

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
Sep 25, 2018 9:05:00 AM	1.08	<1	2	13	<1	0.47
Oct 02, 2018 9:20:00 AM	1.15	<1	<2	13	<1	0.38
Oct 09, 2018 8:40:00 AM	1.12	<1	4	12	<1	0.34
Oct 16, 2018 9:30:00 AM	1.08	<1	<2	13	<1	0.31
Oct 23, 2018 9:00:00 AM	1.18	<1	2	12	<1	0.28
Oct 30, 2018 9:36:00 AM	1.02	<1	4	12	<1	0.84
Nov 06, 2018 8:40:00 AM	1.17	<1	<2	10	<1	1.2
Nov 13, 2018 9:00:00 AM	1.12	<1	2	9	<1	0.85
Nov 20, 2018 9:15:00 AM	1.22	<1	<2	10	<1	0.68
Nov 27, 2018 11:15:00 AM	1.13	<1	2	9	<1	0.76
Dec 11, 2018 8:45:00 AM	1.10	<1	<2	7	<1	0.62
Dec 18, 2018 8:40:00 AM	0.95	<1	NA	7	<1	0.49
Dec 27, 2018 8:45:00 AM	1.08	<1	NA	6	<1	0.35

#### PMS-424

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
Jan 16, 2018 10:41:00 AM	0.75	<1	2	6	<1	0.45
Jan 30, 2018 10:00:00 AM	0.66	<1	2	6	<1	0.31
Feb 06, 2018 10:30:00 AM	0.72	<1	<2	7	<1	0.68
Feb 13, 2018 10:10:00 AM	0.67	<1	<2	6	<1	0.71
Feb 20, 2018 9:46:00 AM	0.67	<1	<2	6	<1	0.47
Feb 27, 2018 11:15:00 AM	0.74	<1	2	6	<1	0.36
Mar 06, 2018 11:18:00 AM	0.86	<1	2	6	<1	0.37
Mar 13, 2018 10:35:00 AM	0.89	<1	<2	5.5	<1	0.37
Mar 20, 2018 11:15:00 AM	0.74	<1	<2	7	<1	0.33
Mar 27, 2018 11:15:00 AM	0.75	<1	<2	7	<1	0.33
Apr 03, 2018 11:15:00 AM	0.73	<1	<2	7	<1	0.45
Apr 10, 2018 11:15:00 AM	0.75	<1	<2	7	<1	0.33
Apr 17, 2018 11:23:00 AM	0.67	<1	<2	8	<1	0.36
Apr 24, 2018 9:51:00 AM	0.87	<1	<2	8	<1	0.86
May 01, 2018 11:15:00 AM	0.89	<1	<2	9	<1	0.31
May 08, 2018 3:30:00 PM	0.78	<1	<2	16	<1	0.26
May 15, 2018 11:17:00 AM	0.91	<1	<2	10	<1	0.53

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
May 22, 2018 11:20:00 AM	0.90	<1	<2	11	<1	0.26
May 29, 2018 11:15:00 AM	0.97	<1	<2	10	<1	0.25
Jun 05, 2018 11:15:00 AM	0.91	<1	<2	12	<1	0.25
Jun 12, 2018 11:20:00 AM	0.88	<1	2	11	<1	0.21
Jun 19, 2018 11:20:00 AM	1.03	<1	<2	11	<1	0.22
Jun 26, 2018 11:20:00 AM	0.72	<1	<2	12	<1	0.17
Jul 03, 2018 10:44:00 AM	0.77	<1	<2	12	<1	0.19
Jul 10, 2018 10:20:00 AM	0.78	<1	<2	12	<1	0.25
Jul 17, 2018 9:40:00 AM	1.05	<1	<2	14	<1	0.71
Jul 24, 2018 10:20:00 AM	1.01	<1	<2	13	<1	0.28
Jul 31, 2018 9:55:00 AM	1.09	<1	2	14	<1	0.24
Aug 07, 2018 9:50:00 AM	0.90	<1	2	15	<1	0.21
Aug 14, 2018 10:30:00 AM	1.00	<1	4	15	<1	0.23
Aug 21, 2018 10:00:00 AM	1.09	<1	2	16	<1	0.34
Aug 28, 2018 10:28:00 AM	0.93	<1	24	16	<1	0.34
Sep 04, 2018 11:15:00 AM	0.98	<1	<2	16	<1	0.22
Sep 11, 2018 11:20:00 AM	0.92	<1	<2	16	<1	0.33
Sep 18, 2018 11:20:00 AM	0.62	<1	<2	16	<1	0.34
Sep 25, 2018 9:40:00 AM	0.66	<1	<2	14	<1	0.75
Oct 02, 2018 10:10:00 AM	0.82	<1	<2	14	<1	0.31
Oct 09, 2018 10:00:00 AM	0.43	<1	10	13	<1	0.27
Oct 16, 2018 11:20:00 AM	0.71	<1	4	14	<1	0.30
Oct 23, 2018 9:55:00 AM	0.72	<1	<2	12	<1	0.26
Oct 30, 2018 11:20:00 AM	0.56	<1	12	13	<1	0.23
Nov 06, 2018 9:55:00 AM	0.26	<1	8	11	<1	0.83
Nov 13, 2018 10:05:00 AM	0.73	<1	<2	11	<1	0.64
Nov 20, 2018 10:30:00 AM	0.54	<1	8	11	<1	0.66
Nov 27, 2018 10:30:00 AM	0.59	<1	2	10	<1	0.65
Dec 04, 2018 10:20:00 AM	0.52	<1	90	8	<1	0.75
Dec 11, 2018 9:45:00 AM	0.83	<1	2	8	<1	0.56
Dec 18, 2018 9:45:00 AM	0.81	<1	NA	8	<1	0.67
Dec 27, 2018 11:40:00 AM	0.70	<1	NA	7	<1	0.28

**PMS-425**

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
Jan 16, 2018 10:15:00 AM	0.29	<1	<2	7	<1	0.42
Jan 30, 2018 9:40:00 AM	0.28	<1	8	7	<1	0.30
Feb 06, 2018 10:45:00 AM	0.36	<1	4	8	<1	0.85
Feb 13, 2018 9:55:00 AM	0.43	<1	<2	7	<1	0.62
Feb 20, 2018 9:22:00 AM	0.43	<1	<2	6	<1	0.63
Feb 27, 2018 11:00:00 AM	0.58	<1	<2	7	<1	0.32
Mar 06, 2018 11:03:00 AM	0.67	<1	2	7	<1	0.43
Mar 13, 2018 10:20:00 AM	0.67	<1	<2	6.5	<1	0.36
Mar 20, 2018 11:00:00 AM	0.73	<1	2	8	<1	0.38
Mar 27, 2018 11:00:00 AM	0.59	<1	<2	7	<1	0.28
Apr 03, 2018 11:00:00 AM	0.65	<1	<2	8	<1	0.30
Apr 10, 2018 10:52:00 AM	0.57	<1	2	8	<1	0.31
Apr 17, 2018 11:00:00 AM	0.54	<1	<2	9	<1	0.35
Apr 24, 2018 9:38:00 AM	0.48	<1	2	8.5	<1	0.47
May 01, 2018 11:00:00 AM	0.74	<1	<2	10	<1	0.32
May 08, 2018 3:16:00 PM	0.65	<1	<2	12	<1	0.26
May 15, 2018 11:00:00 AM	0.78	<1	<2	12	<1	0.48
May 22, 2018 11:02:00 AM	0.70	<1	LA	12.5	<1	0.31
May 29, 2018 10:52:00 AM	0.82	<1	<2	12	<1	0.23
Jun 05, 2018 10:55:00 AM	0.70	<1	<2	13	<1	0.17
Jun 12, 2018 11:07:00 AM	0.75	<1	<2	13	<1	0.21
Jun 19, 2018 11:00:00 AM	0.88	<1	2	14	<1	0.21
Jun 26, 2018 11:00:00 AM	0.73	<1	<2	14	<1	0.16
Jul 03, 2018 9:38:00 AM	0.63	<1	<2	13	<1	0.28
Jul 10, 2018 10:05:00 AM	0.68	<1	2	14	<1	0.53
Jul 17, 2018 9:25:00 AM	0.81	<1	<2	15	<1	0.49
Jul 24, 2018 9:41:00 AM	0.82	<1	<2	14	<1	0.32
Jul 31, 2018 9:40:00 AM	0.93	<1	<2	15	<1	0.22
Aug 07, 2018 9:45:00 AM	0.62	<1	<2	15	<1	0.23
Aug 14, 2018 10:10:00 AM	0.73	<1	<2	16	<1	0.26
Aug 21, 2018 10:20:00 AM	1.05	<1	2	16	<1	0.30
Aug 28, 2018 10:00:00 AM	0.40	<1	LA	17	<1	0.25
Sep 04, 2018 10:55:00 AM	0.64	<1	2	18	<1	0.16

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
Sep 11, 2018 11:32:00 AM	0.49	<1	32	18	<1	0.18
Sep 18, 2018 11:00:00 AM	0.41	<1	74	17	<1	0.27
Sep 25, 2018 9:55:00 AM	0.16	<1	4600	16	<1	0.74
Oct 09, 2018 9:44:00 AM	0.20	<1	3000	15	<1	0.32
Oct 16, 2018 11:01:00 AM	0.36	<1	4000	14	<1	0.65
Oct 23, 2018 9:45:00 AM	0.41	<1	2500	13	<1	0.38
Oct 30, 2018 11:00:00 AM	0.26	<1	3600	14	<1	0.25
Nov 06, 2018 9:45:00 AM	0.05	<1	2200	13	<1	0.56
Nov 13, 2018 9:55:00 AM	0.12	<1	9100	12	<1	0.55
Nov 20, 2018 10:10:00 AM	0	<1	7900	12	<1	0.68
Nov 27, 2018 10:10:00 AM	0.09	<1	110	11	<1	0.57
Dec 04, 2018 9:58:00 AM	0.39	<1	74	9	<1	0.57
Dec 11, 2018 9:35:00 AM	0.34	<1	34	9	<1	0.56
Dec 18, 2018 9:30:00 AM	0.29	<1	NA	8	<1	0.54
Dec 27, 2018 11:20:00 AM	0.33	<1	NA	8	<1	0.27

