



# **2016 Annual Drinking Water Quality Report**

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#### INTRODUCTION

This report provides an overview of the regulatory context, outlines the drinking water quality program for 2016 and associated sample results to provide evidence of potability and compliance with the *British Columbia Drinking Water Protection Regulation*.

#### **REGULATORY CONTEXT**

Drinking water in the City of Burnaby (the City) falls under the regulatory jurisdiction of several government agencies:

#### PROVINCIAL/FEDERAL REGULATORY REQUIREMENTS

The British Columbia Drinking Water Protection Regulation promulgated under the Drinking Water Protection Act requires, amongst other aspects, suppliers of drinking water in British Columbia to hold an Operating Permit, demonstrate that the drinking water is appropriately treated and monitored from microbial perspective, have appropriate emergency and public notification plans in place, and prepare and make public an annual report on the results of the previous year. In addition, the Federal *Guidelines for Canadian Drinking Water Quality* provide references for acceptable concentration values for various microbial, chemical and physical parameters for potable water.

#### **REGIONAL HEALTH AUTHORITY REQUIREMENTS**

In 2000, a "Water Quality Monitoring and Reporting Plan for the GVRD and Member Municipalities" (WQMRP) was established by the Regional Medical Health Officials, the Greater Vancouver Water District and member municipalities. This document, which was reviewed and amended in January 2006, is a cornerstone in providing regional consistency in the monitoring and reporting of bacteriological and chemical drinking water quality parameters. In order to avoid duplication, the WQMRP separates the responsibilities for water quality monitoring and reporting between the GVRD (now Metro Vancouver) and the member municipalities by generally assigning the responsibility of source water and reporting to Metro Vancouver and the responsibility for distribution system monitoring and reporting to the municipalities.

#### METRO VANCOUVER REQUIREMENTS

In addition to the WQMRP, the Drinking Water Management Plan (DWMP) was adopted in 2005 to ensure that our region's water needs will be met affordably and sustainably for Metro Vancouver and its member municipalities. In 2007, the Plan was amended to fully incorporate management of the source watersheds. In June 2011, the Plan was updated again detailing the investments in water treatment, supply and conservation programs necessary to provide consistently higher quality drinking water, improved supply reliability, and greater environmental protection. Details of the Plan and the municipal actions identified and adopted by the City are posted on the Metro Vancouver website at: www.metrovancouver.org

#### DRINKING WATER SYSTEM

Metro Vancouver draws its water from Capilano, Seymour and Coquitlam reservoirs and distributes it through its waterworks systems to member municipalities after treatment. Metro Vancouver uses filtration, UV and chlorine to treat the Seymour and Capilano source waters at the Seymour Capilano Filtration Plants (SCFP) which opened in 2009. Coquitlam source water uses ozone for pre-treatment and UV and chlorine as primary disinfectants. The source waters are then subsequently re-chlorinated at various regional secondary disinfection facilities (8 stations located throughout Metro Vancouver) installed in 1998. The disinfectant dosages are monitored at the regional chlorination facilities using on-line chlorine meters. Figure 1 shows an aerial shot of one of Metro Vancouver's source watersheds.



Figure 1 - Metro Vancouver Source Watershed

#### SOURCE WATER QUALITY MONITORING

Metro Vancouver undertakes comprehensive biological and chemical monitoring of the water while it is in their system. Source water monitoring recommended in the WQMRP includes monitoring for: Total Coliform, *E. Coli*, Heterotrophic Plate Count (HPC), turbidity, pesticides, herbicides, all chemical parameters listed in the *Guidelines for Canadian Drinking Water Quality*, and protozoans (*Giardia* and *Cryptosporidium*) in water at the water supply intakes. In addition, Metro Vancouver also monitors its transmission mains and reservoirs for indicator organisms (Total Coliforms, *E. Coli*, and HPC), and a limited number of chemicals (free chlorine residual, polycyclic aromatic hydrocarbons (PAH's) and Benzene, Toluene, Ethylbenzene, Xylene (BTEX)). The 2016 water quality results for Capilano, Seymour and Coquitlam watersheds can be found in **Appendix B**.

#### SOURCE WATER QUALITY REPORTING

Metro Vancouver staff presented their annual report on 2016 source water quality to the Metro Vancouver Utilities Committee on April 14<sup>th</sup>, 2017 to demonstrate their compliance to the BC Drinking Water Protection Regulation and the regional health authorities requirements. A summary and highlights of the region's water quality monitoring for 2016 can be found in their publication "The Greater Vancouver Water District Quality Control Annual Report 2016, Volume I" (Appendix B). Volume II of the report provides chemical and physical monitoring results (full tabulation of data). In an effort to reduce paper usage, the printing of Volume II has been limited by Metro Vancouver but can be made available if requested either in hard copy or electronically. Requests for Volume II should be directed to the Water Quality Enquiry Line at 604-451-6010. This publication will be available at public libraries and posted on Metro Vancouver's web site <u>www.metrovancouver.org</u> by the end of June 2017.