### PMS-426

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
Jan 16, 2018 10:15:00 AM	0.29	<1	<2	7	<1	0.42
Jan 30, 2018 9:40:00 AM	0.28	<1	8	7	<1	0.30
Feb 06, 2018 10:45:00 AM	0.36	<1	4	8	<1	0.85
Feb 13, 2018 9:55:00 AM	0.43	<1	<2	7	<1	0.62
Feb 20, 2018 9:22:00 AM	0.43	<1	<2	6	<1	0.63
Feb 27, 2018 11:00:00 AM	0.58	<1	<2	7	<1	0.32
Mar 06, 2018 11:03:00 AM	0.67	<1	2	7	<1	0.43
Mar 13, 2018 10:20:00 AM	0.67	<1	<2	6.5	<1	0.36
Mar 20, 2018 11:00:00 AM	0.73	<1	2	8	<1	0.38
Mar 27, 2018 11:00:00 AM	0.59	<1	<2	7	<1	0.28
Apr 03, 2018 11:00:00 AM	0.65	<1	<2	8	<1	0.30
Apr 10, 2018 10:52:00 AM	0.57	<1	2	8	<1	0.31
Apr 17, 2018 11:00:00 AM	0.54	<1	<2	9	<1	0.35
Apr 24, 2018 9:38:00 AM	0.48	<1	2	8.5	<1	0.47
May 01, 2018 11:00:00 AM	0.74	<1	<2	10	<1	0.32

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
May 08, 2018 3:16:00 PM	0.65	<1	<2	12	<1	0.26
May 15, 2018 11:00:00 AM	0.78	<1	<2	12	<1	0.48
May 22, 2018 11:02:00 AM	0.70	<1	LA	12.5	<1	0.31
May 29, 2018 10:52:00 AM	0.82	<1	<2	12	<1	0.23
Jun 05, 2018 10:55:00 AM	0.70	<1	<2	13	<1	0.17
Jun 12, 2018 11:07:00 AM	0.75	<1	<2	13	<1	0.21
Jun 19, 2018 11:00:00 AM	0.88	<1	2	14	<1	0.21
Jun 26, 2018 11:00:00 AM	0.73	<1	<2	14	<1	0.16
Jul 03, 2018 9:38:00 AM	0.63	<1	<2	13	<1	0.28
Jul 10, 2018 10:05:00 AM	0.68	<1	2	14	<1	0.53
Jul 17, 2018 9:25:00 AM	0.81	<1	<2	15	<1	0.49
Jul 24, 2018 9:41:00 AM	0.82	<1	<2	14	<1	0.32
Jul 31, 2018 9:40:00 AM	0.93	<1	<2	15	<1	0.22
Aug 07, 2018 9:45:00 AM	0.62	<1	<2	15	<1	0.23
Aug 14, 2018 10:10:00 AM	0.73	<1	<2	16	<1	0.26
Aug 21, 2018 10:20:00 AM	1.05	<1	2	16	<1	0.30
Aug 28, 2018 10:00:00 AM	0.40	<1	LA	17	<1	0.25
Sep 04, 2018 10:55:00 AM	0.64	<1	2	18	<1	0.16
Sep 11, 2018 11:32:00 AM	0.49	<1	32	18	<1	0.18
Sep 18, 2018 11:00:00 AM	0.41	<1	74	17	<1	0.27
Sep 25, 2018 9:55:00 AM	0.16	<1	4600	16	<1	0.74
Oct 09, 2018 9:44:00 AM	0.20	<1	3000	15	<1	0.32
Oct 16, 2018 11:01:00 AM	0.36	<1	4000	14	<1	0.65
Oct 23, 2018 9:45:00 AM	0.41	<1	2500	13	<1	0.38
Oct 30, 2018 11:00:00 AM	0.26	<1	3600	14	<1	0.25
Nov 06, 2018 9:45:00 AM	0.05	<1	2200	13	<1	0.56
Nov 13, 2018 9:55:00 AM	0.12	<1	9100	12	<1	0.55
Nov 20, 2018 10:10:00 AM	0	<1	7900	12	<1	0.68
Nov 27, 2018 10:10:00 AM	0.09	<1	110	11	<1	0.57
Dec 04, 2018 9:58:00 AM	0.39	<1	74	9	<1	0.57
Dec 11, 2018 9:35:00 AM	0.34	<1	34	9	<1	0.56
Dec 18, 2018 9:30:00 AM	0.29	<1	NA	8	<1	0.54
Dec 27, 2018 11:20:00 AM	0.33	<1	NA	8	<1	0.27

**PMS-427**

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
Jan 16, 2018 9:10:00 AM	0.39	<1	<2	6	<1	0.48
Jan 30, 2018 10:45:00 AM	0.90	<1	<2	6	<1	0.40
Feb 06, 2018 9:35:00 AM	0.80	<1	<2	7	<1	0.53
Feb 13, 2018 11:20:00 AM	0.95	<1	<2	6	<1	0.52
Feb 20, 2018 11:30:00 AM	0.82	<1	LA	5	<1	0.41
Feb 27, 2018 9:18:00 AM	0.55	<1	<2	6	<1	0.38
Mar 06, 2018 9:15:00 AM	0.91	<1	2	6	<1	0.31
Mar 13, 2018 10:55:00 AM	0.98	<1	<2	5.5	<1	0.40
Mar 20, 2018 9:10:00 AM	0.71	<1	<2	7	<1	0.30
Mar 27, 2018 9:30:00 AM	1.04	<1	<2	6	<1	0.58
Apr 03, 2018 9:07:00 AM	0.88	<1	<2	7	<1	0.32
Apr 10, 2018 9:15:00 AM	0.90	<1	4	7	<1	0.34
Apr 17, 2018 8:47:00 AM	0.82	<1	22	8	<1	0.35
Apr 24, 2018 11:25:00 AM	0.96	<1	4	8	<1	0.40
May 01, 2018 9:10:00 AM	0.66	<1	4	9	<1	0.29
May 08, 2018 1:40:00 PM	1.03	<1	8	9	<1	0.33
May 15, 2018 9:22:00 AM	0.96	<1	<2	10	<1	0.30
May 22, 2018 9:15:00 AM	0.94	<1	2	10	<1	0.27
May 29, 2018 9:17:00 AM	0.92	<1	<2	10	<1	0.22
Jun 05, 2018 9:11:00 AM	0.97	<1	6	11	<1	0.26
Jun 12, 2018 9:52:00 AM	0.72	<1	2	11	<1	0.22
Jun 19, 2018 9:25:00 AM	1.00	<1	6	11	<1	0.23
Jun 26, 2018 9:12:00 AM	0.97	<1	2	11	<1	0.17
Jul 03, 2018 11:40:00 AM	0.86	<1	6	13	<1	0.19
Jul 10, 2018 9:10:00 AM	0.99	<1	4	12	<1	0.27
Jul 17, 2018 10:50:00 AM	1.00	<1	4	14	<1	0.47
Jul 24, 2018 11:34:00 AM	1.24	<1	<2	14	<1	0.40
Jul 31, 2018 8:40:00 AM	0.97	<1	2	14	<1	0.21
Aug 07, 2018 11:40:00 AM	0.85	<1	6	15	<1	0.21
Aug 14, 2018 11:40:00 AM	0.75	<1	24	15	<1	0.29
Aug 21, 2018 8:50:00 AM	0.82	<1	10	16	<1	0.24
Aug 28, 2018 11:40:00 AM	0.96	<1	<2	16	<1	0.30
Sep 04, 2018 9:16:00 AM	0.89	<1	6	15	<1	0.23

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
Sep 11, 2018 10:21:00 AM	1.13	<1	12	17	<1	0.30
Sep 18, 2018 9:10:00 AM	1.00	<1	2	15	<1	0.39
Sep 25, 2018 8:50:00 AM	1.12	<1	12	14	<1	0.58
Oct 02, 2018 8:50:00 AM	1.03	<1	14	14	<1	0.37
Oct 09, 2018 11:05:00 AM	0.97	<1	2	13	<1	0.39
Oct 16, 2018 9:10:00 AM	0.97	<1	12	13	<1	0.30
Oct 23, 2018 11:00:00 AM	0.89	<1	4	12	<1	0.31
Oct 30, 2018 9:12:00 AM	0.81	<1	2	12	<1	0.34
Nov 06, 2018 10:30:00 AM	1.02	<1	12	11	<1	1.2
Nov 13, 2018 10:40:00 AM	1.05	<1	10	10	<1	0.80
Nov 20, 2018 8:50:00 AM	1.07	<1	2	10	<1	0.81
Nov 27, 2018 11:30:00 AM	1.04	<1	2	10	<1	0.65
Dec 04, 2018 11:30:00 AM	0.86	<1	10	NA	<1	0.60
Dec 11, 2018 11:05:00 AM	0.90	<1	22	8	<1	0.61
Dec 18, 2018 10:40:00 AM	0.89	<1	NA	7	<1	0.55
Dec 27, 2018 9:45:00 AM	0.84	<1	NA	7	<1	0.32

### PMS-428

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
Jan 16, 2018 11:10:00 AM	1.27	<1	<2	5	<1	0.48
Jan 30, 2018 9:05:00 AM	1.91	<1	<2	5	<1	0.51
Feb 06, 2018 10:15:00 AM	1.42	<1	2	6	<1	0.77
Feb 13, 2018 9:25:00 AM	1.07	<1	<2	5	<1	0.56
Feb 20, 2018 8:40:00 AM	1.20	<1	<2	4.5	<1	0.46
Feb 27, 2018 9:53:00 AM	1.23	<1	<2	5	<1	0.39
Mar 06, 2018 9:55:00 AM	1.29	<1	<2	5	<1	0.34
Mar 13, 2018 8:45:00 AM	1.35	<1	<2	5.5	<1	0.42
Mar 20, 2018 9:50:00 AM	1.17	<1	<2	5	<1	0.38
Mar 27, 2018 10:00:00 AM	1.18	<1	<2	5	<1	0.37
Apr 03, 2018 9:48:00 AM	0.97	<1	<2	6	<1	0.38
Apr 10, 2018 9:57:00 AM	1.27	<1	<2	6	<1	0.36
Apr 17, 2018 10:27:00 AM	1.32	<1	<2	6	<1	0.46
Apr 24, 2018 8:47:00 AM	1.31	<1	<2	6	<1	0.37

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
May 01, 2018 9:45:00 AM	1.21	<1	<2	7	<1	0.36
May 08, 2018 2:23:00 PM	1.27	<1	<2	8	<1	0.49
May 15, 2018 10:00:00 AM	1.17	<1	<2	8.5	<1	0.32
May 22, 2018 9:55:00 AM	1.34	<1	<2	9.5	<1	0.43
May 29, 2018 9:55:00 AM	1.21	<1	<2	9.5	<1	0.22
Jun 05, 2018 9:57:00 AM	1.22	<1	<2	10	<1	0.32
Jun 12, 2018 10:35:00 AM	1.24	<1	<2	9	<1	0.30
Jun 19, 2018 10:00:00 AM	1.26	<1	<2	11	<1	0.33
Jun 26, 2018 9:48:00 AM	1.19	<1	10	12	<1	0.28
Jul 03, 2018 10:20:00 AM	1.24	<1	<2	13	<1	0.27
Jul 10, 2018 10:35:00 AM	1.06	<1	<2	11	<1	0.42
Jul 17, 2018 10:10:00 AM	1.26	<1	<2	13	<1	0.52
Jul 24, 2018 8:47:00 AM	1.29	<1	<2	13	<1	0.49
Jul 31, 2018 9:10:00 AM	1.31	<1	<2	14	<1	0.26
Aug 07, 2018 10:58:00 AM	0.88	<1	<2	14	<1	0.27
Aug 14, 2018 11:10:00 AM	1.13	<1	<2	15	<1	0.27
Aug 21, 2018 9:20:00 AM	1.30	<1	<2	15	<1	0.28
Aug 28, 2018 10:59:00 AM	1.39	<1	<2	15	<1	0.37
Sep 04, 2018 9:50:00 AM	1.26	<1	<2	15	<1	0.28
Sep 11, 2018 9:10:00 AM	1.21	<1	<2	15	<1	0.31
Sep 18, 2018 9:55:00 AM	1.25	<1	<2	13	<1	0.39
Sep 25, 2018 9:25:00 AM	1.24	<1	<2	13	<1	0.75
Oct 02, 2018 9:30:00 AM	1.39	<1	<2	13.5	<1	0.40
Oct 09, 2018 9:00:00 AM	1.15	<1	<2	12	<1	0.36
Oct 16, 2018 9:50:00 AM	1.16	<1	2	12	<1	0.32
Oct 23, 2018 9:15:00 AM	1.22	<1	<2	11	<1	0.32
Oct 30, 2018 9:54:00 AM	1.19	<1	2	11	<1	0.32
Nov 06, 2018 9:00:00 AM	1.28	<1	<2	10	<1	1.6
Nov 13, 2018 9:15:00 AM	1.50	<1	<2	9	<1	1.1
Nov 20, 2018 9:35:00 AM	1.43	<1	<2	9	<1	0.78
Nov 27, 2018 10:50:00 AM	1.46	<1	<2	9	<1	1.2
Dec 04, 2018 10:40:00 AM	1.37	<1	<2	7	<1	0.71
Dec 11, 2018 9:00:00 AM	1.30	<1	<2	7	<1	0.58
Dec 18, 2018 8:55:00 AM	1.08	<1	NA	6	<1	0.65
Dec 27, 2018 9:05:00 AM	1.20	<1	NA	5	<1	0.38

**PMS-429**

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
Jan 16, 2018 8:22:00 AM	0.51	<1	<2	7	<1	0.36
Jan 30, 2018 11:00:00 AM	0.51	<1	<2	7	<1	0.35
Feb 06, 2018 8:40:00 AM	0.54	<1	2	8	<1	0.46
Feb 13, 2018 11:00:00 AM	0.52	<1	2	7	<1	0.44
Feb 20, 2018 10:47:00 AM	0.48	<1	6	5	<1	0.44
Feb 27, 2018 8:35:00 AM	0.56	<1	<2	6	<1	0.32
Mar 06, 2018 8:37:00 AM	0.55	<1	<2	7	<1	0.33
Mar 13, 2018 9:41:00 AM	0.63	<1	<2	7	<1	0.34
Mar 20, 2018 8:27:00 AM	0.61	<1	8	7	<1	0.29
Mar 27, 2018 8:51:00 AM	0.63	<1	<2	7	<1	0.30
Apr 03, 2018 8:25:00 AM	0.58	<1	2	8	<1	0.34
Apr 10, 2018 8:26:00 AM	0.52	<1	<2	9	<1	0.35
Apr 17, 2018 9:15:00 AM	0.46	<1	<2	8.5	<1	
Apr 24, 2018 10:25:00 AM	0.47	<1	<2	8.5	<1	0.32
May 01, 2018 8:20:00 AM	0.68	<1	10	10	<1	0.31
May 08, 2018 12:52:00 PM	0.70	<1	12	11	<1	0.63
May 15, 2018 8:25:00 AM	0.76	<1	2	11	<1	0.43
May 22, 2018 8:28:00 AM	0.46	<1	8	12.5	<1	0.24
May 29, 2018 8:31:00 AM	0.66	<1	<2	14	<1	0.21
Jun 05, 2018 8:20:00 AM	0.57	<1	22	14	<1	0.23
Jun 12, 2018 9:20:00 AM	0.66	<1	24	14	<1	0.19
Jun 19, 2018 8:40:00 AM	0.94	<1	38	14	<1	0.25
Jun 26, 2018 8:27:00 AM	0.61	<1	8	14.5	<1	0.24
Jul 03, 2018 8:28:00 AM	0.66	<1	14	15	<1	0.21
Jul 10, 2018 8:40:00 AM	0.48	<1	2	16	<1	0.18
Jul 17, 2018 8:40:00 AM	0.85	<1	<2	15	<1	0.38
Jul 24, 2018 11:07:00 AM	0.91	<1	<2	15	<1	0.29
Jul 31, 2018 11:00:00 AM	0.71	<1	<2	16	<1	0.24
Aug 07, 2018 8:30:00 AM	0.59	<1	6	15	<1	0.21
Aug 14, 2018 8:22:00 AM	0.70	<1	6	17	<1	0.26
Aug 21, 2018 8:20:00 AM	0.66	<1	30	18	<1	0.23
Aug 28, 2018 8:29:00 AM	0.75	<1	120	16	<1	0.27
Sep 04, 2018 8:30:00 AM	0.76	<1	<2	17	<1	0.19

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
Sep 11, 2018 9:35:00 AM	0.60	<1	26	17	<1	0.20
Sep 18, 2018 8:33:00 AM	0.46	<1	20	16.5	<1	0.30
Sep 25, 2018 8:25:00 AM	0.35	<1	20	16	<1	0.53
Oct 02, 2018 8:30:00 AM	0.42	<1	<2	16	<1	0.39
Oct 09, 2018 10:45:00 AM	0.48	<1	12	15	<1	0.32
Oct 16, 2018 8:26:00 AM	0.49	<1	4	14	<1	0.27
Oct 23, 2018 8:25:00 AM	0.68	<1	2	13	<1	0.32
Oct 30, 2018 8:20:00 AM	0.46	<1	60	13	<1	0.26
Nov 06, 2018 10:45:00 AM	0.35	<1	6	13	<1	0.83
Nov 13, 2018 8:30:00 AM	0.53	<1	<2	11	<1	0.80
Nov 20, 2018 11:10:00 AM	0.47	<1	<2	12	<1	0.67
Nov 27, 2018 9:00:00 AM	0.55	<1	<2	11	<1	0.55
Dec 04, 2018 8:30:00 AM	0.45	<1	2	10	<1	0.58
Dec 11, 2018 11:30:00 AM	0.57	<1	<2	9	<1	0.51
Dec 18, 2018 11:00:00 AM	0.75	<1	NA	9	<1	0.41
Dec 27, 2018 8:25:00 AM	0.51	<1	NA	8	<1	0.32

## **APPENDIX – 3**

### **QUARTERLY METALS ANALYSIS RESULTS FROM METRO VANCOUVER LAB**

## Chemical Analysis

Sample	Date Sampled	THM (ppb)						Total THM Quarterly Average	HAA (ppb)						Total HAA Quarterly Average
		Bromodichloromethane	Bromoform	Chlor dibromomethane	Chloroform	Total Trihalomethanes			Dibromoacetic Acid	Dichloroacetic Acid	Monobromoacetic Acid	Monochloroacetic Acid	Trichloroacetic Acid	Total Haloacetic Acid	
PMS-422	22/08/2017	<1	<1	<1	25	25		<0.5	10	<1	<2	13	23		
PMS-422	28/11/2017	<1	<1	<1	35	36		<0.5	21	<1	2	37.6	61.8		
PMS-422	13/02/2018	<1	<1	<1	30	32	<b>32</b>	<0.5	19	<1	2	23.5	45.1	<b>43</b>	
PMS-422	29/05/2018	<1	<1	<1	28	29	<b>31</b>	<0.5	18	<1	<2	22.7	43.4	<b>43</b>	
PMS-422	07/08/2018	<1	<1	<1	26	27	<b>31</b>	<0.5	13	<1	<2	13.2	29.2	<b>45</b>	
PMS-422	20/11/2018	<1	<1	<1	43	44	<b>33</b>	<0.5	26	<1	3	34.1	62.6	<b>45</b>	
PMS-424	22/08/2017	<1	<1	<1	26	27		<0.5	11	<1	<2	14.3	25.9		
PMS-424	28/11/2017	<1	<1	<1	44	46		<0.5	15	<1	<2	28.1	46.1		
PMS-424	13/02/2018	<1	<1	<1	37	39	<b>37</b>	<0.5	23	<1	2	33	58.9	<b>44</b>	
PMS-424	29/05/2018	<1	<1	<1	27	28	<b>35</b>	0.7	14	<1	<2	17.4	33.9	<b>41</b>	
PMS-424	07/08/2018	<1	<1	<1	26	27	<b>35</b>	<0.5	13	<1	<2	12.1	27.9	<b>42</b>	
PMS-424	20/11/2018	<1	<1	<1	63	64	<b>40</b>	<0.5	32	<1	3	45	80.2	<b>50</b>	
PMS-425	22/08/2017	<1	<1	<1	34	34		<0.5	13	<1	<2	21	33.7		
PMS-425	28/11/2017	1	<1	<1	65	67		<0.5	21	<1	2	65.2	88		
PMS-425	13/02/2018	1	<1	<1	44	46	<b>47</b>	<0.5	15	<1	<2	24.7	41.3	<b>55</b>	
PMS-425	29/05/2018	<1	<1	<1	33	34	<b>45</b>	<0.5	19	<1	2	28.8	50.9	<b>53</b>	
PMS-425	07/08/2018	1	<1	<1	30	31	<b>45</b>	<0.5	13	<1	2	13.8	30.5	<b>53</b>	
PMS-425	20/11/2018	1	<1	<1	89	90	<b>50</b>	<0.5	26	<1	2	37.5	65.6	<b>47</b>	