#### WATER CONSERVATION

Here in Burnaby, surrounded by waterways and with our mild, wet winters, it's easy to forget that water is a precious and limited resource. On average, Lower Mainland residents use more than 350 L per day for activities such as washing dishes and clothes, showering, flushing toilets (Figure 2), lawn watering and other outside activities. With our climate and accessible resources, it's easy to take water for granted.

Water conservation is important for:

- Ensuring sufficient drinking water supply through the year particularly when low snow-pack levels along with hot summers prevents our reservoirs from a full recharge. The Capilano, Seymour and Coquitlam reservoirs are filled by precipitation and snowmelt.
- Meeting the demands of a growing population and delaying (or eliminating) the need for costly upgrades in the future.
- o Reducing waterfront pollution by minimizing how much waste water is generated.



### How do you use your water?

Figure 2 – How do you use your water? (image from Metro Vancouver)

The City of Burnaby encourages residents to use water sustainably to protect our water supply, conserve energy, and help reduce personal utility costs. Water use can typically be reduced with a few simple changes:

- Turn off the tap while brushing your teeth or washing dishes.
- Use a City Rain Barrel to collect rain water for use in gardens and planters.
- Water lawns sparingly or not at all. This saves up to 17,000 litres of water per household over the summer months.
- Use spring-loaded garden hose nozzles. This saves 23 litres of water per minute.
- Wash full loads and use shorter cycles when doing laundry. This will save 95 litres of water per load.
- Use low-flow toilets to save 6 to 14 litres of water per flush.
- Use toilet inserts to save up to 100 litres of water per day.
- Use aerator and flow restrictors on the kitchen tap to save up to 20 litres of water per day.
- Fix leaks in kitchen and bathroom taps and save 47 litres of water per day.

#### WATER CONSERVATION IN A RAINFOREST?

Metro Vancouver gets a lot of rain throughout the year (over 1 metre per year in some regions) except during the months of July, August and September. These are also the months that water demand increases, in part, due to watering our lawns which can create a shortage of fresh water. A healthy lawn needs only one hour of rain or watering per week. The City of Burnaby and other member municipalities of Metro Vancouver have the Water Shortage Response Plan 2017 in place that runs from May 15 to October 15. This Plan helps to conserve water in the summer months, when we use water faster than our reservoirs can refill. More details on the Lawn watering restrictions are available at www.burnaby.ca/waterrestrictions.

#### DISTRIBUTION SYSTEM

The City receives its treated water from Metro Vancouver and distributes it through a series of reservoirs and a network of pipes to the consumers. In order to ensure potability of the water at the point of use, the City has a comprehensive program consisting of water quality monitoring, routine uni-directional flushing of water mains, cross-connection control and reservoir exercising.

#### INFRASTRUCTURE

The City's water system consists of four water pump (or booster) stations, four active water storage reservoirs (storage capacity 13.0 ML), twenty (20) pressure reducing stations, twenty-one (21) pressure zones and over 700 km of watermains valued at over \$490 M.

The City has a water main replacement program (average age of pipe is 29 years) to replace aging water mains at a rate of about 2% a year (approximately 15km per year), and a program to install dedicated sampling kiosks at sampling locations.

#### CROSS CONNECTION CONTROL PROGRAM

The City's cross connection control program is in place to ensure the potable water supply is protected from contamination in the event of back siphonage or back pressure. The City requires that appropriate backflow preventers are installed and tested annually as prescribed in the City of Burnaby Plumbing Bylaw #11148. Regulations for the cross connection control can be found in the British Columbia Plumbing Code. Further information on the City's cross connection control program can be obtained directly from Burnaby Building Department – Plumbing and Gas Inspections at 604-294-7130.

#### WATER QUALITY MONITORING PROGRAM

In 2016, there were 63 water quality sample locations in Burnaby (detailed in **Figure 3** and **Appendix A**) These sample locations were selected on the basis of determining water quality in various pressure zones, dead ends, reservoirs, feed lines from Metro Vancouver water mains, residences and institutions. These locations were grouped into four different routes for sample collection purposes. Water samples were collected on average twice per week on a two week sample location cycle. At the time of sample collection, free chlorine residual, turbidity and temperature were measured using field test kits. In addition, Metro Vancouver also collected water samples from 17 sites along its transmission network in the City (detailed in **Figure 3 and Appendix A**).