## Metal Analysis - Spring

	Sample Description	PMS-421	PMS-426		
		12192 McMynn Ave.	McKechnie Road	Canadian Guideline Limit	Reason Guideline Established
	Sample Date	12/06/2018 9:41	12/06/2018 10:48		
Aluminum Total	µg/L	GRAB	GRAB	200	aesthetic
Antimony Total	µg/L	80	80	6	health
Arsenic Total	µg/L	<0.5	<0.5	10	health
Barium Total	µg/L	<0.5	<0.5	1000	health
Boron Total	µg/L	2.2	2.5	5000	health
Cadmium Total	µg/L	<10	<10	5	health
Calcium Total	µg/L	<0.2	<0.2	none	
Chromium Total	µg/L	839	968	50	health
Cobalt Total	µg/L	<0.05	<0.05	none	
Copper Total	µg/L	<0.5	<0.5	≤1000	aesthetic
Iron Total	µg/L	10.5	1.2	≤ 300	aesthetic
Lead Total	µg/L	48	49	10	health
Magnesium Total	µg/L	<0.5	<0.5	none	
Manganese Total	µg/L	88	89	≤ 50	aesthetic
Mercury Total	µg/L	2.7	2.0	1.0	health
Molybdenum Total	µg/L	<0.05	<0.05	none	
Nickel Total	µg/L	<0.5	<0.5	none	
Potassium Total	µg/L	<0.5	<0.5	none	
Selenium Total	µg/L	106	107	50	health
Silver Total	µg/L	<0.5	<0.5	none	
Sodium Total	µg/L	<0.5	<0.5	≤ 200,000	aesthetic
Zinc Total	µg/L	5150	4960	≤ 5000	aesthetic

## Metal Analysis - Fall

	Sample Description	PMS-421	PMS-426		
		12192 McMynn Ave.	McKechnie Road	Canadian Guideline Limit	Reason Guideline Established
	Sample Date	24/10/2017 9:06	24/10/2017 10:46		
Aluminum Total	µg/L	90	93	200	aesthetic
Antimony Total	µg/L	<0.5	<0.5	6	health
Arsenic Total	µg/L	<0.5	<0.5	10	health
Barium Total	µg/L	2.7	2.8	1000	health
Boron Total	µg/L	<10	<10	5000	health
Cadmium Total	µg/L	<0.2	<0.2	5	health
Calcium Total	µg/L	909	1390	none	
Chromium Total	µg/L	<0.05	0.07	50	health
Cobalt Total	µg/L	<0.5	<0.5	none	
Copper Total	µg/L	9.8	0.8	≤1000	aesthetic
Iron Total	µg/L	58	66	≤ 300	aesthetic
Lead Total	µg/L	<0.5	<0.5	10	health
Magnesium Total	µg/L	100	99	none	
Manganese Total	µg/L	2.3	2.3	≤ 50	aesthetic
Mercury Total	µg/L	<0.05	<0.05	1.0	health
Molybdenum Total	µg/L	<0.5	<0.5	none	
Nickel Total	µg/L	<0.5	<0.5	none	
Potassium Total	µg/L	117	124	none	
Selenium Total	µg/L	<0.5	<0.5	50	health
Silver Total	µg/L	<0.5	<0.5	none	
Sodium Total	µg/L	5300	5450	≤ 200,000	aesthetic
Zinc Total	µg/L	3.0	<3.0	≤ 5000	aesthetic

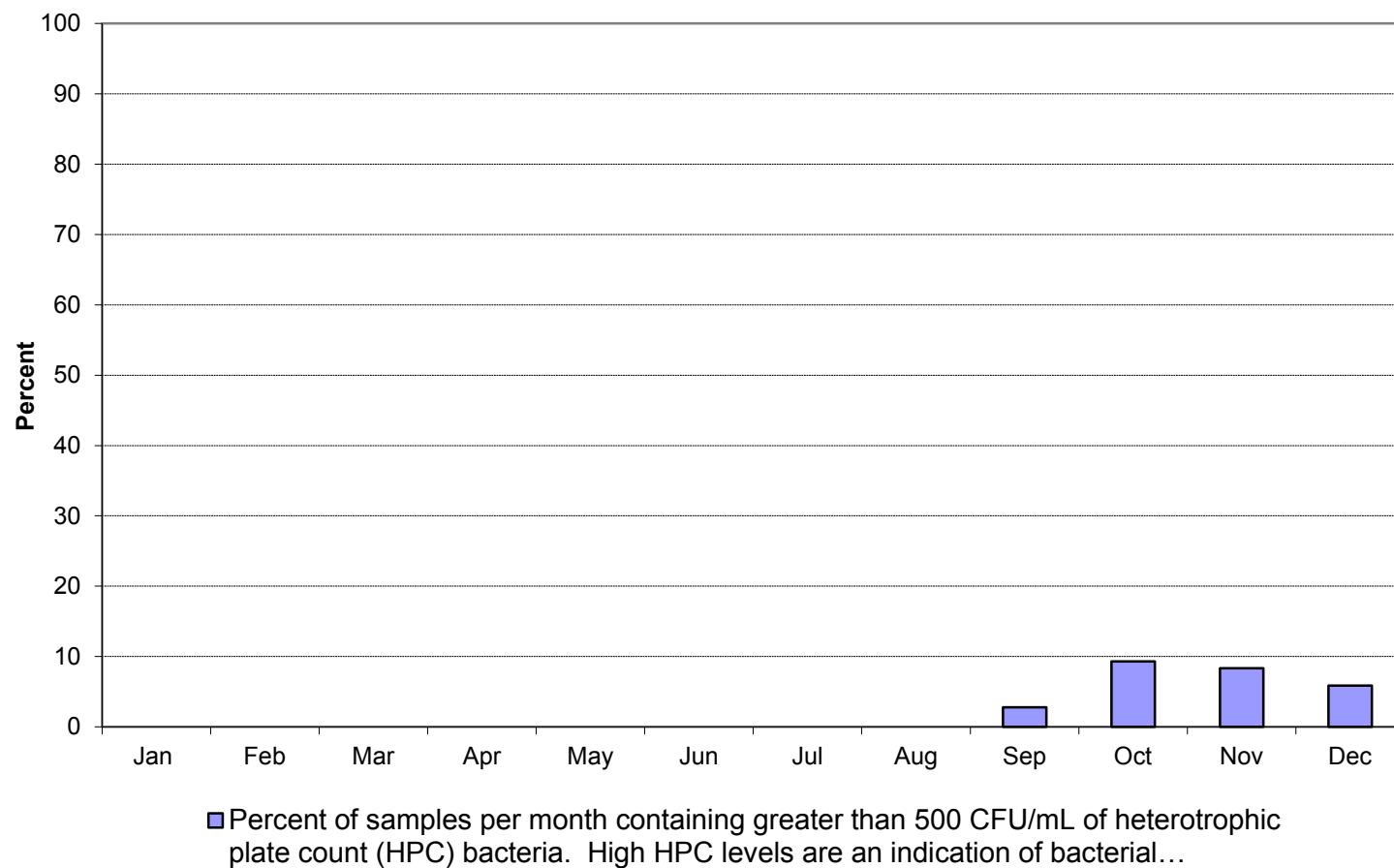
## Vinyl Chloride Analysis

Sample Site Number	Sample Reported Name	Sampled date	Vinyl Chloride ppb
PMS-I	Pitt Meadows Sampling Point (PMS-I)	19-Jun-18	<0.00040

## **APPENDIX – 4**

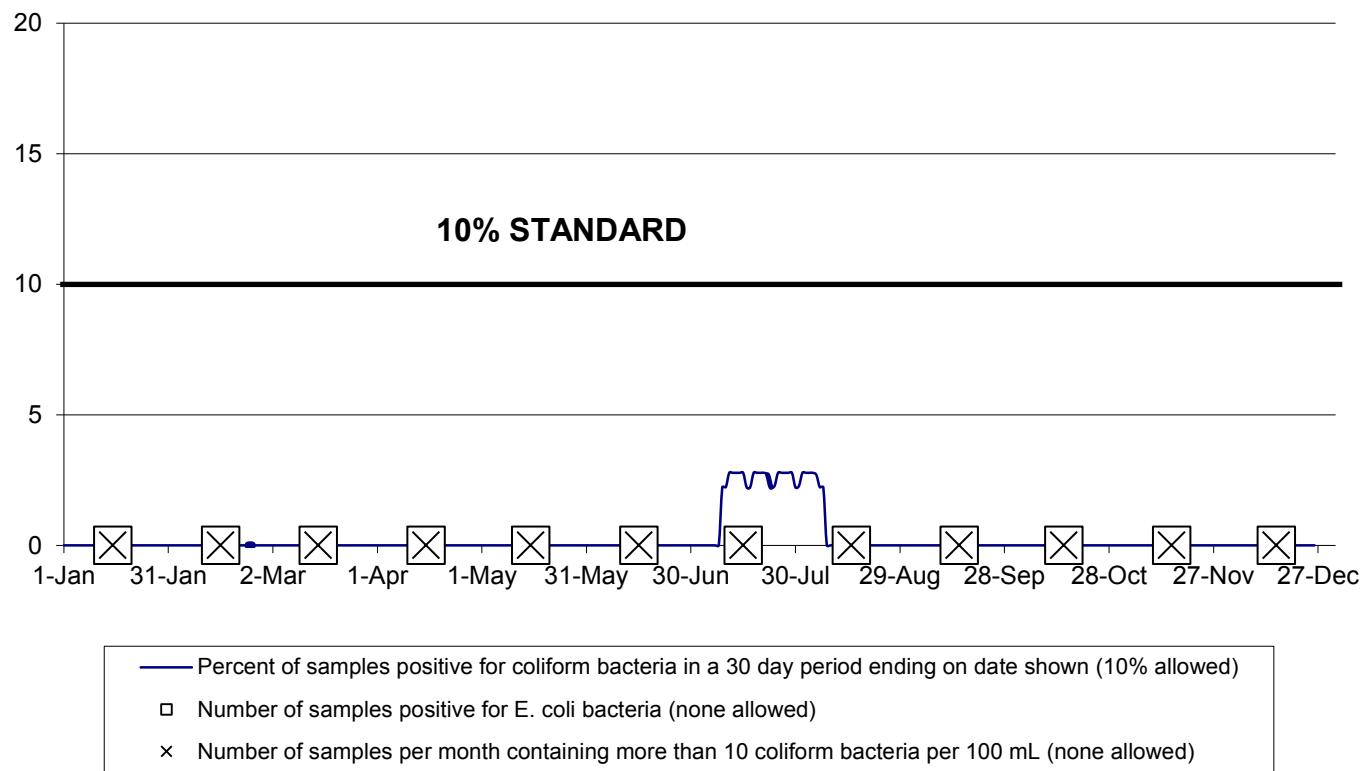
### **BACTERIOLOGICAL ANALYSIS OF POTABLE WATER SAMPLES**

## CITY OF PIT MEADOWS - MONTHLY HPC COUNTS FOR 2018

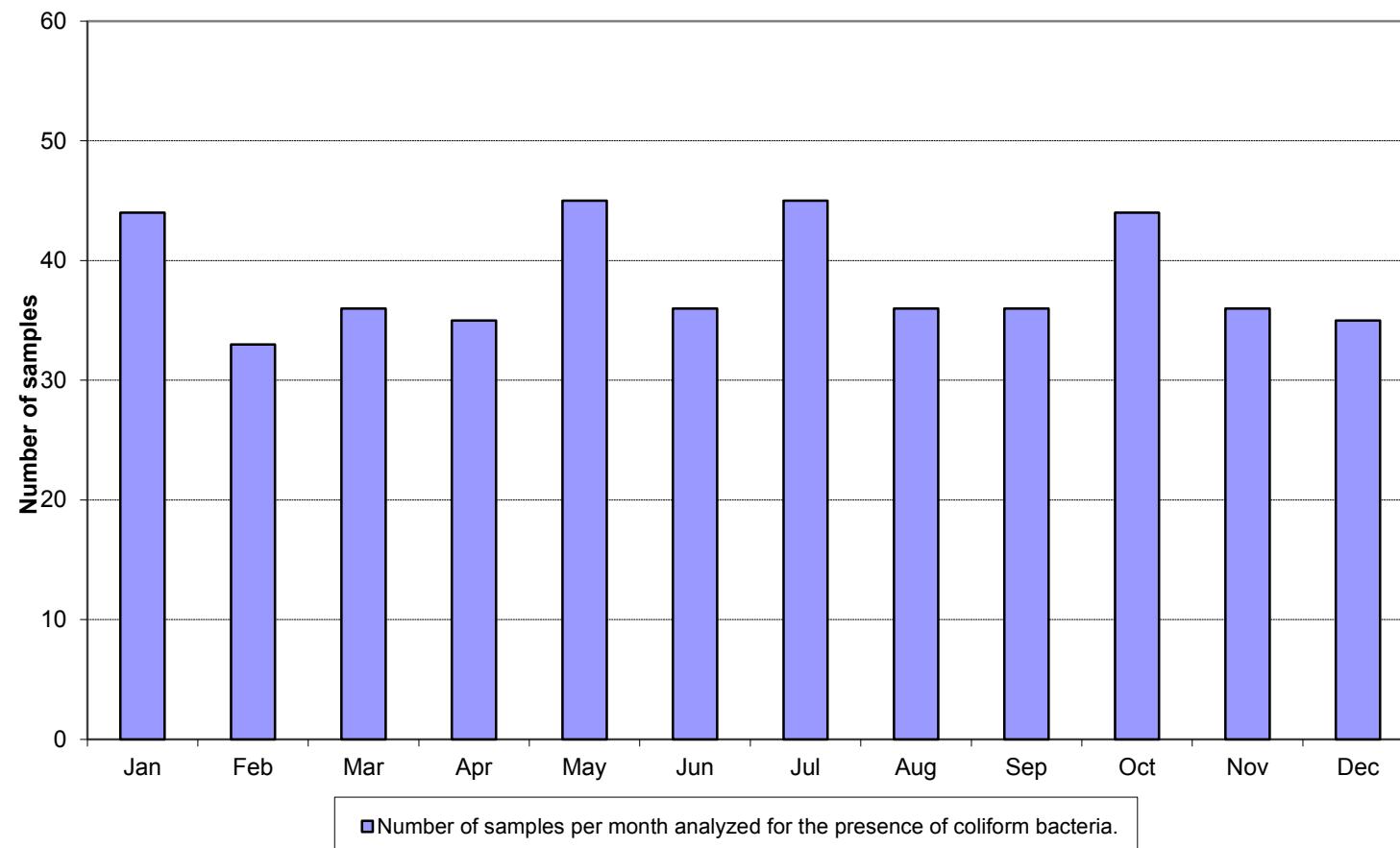


## CITY OF PIT MEADOWS - 2018

### Results of Bacteriological Analyses of Potable Water Samples Compliance With BC Drinking Water Protection Regulation



## CITY OF PIT MEADOWS - 2018



## **APPENDIX – 5**

### **WEEKLY SAMPLE RESULTS – METRO VANCOUVER SAMPLE STATION GVS-012 IN PORT MOODY**

## GVS-012 Port Moody Results:

Sampled date	Chlorine Free mg/L	Ecoli MF/100 mLs	HPC CFU/mls	Temp °C	Total Coliform MF/100mLs	Turbidity NTU
2017-01-05 10:03	1.1	<1	<2	4	<1	0.26
2017-01-11 08:39	0.75	<1	<2	4	<1	0.26
2017-01-20 08:39	0.56	<1	<2	5	<1	1.4
2017-01-23 13:06	0.99	<1	<2	6	<1	0.38
2017-01-31 11:01	0.62	<1	<2	6	<1	0.27
2017-02-09 08:54	0.61	<1	<2	4	<1	0.3
2017-02-16 08:21	0.89	<1	24	5	<1	0.34
2017-02-23 08:29	0.93	<1	2	4	<1	0.42
2017-02-24 11:41	0.89	<1	<2	6	<1	0.49
2017-02-27 13:00	0.83	<1	<2	5	<1	0.29
2017-03-03 08:15	0.87	<1	<2	5	<1	0.35
2017-03-09 12:16	0.71	<1	4	5	<1	0.38
2017-03-14 12:10	1.1	<1	<2	4	<1	0.4
2017-03-21 13:29	0.79	<1	<2	5	<1	0.35
2017-03-22 12:25	0.83	<1	<2	5	<1	0.36
2017-03-27 12:06	0.78	<1	<2	6	<1	0.39
2017-04-03 12:22	0.89	<1	4	6	<1	0.44
2017-04-06 10:08	0.78	<1	<2	5	<1	0.37
2017-04-10 08:27	0.77	<1	<2	6	<1	0.48
2017-04-21 07:10	1.1	<1	<2	6	<1	0.52
2017-04-28 08:37	0.84	<1	<2	7	<1	0.52
2017-05-05 09:08	0.81	<1	<2	8	<1	0.41
2017-05-11 08:25	0.76	<1	<2	8	<1	0.43
2017-05-18 10:18	0.87	<1	<2	7	<1	0.39
2017-05-20 11:31	0.81	<1	<2	7	<1	1.8
2017-05-21 08:14	0.91	<1	<2	8	<1	0.32
2017-05-26 10:20	0.69	<1	2	10	<1	0.27
2017-06-02 10:04	0.97	<1	<2	11	<1	0.35
2017-06-09 12:57	0.78	<1	<2	10	<1	0.36
2017-06-16 10:22	1	<1	<2	9	<1	0.32
2017-06-21 08:23	0.61	<1	18	11	<1	0.42
2017-06-29 08:27	0.71	<1	76	12	<1	0.35
2017-07-05 08:52	1.4	<1	<2	14	<1	0.37
2017-07-07 12:02	0.88	<1	<2	14	<1	0.3