The collected samples were submitted to the Metro Vancouver Laboratory for analysis. The Metro Vancouver Laboratory is a member of the Canadian Association of Environmental Analytical Laboratories (CAEAL), is accredited by the Standards Council of Canada (SCC) and is also approved by the Provincial Medical Health Officer for potable water testing.

A total of 2,664 routine drinking water samples were obtained in 2016 for bacteriological analysis. These included 1,605 samples collected from City sample sites (see **Appendix A** for details) and 1059 samples collected from Metro Vancouver transmission line sites located within the City boundary. The average number of samples collected for bacterial monitoring by the City every month was over 133 and is well above the 104 monthly sample requirement stipulated in the B.C. Drinking Water Protection Regulation for Burnaby's population size (see Figure 4, Table 1).



Burnaby Drinking Water Quality Monitoring Stations 2016



Figure 4 - Number of Monthly Routine Samples Taken in 2016

The water sampling frequency for microbiological characterization of the potable water is stipulated in Schedule B of *Guidelines for Canadian Drinking Water Quality* to be as follows:

TABLE 1- Schedule B – Frequency of Monitoring Samples for Prescribed Water Supply Systems						
Population Served	Number of Samples Per Month					
Less than 5,000	4					
5,000 to 90,000	1 per 1,000 of population					
More than 90,000	90 plus 1 per 10,000 of population in excess of 90,000					

From a reporting perspective, Fraser Health Authority (FHA) was provided with the drinking water quality results directly by the Metro Vancouver laboratory at the same time as the results were sent to the City. It is to be noted that information regarding sampling locations, sample frequency, sample collection methodology, sample parameters and the laboratory to be used for sample analysis were submitted and accepted by the regulatory agency. Furthermore, FHA also collects water samples from City kiosks for audit purposes on a regular basis.

#### PHYSICAL PARAMETERS

The physical parameters tested for in the City's water distribution system include temperature and turbidity.

#### TEMPERATURE

Water temperature in the distribution system is dependent on the seasonal temperature variation experienced by the source water. The *Guidelines for Canadian Drinking Water Quality* set the aesthetic objective (AO) at less than 15°C for drinking water temperature. Temperatures above 15°C can impact aesthetic properties of taste, colour and odour. Temperature is also related to the microbiological characteristics of drinking water through its effect on water treatment processes, especially disinfection, and its effect on the growth and survival of micro-organisms.

The average water temperature in the distribution system remained well below the AO of 15°C throughout most of the year other than between August to September (Figure 5). However, during this period, water quality samples did not show an increase in bacteriological growth, indicating that effective water treatment such as filtration and chlorine disinfection was achieved.



Figure 5 – 2016 Average Monthly Water Temperatures in the Distribution System

#### TURBIDITY

Turbidity is a measure of the relative clarity or cloudiness of water caused by fine suspended matter such as clay, silt and organics. Turbidity is not a direct measure of these particles, but rather a general measure of the effect these particles have on light. Elevated turbidity may be attributed to source water conditions or other transient activities which cause a change in water pressure or flow in the system. These activities include construction, watermain flushing, watermain breaks, or a sudden increase in water usage (i.e. firefighting). In the event that a sample indicated a high turbidity reading, follow up with the FHA and immediate flushing of applicable watermain(s) and re-sampling would be undertaken as appropriate.

In 2016, the majority (99.9%) of the samples obtained had turbidity <1 NTU. One (1) sample (0.1%) had turbidity between 3-5 NTU. The average turbidity in Burnaby's water system is seasonally constant as shown in **Figure 6**.



Figure 6 - 2016 Monthly Average Turbidity Levels in the Distribution System

#### CHEMICAL PARAMETERS

Water in the City's distribution system is also tested for chemical parameters of pH, chlorine, disinfection by-products (Haloacetic Acids and Total Trihalomethanes), metals and vinyl chloride.

#### PΗ

The pH levels of water at the select sample location were representative of the pH levels of the source water. The water sample pH was 7.0 which meets the Guidelines for Canadian Drinking Water Quality Aesthetic Objective of 6.5 to 8.5.

#### CHLORINE RESIDUAL

Chlorine is used to disinfect the water and safeguard against any microbial re-growth or contamination in the distribution system. The Guidelines for Canadian Drinking Water Quality recommends a minimum free chlorine residual of 0.2 mg/L.

On average, ninety-nine. (99) percent of water samples obtained from the sixty-three (63) sampling stations achieved the objective of 0.2 mg/L or above in 2016 (see **Table 3**). Sampling stations that experience temporary lower residual free chlorine are largely due to low flow/use through the distribution system and the City maintains the residual chlorine levels in these areas by frequent flushing of the watermains to enhance flow.

Sample name	Number of Routine Samples	Free Chlorine Residual <o.2 mg/L</o.2 	Free Chlorine Residual <u>≥</u> 0.2 mg/L	Free Chlorine Residual Ave mg/L	Free Chlorine Residual less than 0.2 (%)	Free Chlorine Residual Greater than 0.2 (%)
BUR-490K	26	0	26	1.02	0	100
BUR-491K	25	0	25	0.63	0	100
BUR-492K	25	0	25	0.78	0	100
BUR-493K	25	0	25	0.63	0	100
BUR-494K	27	0	27	0.51	0	100
BUR-495K	25	0	25	0.66	0	100
BUR-496K	26	5	21	0.32	19	81
BUR-497K	25	2	23	0.39	8	92
BUR-498K	25	0	25	0.64	0	100
BUR-499K	25	0	25	0.87	0	100
BUR-500K	26	0	26	0.71	0	100
BUR-529K	26	0	26	0.79	0	100

#### TABLE 3: Burnaby Drinking Water Chlorine Residuals For Each Sampling Station (2016)

TABLE 3: Burnaby Drinking Water Chlorine Residuals For Each Sampling Station (2016)											
Sample name	Number of Routine Samples	Free Chlorine Residual <o.2 mg/L</o.2 	Free Chlorine Residual <u>≥</u> 0.2 mg/L	Free Chlorine Residual Ave mg/L	Free Chlorine Residual less than 0.2 (%)	Free Chlorine Residual Greater than 0.2 (%)					
BUR-530K	26	0	26	0.63	0	100					
BUR-560K	26	0	26	0.63	0	100					
BUR-561K	25	0	25	0.79	0	100					
BUR-562K	26	0	26	0.82	0	100					
BUR-563K	26	0	26	0.68	0	100					
BUR-564K	26	0	26	0.80	0	100					
BUR-565K	26	0	26	0.78	0	100					
BUR-566K	26	0	26	0.78	0	100					
BUR-567K	26	0	26	0.78	0	100					
BUR-568K	25	0	25	0.80	0	100					
BUR-569K	27	0	27	0.76	0	100					
BUR-570K	25	0	25	0.73	0	100					
BUR-572K	26	0	26	0.80	0	100					
BUR-573K	26	0	26	0.80	0	100					
BUR-574K	26	0	26	0.87	0	100					
BUR-575K	26	0	26	0.78	0	100					
BUR-576K	26	0	26	0.83	0	100					
BUR-577K	26	0	26	0.70	0	100					
BUR-578K	25	0	25	0.79	0	100					
BUR-579K	26	0	26	0.76	0	100					
BUR-580K	26	0	26	0.77	0	100					
BUR-581K	25	0	25	0.66	0	100					
BUR-582K	26	0	26	0.80	0	100					
BUR-583K	26	1	25	0.43	4	96					
BUR-584K	29	0	29	0.77	0	100					
BUR-585K	27	0	27	0.77	0	100					
BUR-586K	26	0	26	0.71	0	100					
BUR-587K	26	0	26	0.70	0	100					
BUR-588K	26	0	26	0.79	0	100					
BUR-589K	27	0	27	0.79	0	100					
BUR-590K	26	0	26	0.82	0	100					
BUR-592K	26	0	26	0.71	0	100					
BUR-593K	26	0	26	0.69	0	100					
BUR-594K	26	0	26	0.77	0	100					
BUR-595K	26	0	26	0.73	0	100					

TABLE 3: Burnaby Drinking Water Chlorine Residuals For Each Sampling Station (2016)											
Sample name	Number of Routine Samples	Free Chlorine Residual <0.2 mg/L	Free Chlorine Residual <u>≥</u> 0.2 mg/L	Free Chlorine Residual Ave mg/L	Free Chlorine Residual less than 0.2 (%)	Free Chlorine Residual Greater than 0.2 (%)					
BUR-596K	26	0	26	0.75	0	100					
BUR-597K	26	0	26	0.67	0	100					
BUR-660K	26	0	26	0.61	0	100					
BUR-661K	26	0	26	0.71	0	100					
BUR-668K	26	0	26	0.73	0	100					
BUR-669K	26	0	26	0.66	0	100					
BUR-800K	25	0	25	0.68	0	100					
BUR-850K	26	0	26	0.88	0	100					
BUR-851K	26	0	26	0.50	0	100					
BUR-852K	26	0	26	0.78	0	100					
BUR-853K	26	0	26	0.80	0	100					
BUR-854K	25	0	25	0.73	0	100					
BUR-855K	26	0	26	0.88	0	100					
BUR-856K	26	8	18	0.25	31	69					
BUR-857K	26	0	26	0.74	0	100					
	1605	16	1589	0.72	1.0	99.0					

#### **DISINFECTION BY-PRODUCTS**

Disinfection by-products are compounds formed by the interaction between chlorine and naturally occurring organic substances in the water such as decaying leaves and vegetation that enter the source water naturally.