2017-07-11 11:35	0.81	<1	<2	13	<1	0.38
2017-07-18 11:40	0.89	<1	28	14	<1	0.27
2017-07-25 12:13	1.1	<1	92	13	<1	0.34
2017-08-03 11:26	0.92	<1	LA	15	<1	0.25
2017-08-08 11:40	0.81	<1	<2	15	<1	0.23
2017-08-10 09:43	0.82	<1	34	13	<1	0.32
2017-08-17 09:58	1.1	<1	<2	15	<1	0.22
2017-08-18 11:05	0.78	<1	2	13	<1	0.26
2017-08-21 11:56	0.62	<1	8	15	<1	0.24
2017-08-28 11:14	0.79	<1	450	17	<1	0.43
2017-09-07 11:15	0.82	<1	4	18	<1	0.33
2017-09-11 11:12	1	<1	<2	17	<1	0.35
2017-09-14 08:23	0.74	<1	<2	16	<1	0.28
2017-09-19 11:57	0.86	<1	<2	15	<1	0.31
2017-09-27 11:12	0.95	<1	NA	15	<1	0.27
2017-10-05 11:26	0.91	<1	<2	14	<1	0.33
2017-10-12 10:53	0.86	<1	<2	13	<1	0.28
2017-10-19 09:39	1	<1	<2	8	<1	0.5
2017-10-24 11:29	0.71	<1	<2	10	<1	0.53
2017-10-27 11:31	0.7	<1	2	10	<1	0.55
2017-11-01 11:44	0.61	<1	4	10	<1	0.45
2017-11-07 10:57	0.74	<1	<2	8	<1	0.36
2017-11-09 09:30	0.82	<1	<2	8	<1	0.31
2017-11-15 11:37	0.8	<1	<2	7	<1	0.36
2017-11-23 09:38	1.1	<1	<2	6	<1	0.71
2017-11-30 10:33	0.98	<1	<2	6	<1	0.76
2017-12-08 11:12	0.94	<1	<2	6	<1	0.83
2017-12-15 11:05	0.89	<1	4	5	<1	0.66
2017-12-22 09:00	0.88	<1	NA	5	<1	0.62
12/20/2018	0.66	<1	NA	7	<1	0.42
12/21/2018	0.72	<1	NA	5	<1	0.44
12/29/2018	0.91	<1	NA	5	<1	2.4

## **APPENDIX – 6**

### **SOURCE WATER QUALITY – COQUITLAM, SEYMOUR AND CAPILANO WATERSHEDS**

Physical and Chemical Analysis of Water Supply  
 Greater Vancouver Water District

## 2018 - Capilano Water System

Parameter	Untreated	SCFP Treated				
	Average	Average	Range	Days Guideline Exceeded	Canadian Guideline Limit	Reason Guideline Established
Alkalinity as CaCO <sub>3</sub> (mg/L)	2.7	11	8.8 - 31		none	
Aluminium Dissolved (µg/L)	75	30	21 - 55		none	
Aluminum Total (µg/L)	140	30	17 - 61		none	
Antimony Total (µg/L)	<0.5	<0.5	<0.5	0	6	Health
Arsenic Total (µg/L)	<0.5	<0.5	<0.5	0	10	Health
Barium Total (µg/L)	2.8	2.5	2.4 - 2.5	0	1000	Health
Boron Total (µg/L)	<10	<10	<10		5	
Bromate (mg/L)	<0.01	<0.01	<0.01	0	0.01	Health
Bromide (mg/L)	<0.01	<0.01	<0.01		none	
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	0	5	Health
Calcium Total (µg/L)	1110	4450	3770 - 4790		none	
Carbon Organic - Dissolved (mg/L)	1.7	0.6	0.4 - 0.9		none	
Carbon Organic - Total (mg/L)	1.7	0.6	0.4 - 0.9		none	
Chlorate (mg/L)	<0.01	0.02	0.01 - 0.03	0	1	Health
Chloride (mg/L)	<0.6	2.5	2.2 - 2.9	0	≤ 250	Aesthetic
Chromium Total (µg/L)	<0.11	<0.05	<0.05	0	50	Health
Cobalt Total (µg/L)	<0.5	<0.5	<0.5		none	
Color - Apparent (ACU)	14	<2	<1 - 4		none	
Color - True (TCU)	11	<1	<1 - 2	0	≤ 15	Aesthetic
Conductivity (µmhos/cm)	10	32	29 - 38		none	
Copper Total (µg/L)	4	<0.5	<0.5	0	≤ 1000	Aesthetic
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	0	0.2	Health
Fluoride (mg/L)	<0.05	<0.05	<0.05	0	1.5	Health
Hardness as CaCO <sub>3</sub> (mg/L)	3.5	11.7	10.1 - 12.7		none	
Iron Dissolved (µg/L)	31	<5	<5 - 5		none	
Iron Total (µg/L)	91	<5	<5 - 8	0	≤ 300	Aesthetic
Lead Total (µg/L)	<0.5	<0.5	<0.5	0	10	Health
Magnesium Total (µg/L)	162	159	134 - 187		none	
Manganese Dissolved (µg/L)	4.3	1.7	0.9 - 3.3		none	
Manganese Total (µg/L)	5.3	3.2	1.7 - 6.1	0	≤ 50	Aesthetic
Mercury Total (µg/L)	<0.05	<0.05	<0.05	0	1	Health
Molybdenum Total (µg/L)	<0.5	<0.5	<0.5		none	
Nickel Total (µg/L)	<0.5	<0.5	<0.5		none	
Nitrogen - Ammonia as N (mg/L)	<0.02	<0.02	<0.02		none	
Nitrogen - Nitrate as N (mg/L)	0.07	0.06	0.02 - 0.08	0	45	Health
Nitrogen - Nitrite as N (mg/L)	<0.01	<0.01	<0.01 - 0.01	0	1	Health
pH (pH units)	6.5	7.4	6.7 - 7.6	1	7.0 to 10.5	Aesthetic
pH Online Instrument Readings (pH units)		7.6	7.1 - 8.5	0	7.0 to 10.5	Aesthetic
Phenol (mg/L)	<0.005	<0.005	<0.005		none	
Phosphorus Dissolved (mg/L)	<10	<10	<10		none	
Phosphorus Total (µg/L)	<10	<10	<10		none	
Potassium Total (µg/L)	149	141	135 - 146		none	
Residue Total (mg/L)	17	30	28 - 31		none	
Residue Total Dissolved (mg/L)	11	19	12 - 22	0	≤ 500	Aesthetic
Residue Total Fixed (mg/L)	11	23	22 - 25		none	
Residue Total Volatile (mg/L)	6	6	5 - 8		none	
Selenium Total (µg/L)	<0.5	<0.5	<0.5	0	50	Health
Silica as SiO <sub>2</sub> (mg/L)	3.2	3.1	2.8 - 3.7		none	
Silver Total (µg/L)	<0.5	<0.5	<0.5		none	
Sodium Total (mg/L)	0.56	1.5	1.3 - 1.7	0	≤ 200	Aesthetic
Sulphate (mg/L)	0.7	1	0.8 - 1.3	0	≤ 500	Aesthetic
Turbidity (NTU)	1.1	0.12	0.06 - 0.26		0 <sup>1</sup>	≤ 1.0
Turbidity IFE (NTU) <sup>1</sup>				0 <sup>1</sup>	≤ 1.0	Health
UV254 (Abs/cm)	0.071	0.01	0.007 - 0.015		none	
Zinc Total (µg/L)	<3	<3	<3	0	≤ 5000	Aesthetic

<sup>1</sup>These figures are averaged values from a number of laboratory analyses done throughout the year. Where the range is a single value no variation was measured for the samples analyzed. Average values containing one or more results below the detection limit are preceded with "<" symbol. Minimum range values than "<" denotes not detectable with the technique used for determination. Methods and terms are based on those of the most current on-line version of "Standard Methods for the Examination of Water and Waste Water". Intreated water is from the intake prior to the raw water tunnel, treated water is from a single site in the GVWD distribution system after the treated water tunnel and before the breakheat tank. Guidelines are taken from the most current Guidelines for Canadian Drinking Water Quality summary table updated in February 2017. Capilano Source was operational for 365 days in 2018.

Treated turbidity guideline and the number of exceedances applies to Individual Filter Effluent readings; measured in events and not days.

Physical and Chemical Analysis of Water Supply  
 Greater Vancouver Water District

Parameter	2018 - Seymour Water System					
	Untreated		SCFP Treated			
	Average	Average	Range	Days Guideline Exceeded	Canadian Guideline Limit	Reason Guideline Established
Alkalinity as CaCO <sub>3</sub> (mg/L)	3.4	10	8.1-12		none	
Aluminum Dissolved (µg/L)	65	31	22-57		none	
Aluminum Total (µg/L)	156	31	15-70	0	200	Aesthetic
Antimony Total (µg/L)	<0.5	<0.5	<0.5	0	6	Health
Arsenic Total (µg/L)	<0.5	<0.5	<0.5	0	10	Health
Barium Total (µg/L)	3.5	2.5	2.4-2.5	0	1000	Health
Boron Total (µg/L)	<10	<10	<10	0	5	
Bromate (mg/L)	<0.01	<0.01	<0.01	0	0.01	Health
Bromide (mg/L)	<0.01	<0.01	<0.01		none	
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	0	5	Health
Calcium Total (µg/L)	1560	4400	3700-4690		none	
Carbon Organic - Dissolved (mg/L)	1.6	0.6	0.4-0.9		none	
Carbon Organic - Total (mg/L)	1.7	0.6	0.4-0.9		none	
Chlorate (mg/L)	<0.01	0.03	0.01-0.03	0	1	Health
Chloride (mg/L)	<0.5	2.5	2.2-3	0	≤ 250	Aesthetic
Chromium Total (µg/L)	<0.09	<0.05	<0.05	0	50	Health
Cobalt Total (µg/L)	<0.5	<0.5	<0.5		none	
Color - Apparent (ACU)	18	<2	<1-3		none	
Color - True (TCU)	12	<1	<1-1	0	≤ 15	Aesthetic
Conductivity (µmhos/cm)	13	32	29-38		none	
Copper Total (µg/L)	36.6	<0.5	<0.5	0	≤1000	Aesthetic
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	0	0.2	Health
Fluoride (mg/L)	<0.05	<0.05	<0.05	0	1.5	
Hardness as CaCO <sub>3</sub> (mg/L)	4.7	11.5	10-12.3		none	
Iron Dissolved (µg/L)	115	<5	<5-7		none	
Iron Total (µg/L)	261	<6	<5-12	0	≤ 300	Aesthetic
Lead Total (µg/L)	<0.5	<0.5	<0.5	0	10	Health
Magnesium Total (µg/L)	160	158	134-185		none	
Manganese Dissolved (µg/L)	6.7	4.1	2.5-5.7		none	
Manganese Total (µg/L)	9.8	4.6	2.8-8.4	0	≤ 50	Aesthetic
Mercury Total (µg/L)	<0.05	<0.05	<0.05	0	1	Health
Molybdenum Total (µg/L)	<0.5	<0.5	<0.5		none	
Nickel Total (µg/L)	<0.5	<0.5	<0.5		none	
Nitrogen - Ammonia as N (mg/L)	<0.02	<0.02	<0.02		none	
Nitrogen - Nitrate as N (mg/L)	0.05	0.06	0.02-0.08	0	45	Health
Nitrogen - Nitrite as N (mg/L)	<0.01	<0.01	<0.01	0	3	Health
pH (pH units)	6.6	7.4	6.7 - 7.6	1	7.0 to 10.5	Aesthetic
pH - Online Instrument Readings (pH units)		7.6	7.1 - 8.5	0	7.0 to 10.5	Aesthetic
Phenol (mg/L)	<0.005	<0.005	<0.005		none	
Phosphorus Dissolved Reactive (mg/L)	<10	<10	<10		none	
Phosphorus Total (mg/L)	<10	<10	<10		none	
Potassium Total (µg/L)	159	143	136-150		none	
Residue Total (mg/L)	17	25	21-27		none	
Residue Total Dissolved (mg/L)	12	19	15-22	0	≤ 500	Aesthetic
Residue Total Fixed (mg/L)	11	19	17-21		none	
Residue Total Volatile (mg/L)	6	6	3-7		none	
Selenium Total (µg/L)	<0.5	<0.5	<0.5	0	50	Health
Silica as SiO <sub>2</sub> (mg/L)	3.1	3.1	2.7-3.6		none	
Silver Total (µg/L)	<0.5	<0.5	<0.5		none	
Sodium Total (mg/L)	0.52	1.5	1.3 - 1.7	0	≤ 200	Aesthetic
Sulphate (mg/L)	1.2	1	0.8-1.3	0	≤ 500	Aesthetic
Turbidity (NTU)	1.3	0.11	0.07-0.22			
Turbidity IFE (NTU) 1				0.1	≤ 1.0	Health
UV254 (Abs/cm)	0.072	0.011	0.007-0.015		none	
Zinc Total (µg/L)	<4.4	<3	<3	0	≤ 5000	Aesthetic

These figures are averaged values from a number of laboratory analyses done throughout the year. Where the range is a single value no variation was measured for the samples analyzed. Average values containing one or more results below the detection limit are preceded with "<" symbol. Minimum range values than "<" denotes not detectable with the technique used for determination. Methods and terms are based on those of the most current on-line version of "Standard Methods for the Examination of Water and Waste Water". Untreated water is from a sample site prior to coagulation, treated water is from a sample site downstream of the SCFP clearwell. Guidelines are taken from the most current Guidelines for Canadian Drinking Water Quality summary table updated in February 2017. Seymour Source was operational for 365 days in 2018.

<sup>1</sup> Treated turbidity guideline and the number of exceedances applies to Individual Filter Effluent readings; measured in events and not days.

Physical and Chemical Analysis of Water Supply  
 Greater Vancouver Water District

Parameter	2018 - Coquitlam Water System					
	Untreated		Treated		Canadian Guideline Limit	Reason Guideline Established
	Average	Average	Range	Days Guideline Exceeded		
Alkalinity as CaCO <sub>3</sub> (mg/L)	1.7	8.4	6 - 10.2		none	
Aluminium Dissolved (µg/L)	69	69	55 - 89		none	
Aluminum Total (µg/L)	98	101	68 - 138		none	
Antimony Total (µg/L)	<0.5	<0.5	<0.5	0	6	Health
Arsenic Total (µg/L)	<0.5	<0.5	<0.5	0	10	Health
Barium Total (µg/L)	2.3	2.3	1.7 - 2.7	0	1000	Health
Boron Total (µg/L)	<10	<10	<10	0	5	Health
Bromate (mg/L)	<0.01	<0.01	<0.01	0	0.01	Health
Bromide (mg/L)	<0.01	<0.01	<0.01		none	
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	0	5	Health
Calcium Total (µg/L)	803	800	726 - 876		none	
Carbon Organic - Dissolved (mg/L)	1.6	1.5	1.1 - 2.4		none	
Carbon Organic - Total (mg/L)	1.7	1.5	1.1 - 2.5		none	
Chlorate (mg/L)	<0.01	0.03	0.01 - 0.05	0	1	Health
Chloride (mg/L)	<0.5	2.0	1.7 - 2.4	0	≤ 250	Aesthetic
Chromium Total (µg/L)	<0.05	<0.05	<0.05 - 0.06	0	50	Health
Cobalt Total (µg/L)	<0.5	<0.5	<0.5		none	
Color - Apparent (ACU)	12	<2	<1 - 5		none	
Color - True (TCU)	9	<1	<1 - 2	0	≤ 15	Aesthetic
Conductivity (µmhos/cm)	8	25	20 - 31		none	
Copper Total (µg/L)	2.7	<0.5	<0.5	0	≤ 1000	Aesthetic
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	0	0.2	Health
Fluoride (mg/L)	<0.05	<0.05	<0.05	0	1.5	Health
Hardness as CaCO <sub>3</sub> (mg/L)	2.4	2.4	2.2 - 2.6		none	
Iron Dissolved (µg/L)	19	21	13 - 31		none	
Iron Total (µg/L)	49	51	32 - 132	0	≤ 300	Aesthetic
Lead Total (µg/L)	<0.5	<0.5	<0.5	0	10	Health
Magnesium Total (µg/L)	94	94	77 - 108		none	
Manganese Dissolved (µg/L)	3.7	2	1.4 - 3.0		none	
Manganese Total (µg/L)	4.0	3.8	1.9 - 17.5	0	≤ 50	Aesthetic
Mercury Total (µg/L)	<0.05	<0.05	<0.05	0	1	Health
Molybdenum Total (µg/L)	<0.5	<0.5	<0.5		none	
Nickel Total (µg/L)	<0.5	<0.5	<0.5		none	
Nitrogen - Ammonia as N (mg/L)	<0.02	<0.02	<0.02		none	
Nitrogen - Nitrate as N (mg/L)	0.08	0.08	0.04 - 0.11	0	45	Health
Nitrogen - Nitrite as N (mg/L)	<0.01	<0.01	<0.01 - 0.03	0	3	Health
pH (pH units)	6.3	7.5	6.7 - 8.3	1	7.0 to 10.5	Aesthetic
pH - Online Instrument Readings (pH units)		7.7	6.4 - 8.6	3*	7.0 to 10.5	Aesthetic
Phenol (mg/L)	<0.005	<0.005	<0.005		none	
Phosphorus Dissolved (µg/L)	<10	<10	<10		none	
Phosphorus Total (µg/L)	<10	<10	<10		none	
Potassium Total (µg/L)	105	107	101 - 111		none	
Residue Total (mg/L)	13	27	25 - 28		none	
Residue Total Dissolved (mg/L)	9	21	16 - 28	0	≤ 500	Aesthetic
Residue Total Fixed (mg/L)	7	20	17 - 21		none	
Residue Total Volatile (mg/L)	6	8	7 - 9		none	
Selenium Total (µg/L)	<0.5	<0.5	<0.5	0	50	Health
Silica as SiO <sub>2</sub> (mg/L)	2.5	2.5	2.1 - 2.8		none	
Silver Total (µg/L)	<0.5	<0.5	<0.5		none	
Sodium Total (mg/L)	0.45	4.8	3.9 - 5.5	0	≤ 200	Aesthetic
Sulphate (mg/L)	<0.6	0.6	0.5 - 0.7	0	≤ 500	Aesthetic
Turbidity (NTU)	0.46	0.42	0.18 - 1.4	9*	≤ 1.0	Health
UV 254 - Apparent (Abs/cm)	0.067	0.023	0.013 - 0.055	0		
UV 254 nm (Abs/cm)	0.064	0.019	0.01 - 0.038		none	
Zinc Total (µg/L)	<3	<3	<3	0	≤ 5000	Aesthetic

These figures are averaged values from a number of laboratory analyses done throughout the year. Where the range is a single value no variation was measured for the samples analyzed. Average values containing one or more results below the detection limit are preceded with "<" symbol. Minimum range values than "<" denotes not detectable with the technique used for determination. Methods and terms are based on those of the most current on-line version of "Standard Methods for the Examination of Water and Waste Water". Untreated water is from the intake prior to treatment, treated water is from a single site in the GVWD distribution system downstream of CWTP. Guidelines are taken from the most current Guidelines for Canadian Drinking Water Quality summary table updated in February 2017. Recommended turbidity guidelines applies to finished treated water from an unfiltered source. Coquitlam source was operational for 365 days in 2018.  
 \*guideline exceedences were not days but events. Totaling 3.8 hrs below 7.0, measured with on-line instrumentation.