The disinfection by-products, measured as Trihalomethanes and Haloacetic Acid were found to be below the Maximum Acceptable Concentration (MAC) value of 100 parts per billion and 80 parts per billion, respectively noted in the Guidelines for Canadian Drinking Water Quality (see Table 4).

Т	TABLE 4: Burnaby Drinking Water Disinfection By-Products Results (2016)														
THM (ppb)									HAA (ppb)						
Sample Site	Sample Date	Bromodichloromethane	Bromoform	Chlorodibromomethane	Chloroform	Total Trihalomethanes	Total THM Quarterly Average	Dibromoacetic Acid	Dichloroacetic Acid	Monobromoacetic Acid	Monochloroacetic Acid	Trichloroacetic Acid	Total Haloacetic Acid	Total HAA Quarterly Average	
	04/03/2016	<1	<1	<1	22	22.8	25	<0.5	8	<1	5	7.8	22.6	26	
IR-561	02/06/2016	<1	<1	<1	21	21.3	25	<0.5	9	<1	4	7.1	21.4	26	
	02/09/2016	2	<1	<1	28	31.0	25	<0.5	10	<1	3	7.1	21.0	23	
BL	20/10/2016	<1	<1	<1	26	28.0	26	<0.5	11	<1	6	15.7	34.1	25	
	04/03/2016	<1	<1	<1	18	19.1	27	<0.5	7	<1	6	6	21	35	
84k	02/06/2016	<1	<1	<1	34	34.4	26	<0.5	17	<1	9	16.5	43.9	34	
IR-5	02/09/2016	1	<1	<1	27	30	26	<0.5	12	<1	5	10.3	28.8	29	
BU	20/10/2016	<1	<1	<1	24	25	27	<0.5	10	<1	6	12.6	30.1	31	
	04/03/2016	<1	<1	<1	23	23.8	34	<0.5	8	<1	6	6.4	21	36	
86k	02/06/2016	<1	<1	<1	39	39.8	33	<0.5	19	<1	9	21.6	49.2	36	
R-5	02/09/2016	1	<1	<1	25	27	29	<0.5	9	<1	3	6.7	19.8	29	
BU	20/10/2016	<1	<1	<1	22	24	29	<0.5	10	<1	6	13	30.5	30	
	04/03/2016	<1	<1	<1	33	34.4	40	<0.5	5	<1	3	14.2	23.6	22	
984	02/06/2016	<1	<1	<1	36	36.4	39	<0.5	2	<1	<2	20.3	24.7	24	
R-5	02/09/2016	2	<1	<1	42	45	38	<0.5	1	<1	<2	12.3	15.1	20	
BU	20/10/2016	2	<1	<1	29	32	37	<0.5	1	<1	<2	15.1	18.6	21	

#### METALS

Drinking water samples from six stations were tested for metals on two different occasions. None of the sample results exceeded the guideline values stipulated in the Federal *Guidelines for Canadian Drinking Water Quality* (Table 5).

TABLE 5: Burnaby Drinking Water Total Metal Sampling Results (2016)										
	Site	BUR-	561K	BUR	-570K	BUR-	576K	Gui	delines <sup>1</sup>	
	Sample Date	20/05/2016	27/10/2016	20/05/2016	27/10/2016	20/10/2016	27/10/2016	Max.	Aesthetic	
	Aluminum	23	34	22	37	24	42	200	NA	
	Antimony	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	6	NA	
	Arsenic	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	10	NA	
	Barium	3.0	3.4.	2.9	3.3	3.0	3.2	1000	NA	
	Boron	<10	<10	<10	<10	<10	<10	5000	NA	
	Cadmium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	5	NA	
	Calcium	3390	2890	3220	2760	3400	2820	NA	NA	
	Chromium	<0.05	0.21	<0.05	0.14	<0.05	0.17	50	NA	
/L)	Cobalt	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	
бrl)	Copper	10.7	9.9	11.5	9.4	5.8	7.2	NA	<1000	
als	Iron	<5	22	<5	<5	8	39	NA	<300	
Met	Lead	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	10	NA	
tal	Magnesium	165	154	166	156	169	156	NA	NA	
Ц	Manganese	<0.5	9.7	1.9	2.7	2.4	8.2	NA	<50	
	Mercury	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1	NA	
	Molybdenum	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	
	Nickel	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	
	Potassium	162	181	161	185	166	183	NA	NA	
	Selenium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	50	NA	
	Silver	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	
	Sodium	1490	1620	1500	1610	1500	1610	NA	<200000	
	Zinc	<3	<3.0	<3	3.6	<3	4.3	NA	<5000	
NA-	- No Current Guid	deline Availa	able <sup>1</sup> Canac	lian Drinkin	g Water Qua	ality Guideli	nes			

	TABLE 5: Burnaby Drinking Water Total Metal Sampling Results (2016)											
	Site	BUR-	582K	BUR-	586K	BUR-	592K	Gu	idelines <sup>1</sup>			
	Sample Date	20/05/2016	27/10/2016	20/05/2016	27/10/2016	20/05/2016	27/10/2016	Max.	Aesthetic			
_	Aluminum	55	36	28	33	31	37	NA	NA			
	Antimony	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	6	NA			
	Arsenic	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	10	NA			
_	Barium	2.8	3.5	3.2	3.4	3.2	3.4	1000	NA			
_	Boron	<10	<10	<10	<10	<10	<10	5000	NA			
_	Cadmium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	5	NA			
_	Calcium	2530	2700	3650	2770	3700	2760	NA	NA			
_	Chromium	<0.05	0.23	<0.05	0.25	<0.05	0.18	50	NA			
JL)	Cobalt	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA			
n)	Copper	9.4	8.0	17.5	21.9	8.4	15.6	NA	<1000			
als	Iron	30	<5	17	10	8	<5	NA	<300			
<b>Aet</b>	Lead	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	10	NA			
a	Magnesium	132	152	148	144	161	154	NA	NA			
Tot	Manganese	2.8	2.3	1.7	1.2	2.6	4.0	NA	<50			
	Mercury	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1	NA			
	Molybdenum	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA			
	Nickel	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA			
	Potassium	138	179	156	180	155	183	NA	NA			
	Selenium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	10	NA			
	Silver	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA			
	Sodium	3020	1610	1400	1640	1300	1610	NA	<200000			
	Zinc	<3.0	3.2	5.8	3.9	3.4	3.5	NA	<5000			
NA	– No Current G	uideline Ava	ailable <sup>1</sup> Car	adian Drink	ring Water (	Duality Guid	elines					

#### VINYL CHLORIDE

One (1) Vinyl chloride sample was taken in 2016. The sample was taken at a location where the longest section of poly vinyl chloride (PVC) pipes was installed for conveying drinking water to the end user. The vinyl chloride concentration in the sample was found to be <0.001 mg/L which is below the guideline value of 0.002 mg/L stipulated in the Guidelines for Canadian Drinking Water Quality.

#### BACTERIOLOGICAL QUALITY

The bacteriological monitoring conducted regularly by the City includes testing for heterotrophic plate count (HPC), total coliform and E.coli.

#### HETEROTROPHIC PLATE COUNT

Heterotrophic Plate Count (HPC) is measured to monitor the system for early bacterial regrowth in the water distribution system. The annual average levels of HPC have been decreasing over the last ten years (Figure 7). While bacteriological re-growth in the late summer and fall period is still occurring (due to warmer water temperatures), it is to a much lesser extent than in previous years. Continued efforts in unidirectional flushing of water mains and maintaining a free chlorine residual objective of 0.2 mg/L helps to keep the HPC numbers below guideline levels.





#### TOTAL COLIFORM AND E.COLI

For a waterworks system to be in compliance, the potable water sample must meet the following standards set out in Schedule A of the British Columbia Drinking Water Protection Regulations for the parameter tested (Table 6):

TABLE 6: Schedule A – Water Quality Standards for Potable Water									
Parameter	Standard								
Fecal coliform bacteria	No detectable fecal coliform bacteria per 100 ml								
Escherichia coli (E. Coli)	No detectable Escherichia coli per 100 ml								
Total coliform bacteria	<ul> <li>a) No more than 10% of the samples in a 30 day period should be positive for total coliform bacteria when more than one sample is collected</li> <li>b) No sample should contain more than 10 total coliform bacteria per 100 mL</li> </ul>								

Overall, the bacteriological water quality complied with the *BC Drinking Water Protection Regulations* (see Figure 8).

Both E. Coli and Total Coliforms were not detected in the drinking water samples tested.

For a complete list of results by sampling locations, see Appendix A.



Figure 8 – City of Burnaby – Results of Bacteriological Analyses of Potable Water Samples Compliance with BC Drinking Water Protection Regulation

#### WATER UTILITY INCIDENT RESPONSE PLAN

In the event of major emergencies or disasters, the Engineering Department is responsible for restoring/maintaining water utility operations in order to ensure that water quality, quantities and pressures are sufficient for the distribution of drinking water and effective fire-fighting. The Water Utility Incident Response Plan is the Engineering Department's action plan to ensure compliance to the legislated requirements under the BC Drinking Water Protection Act and Regulation. Should water utility service be diminished by an emergency or disaster, this plan will assist in reducing the impact and ensuring orderly response.