## **APPENDIX – 7**

### **PHYSICAL AND CHEMICAL ANALYSIS – COQUITLAM WATER SYSTEM**

**Analysis of Source Waters for Herbicides, Pesticides, Volatile Organic Compounds and Uranium**

Parameter	Unit	Date Sampled	MAC	AO	Capilano	Seymour	Coquitlam
Atrazine	µg/L	11-Dec-18	5		<0.5	<0.5	<0.5
Azinphos-Methyl	µg/L	11-Dec-18	20		<1.0	<1.0	<1.0
Bendiocarb	µg/L	11-Dec-18	40		<2	<2	<2
Benzene	µg/L	20-Jun-18	5		<0.5	<0.5	<0.5
Benzo(a)pyrene	µg/L	18-Jun-18	0.04		<0.0050	<0.0050	<0.0050
Bromoxynil	µg/L	11-Dec-18	5		<0.50	<0.50	<0.50
Carbaryl	µg/L	11-Dec-18	90		<5	<5	<5
Carbofuran	µg/L	11-Dec-18	90		<5	<5	<5
Carbon Tetrachloride	µg/L	15-Mar-19 <sup>1</sup>	2		<0.50	<0.50	<0.50
Cyanobacterial toxins—Microcystin-LR	µg/L	Apr thru Nov 2018	1.5		<0.20	<0.20	<0.20
Chlorpyrifos	µg/L	11-Dec-18	90		<2.0	<2.0	<2.0
Diazinon	µg/L	11-Dec-18	20		<2	<2	<2
Dicamba	µg/L	11-Dec-18	120		<1.0	<1.0	<1.0
Dichlofop-Methyl	µg/L	11-Dec-18	9		<0.90	<0.90	<0.90
Dichlorobenzene, 1,2-	µg/L	15-Mar-19 <sup>1</sup>	200	≤ 3	<0.50	<0.50	<0.50
Dichlorobenzene, 1,4-	µg/L	15-Mar-19 <sup>1</sup>	5	≤ 1	<1.0	<1.0	<1.0
Dichloroethane, 1,2-	µg/L	15-Mar-19 <sup>1</sup>	5		<1.0	<1.0	<1.0
Dichloroethylene, 1,1-	µg/L	15-Mar-19 <sup>1</sup>	14		<1.0	<1.0	<1.0
Dichlormethane	µg/L	15-Mar-19 <sup>1</sup>	50		<5.0	<5.0	<5.0
Dichlorophenol, 2,4-	µg/L	11-Dec-18	900	≤ 0.3	<0.10	<0.10	<0.10
Dichlorophenoxyacetic acid,	µg/L	11-Dec-18	100		<1.0	<1.0	<1.0
Dimethoate	µg/L	11-Dec-18	20		<2	<2	<2
Diquat	µg/L	11-Dec-18	70		<7.0	<7.0	<7.0
Diuron	µg/L	11-Dec-18	150		<10	<10	<10
Ethylbenzene	µg/L	20-Jun-18	140	≤ 1.6	<0.5	<0.5	<0.5
Glyphosate	µg/L	11-Dec-18	280		<10	<10	<10
Malathion	µg/L	11-Dec-18	190		<2.0	<2.0	<2.0
2-Methyl-4-	µg/L	11-Dec-18	100		<2.0	<2.0	<2.0
Methyl t-butyl ether (MTBE)	µg/L	20-Jun-18		≤ 15	<0.5	<0.50	<0.50
Metolachlor	µg/L	11-Dec-18	50		<5	<5	<5
Metribuzin	µg/L	11-Dec-18	80		<5.0	<5.0	<5.0
Monochlorobenzene	µg/L	15-Mar-19 <sup>1</sup>	80	≤ 30	<1.0	<1.0	<1.0
N-Nitroso dimethylamine	µg/L	11-Dec-18	0.04		<0.0009	<0.0009	<0.0009
Nitrilotriacetic Acid (NTA)	µg/L	11-Dec-18	400		<50.0	<50.0	<50.0
Paraquat (as Dichloride)	µg/L	11-Dec-18	10		<1.0	<1.0	<1.0
Pentachlorophenol	µg/L	11-Dec-18	60	≤ 30	<0.10	<0.10	<0.10
Phorate	µg/L	11-Dec-18	2		<1	<1	<1
Picloram	µg/L	11-Dec-18	190		<5.0	<5.0	<5.0
Simazine	µg/L	11-Dec-18	10		<2	<2	<2
Terbufos	µg/L	11-Dec-18	1		<1	<1	<1
Tetrachloroethylene	µg/L	15-Mar-19 <sup>1</sup>	10		<1.0	<1.0	<1.0

Parameter	Unit	Date Sampled	MAC	AO	Capilano	Seymour	Coquitlam
Tetrachlorophenol, 2,3,4,6-	µg/L	11-Dec-18	100	≤ 1	<0.10	<0.10	<0.10
Toluene	µg/L	20-Jun-18	60	24	<0.45	<0.45	<0.45
Trichloroethylene	µg/L	15-Mar-19 <sup>1</sup>	5		<1.0	<1.0	<1.0
Trichlorophenol, 2,4,6-	µg/L	11-Dec-18	5	≤ 2	<0.10	<0.10	<0.10
Trifluralin	µg/L	11-Dec-18	45		<5	<5	<5
Uranium	µg/L	11-Dec-18	20		0.0323	0.0241	0.0407
Vinyl Chloride	µg/L	15-Mar-19 <sup>1</sup>	2		<0.40	<0.40	<0.40
Xylene (Total)	µg/L	11-Dec-18	90	≤ 20	<0.75	<0.75	<0.75

<sup>1</sup>Analysis was missed at the time of annual testing, parameter tested in 2019 in lieu of 2018.

### Analysis of Source Water for PAHs

Parameter	Unit	Capilano		Seymour		Coquitlam	
		19-June	5-Nov	18-June	5-Nov	19-June	5-Nov
Acenaphthene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Acenaphthylene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Anthracene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(a)anthracene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(b)fluoranthene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(k)fluoranthene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(g,h,i)perylene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(a)pyrene <sup>1</sup>	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Dibenzo(a,h)anthracene	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Fluorene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Indeno(1,2,3-c,d)pyrene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Naphthalene	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Phenanthrene	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Pyrene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010

<sup>1</sup>Benzo(a)pyrene is the only PAH compound that has guideline limit. Maximum Acceptable Concentration of Benzo(a)pyrene is 0.04µg/L. Guidelines for Canadian Drinking Water Quality (GCDWQ), February 2017

## Analysis of Source Water for Radioactivity

Radioactivity	Unit	Date Sampled	MAC <sup>1</sup>	Capilano		Seymour		Coquitlam	
				MDC <sup>2</sup>	Activity	MDC <sup>2</sup>	Activity	MDC <sup>2</sup>	Activity
Gross Alpha	Bq/L	11-Dec-18	<0.5	0.014	<0.014	0.038	<0.038	-0.010	<0.010
Gross Beta	Bq/L	11-Dec-18	<1.0	0.030	<0.030	0.033	<0.033	0.036	<0.036
Cobalt-60	Bq/L	11-Dec-18	None	0.175	<0.175	0.444	<0.444	-0.018	<0.018
Cesium-134	Bq/L	11-Dec-18	None	0.307	<0.307	0.488	<0.488	-0.077	<0.077
Cesium-137	Bq/L	11-Dec-18	10	0.205	<0.205	0.581	<0.581	0.137	<0.137
Iodine-131	Bq/L	11-Dec-18	6	0.210	<0.210	0.300	<0.300	-0.103	<0.103
Lead-210	Bq/L	11-Dec-18	0.2	0.017	<0.017	0.055	<0.055	0.018	<0.018
Radium-226	Bq/L	11-Dec-18	0.5	0.002	<0.002	0.007	<0.007	0.003	<0.003
Radon-222	Bq/L	11-Dec-18	None	0.142	<0.142	0.566	<0.566	0.047	<0.047
Strontium-90	Bq/L	11-Dec-18	5	0.001	<0.001	0.004	<0.004	0.002	<0.002
Tritium (H-3)	Bq/L	11-Dec-18	7000	1.432	<1.432	8.880	<8.880	1.765	<1.765

**Footnotes:**

<sup>1</sup>MAC from Guidelines for Canadian Drinking Water Quality (GCDWQ), February 2017

<sup>2</sup>MDC Minimum Detectable Concentration

## Monitoring of Selected GVWD Water Mains for BTEXs

Parameter	Unit	MAC	AO	Maple Ridge Main at Reservoir	Barnston Island Main at Willoughby PS	Jericho-Clayton Main	South Burnaby Main #2
				20-Jun-2018	20-Jun-2018	20-Jun-2018	20-Jun-2018
Benzene	µg/L	5		<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	140	1.6	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	60	24	<0.45	<0.45	<0.45	<0.45
Xylenes (Total)	µg/L	90	20	<0.75	<0.75	<0.75	<0.75

### Monitoring of Selected GWWD Mains for PAHs

Parameter	Unit	Coquitlam Main #2 & #3		Westburnco Reservoir		Barnston Island		Queensborough		Whalley Kennedy Link Main		Haney Main #2		36th Ave Main	
		12-Jun	7-Nov	19-Jun	7-Nov	20-Jun	7-Nov	21-Jun	6-Nov	21-Jun	7-Nov	20-Jun	6-Nov	21-Jun	7-Nov
Acenaphthene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Acenaphthylene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Anthracene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(a)anthracene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(b)fluoranthene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(k)fluoranthene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(g,h,i)perylene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(a)pyrene <sup>1</sup>	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Dibenzo(a,h)anthracene	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Fluorene	µg/L	<0.010	<0.010	0.022	<0.010	<0.010	<0.010	0.018	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	0.012
Indeno(1,2,3-c,d)pyrene	µg/L	<0.010	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Naphthalene	µg/L	<0.050	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Phenanthrene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Pyrene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010

<sup>1</sup>Benzo(a)pyrene is the only PAH compound that has guideline limit. Maximum Acceptable Concentration of Benzo(a)pyrene is 0.04 µg/L

## **APPENDIX – 8**

### **2018 OPERATING PERMIT**



**fraserhealth**

**HEALTH  
PROTECTION**

# **PERMIT TO OPERATE**

**A Drinking Water System with  
301-10000 Connections**

**Water Supplier:**

**City of Pitt Meadows**

**Facility Name:**

**City of Pitt Meadows Water System**

**Conditions of Permit**

By December 31, 2014, the drinking water that you provide must have undergone treatment that achieves the following:

1. At least a 4-log (99.99%) reduction and/or inactivation of viruses
2. At least a 3-log (99.9%) reduction and/or inactivation of Giardia cysts
3. At least a 3-log (99.9%) reduction and/or inactivation of Cryptosporidium oocysts

A written update on the status of the plan to meet these terms and conditions shall be submitted to Fraser Health Authority by March 31st of each calendar year.

**29-Aug-2013**

**Effective Date**

  
**Environmental Health Officer**

*This permit must be displayed  
in a conspicuous place and is nontransferable*