#### CONCLUSION

The City of Burnaby in partnership with Metro Vancouver consistently deliver clean, safe and aesthetically pleasing drinking water to the residents, businesses and visitors in Burnaby. In 2016, the physical, chemical, and bacteriological characteristics of the water continue to be of high quality and in compliance with applicable regulations and guidelines.



APPENDIX A: Detailed Water Quality Reports of Samples Collected in 2016

APPENDIX B: Metro Vancouver Water Quality Control Annual Report for 2016



## **2016 Annual Drinking Water Quality Report**



APPENDIX A: Detailed Water Quality Reports of Samples Collected in 2016



# **2016 Annual Drinking Water Quality Report**

	Appendix A: Drinking Water Station Locations- City of Burnaby Sites (2016)												
Site Code	Location	Water Source	Pressure Zone	Flow Type	Main Composition	Main Size (mm)	Parameters Analyzed						
BUR-490K	8550 Barnet Highway	SEY	Barnet	D	AC/ST/DI	250/300/200	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-491K	7400 Block Fraser Park Drive	SEY/COQ	Big Bend	L	DI	200	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-492K	5700 Block Marine Drive	SEY/COQ	Big Bend	М	CI	250	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-493K	7740 20th St. (10th Ave. Res.)	SEY	Big Bend	D	DI	500	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-494K	3700 Block Banting Place	SEY/COQ	Big Bend	D	AC	150	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-495K	8400 Block Nelson Avenue	SEY/COQ	Big Bend	L	DI	200	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-496K	8200 Block Wiggins Street	SEY/COQ	Big Bend	D	DI	250	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-497K	8300 Block Willard Street	SEY/COQ	Big Bend	D	DI	200	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-498K	9001 Riverway Place	SEY/COQ	Big Bend	L	DI	250	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-499K	3800 Block North Fraser Way	SEY/COQ	Big Bend	М	DI	250	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-500K	5400 Block Dundas Street	SEY	Capitol Hill	Μ	AC	200	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-529K	5200 Block Penzance	SEY	Hastings	L	CI	250	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-530K	400 Block Northcliffe Crescent	SEY	Hastings	L	Polybutylene	50	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-560K	3600 Brighton Avenue	SEY/CAP	Central Valley	М	DI	300	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-561K	6100 Block Deer Lake Parkway	SEY/CAP	Central Valley	М	DI	150	Bacteriology, Turbidity, Temp., Free Chlorine, DBP, Metals						
BUR-562K	1300 Block Gilmore Street	SEY/CAP	Central Valley	D	AC	150	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-563K	6200 Block Lougheed Hwy	SEY/CAP	Central Valley	Μ	DI	200	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-564K	4410 Still Creek Drive	SEY/CAP	Central Valley	L	DI	250	Bacteriology, Turbidity, Temp., Free Chlorine						
BUR-565K	5500 Block Laurel Street	SEY/CAP	Central Valley	М	AC	150	Bacteriology, Turbidity, Temp., Free Chlorine						

	Appendix A: Drinking Water Station Locations- City of Burnaby Sites (2016)											
Site Code	Location	Water Source	Pressure Zone	Flow Type	Main Composition	Main Size (mm)	Parameters Analyzed					
BUR-566K	4200 Block Garden Grove Drive	SEY/CAP	Central Valley	М	DI	150	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-567K	SS of CG Brown Pool, Sprott St	SEY/CAP	Central Valley	М	DI	200	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-568K	3800 Block Phillips Street	SEY/CAP	Central Valley	М	AC	200	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-569K	3200 Block Smith Avenue	SEY	Hospital	L	AC	150	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-570K	6000 Buckingham Drive	SEY	Stanley	М	AC	150	Bacteriology, Turbidity, Temp., Free Chlorine, Metals					
BUR-572K	8500 Block Forest Grove Drive	SEY	Forest Grove	М	DI	200	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-573K	4400 Block Dundas St	SEY	North Burnaby	М	HDPE	350	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-574K	200 Block Gilmore	SEY	North Burnaby	L	DI	300	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-575K	1100 Block Madison	SEY	North Burnaby	М	СІ	150	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-576K	6100 Block Curtis Street	SEY	North Burnaby	L	AC	300	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-577K	1471 Heathdale Drive	SEY	North Burnaby	L	AC	150	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-578K	1600 Block Burnwood Drive	SEY	North Burnaby	М	DI	200	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-579K	3800 Block Ingleton	SEY	Hospital	М	CI	150	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-580K	4400 Block Moscrop Street	SEY	Hospital	L	CI	150	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-581K	7900 Block Kaymar Street	SEY/COQ	Joffre- Patterson	М	AC	150	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-582K	8100 Block 16th Avenue	SEY/COQ	Kingsway	М	AC	200	Bacteriology, Turbidity, Temp., Free Chlorine, Metals					
BUR-583K	7500 Block Edmonds Street	SEY/COQ	Kingsway	М	AC	300	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-584K	7200 Block Edmonds Street	SEY/COQ	Kingsway	М	DI	150	Bacteriology, Turbidity, Temp., Free Chlorine, DBP, pH					
BUR-585K	5400 Block Rumble Street	SEY/COQ	Kingsway	L	DI	200	Bacteriology, Turbidity, Temp., Free Chlorine					

	Appendix A: Drinking Water Station Locations- City of Burnaby Sites (2016)											
Site Code	Location	Water Source	Pressure Zone	Flow Type	Main Composition	Main Size (mm)	Parameters Analyzed					
BUR-586K	3800 Block Rumble Street	SEY/COQ	Kingsway	М	CI	200	Bacteriology, Turbidity, Temp., Free Chlorine, DBP, Metals					
BUR-587K	4400 Block Kingsway	SEY/COQ	Kingsway	L	CI	250	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-588K	7500 Block Cumberland Street	SEY/COQ	Kingsway	М	DI	200	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-589K	6500 Block Marlborough Street	SEY/COQ	Kingsway	М	AC	150	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-590K	6100 Block Imperial Street	SEY/COQ	Kingsway	L	DI	200	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-592K	9800 Block Lyndhurst Street	SEY	Lake City	L	CI	150	Bacteriology, Turbidity, Temp., Free Chlorine, Metals					
BUR-593K	3390 Lake City Way	SEY	Lake City	L	AC	150	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-594K	9000 Centaurus Circle	SEY	Lake City	L	DI	200	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-595K	Rochester West of North Road	SEY	Lake City	М	DI	150	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-596K	561 Duthie Avenue	SEY	North Burnaby	М	CI	200	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-597K	Univ. High St. & Univ. Cresc.	SEY	Simon Fraser	D	DI	450	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-660K	North Road Across from Hume Park	SEY/CAP/COQ	Lake City	L	DI	150	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-661K	5300 Block Kira Court	SEY/CAP/COQ	Hospital	L	CI	150	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-668K	1000 Block Ayshire Drive	SEY/CAP/COQ	Curtis- Duthie	L	DI	150	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-669K	Gatenby & Monarch	SEY/CAP/COQ	Kincaid	L	AC	200	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-800K	7400 Block Mulberry Place	SEY/CAP/COQ	Cariboo	L	DI	200	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-850K	4300 Block Vipond Place	SEY/CAP/COQ	Kingsway	D	DI	150	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-851K	9200 Block Holmes Street	SEY/CAP/COQ	Kingsway	L	DI	200	Bacteriology, Turbidity, Temp., Free Chlorine					
BUR-852K	7200 Block Gibson Street	SEY/CAP/COQ	North Burnaby	L	DI	150	Bacteriology, Turbidity, Temp., Free Chlorine					

Appendix A: Drinking Water Station Locations- City of Burnaby Sites (2016)											
Site Code	Location	Water Source	Pressure Zone	Flow Type	Main Composition	Main Size (mm)	Parameters Analyzed				
BUR-853K	1500 Block Sperling Avenue	SEY/CAP/COQ	North Burnaby	L	AC	200	Bacteriology, Turbidity, Temp., Free Chlorine				
BUR-854K	5500 Block Carson Street	SEY/CAP/COQ	South Slope	L	DI	150	Bacteriology, Turbidity, Temp., Free Chlorine				
BUR-855K	5000 Block Manor Street	SEY/CAP/COQ	Central Valley	L	AC	150	Bacteriology, Turbidity, Temp., Free Chlorine				
BUR-856K	Centennial Reservoir	SEY	Centennial		CI	200	Bacteriology, Turbidity, Temp., Free Chlorine				
BUR-857K	Curtis Reservoir	SEY	Curtis- Duthie		DI	250	Bacteriology, Turbidity, Temp., Free Chlorine				
BUR-858K	Sanderson Way						Vinyl Chloride				
Explanator	y Notes:										
Flow Types:	M= medium Flow		SEY:	Seymo	our reservoir	Bacteriology: E. Coli, Total Coliform, Herterotrophic Plate Cour					
. ,	L= low flow	COQ:	Coquitlam Reservoir		DPB: Disinfection byproducts						
	D = unlooped lines with very low flow CA				Capilano Reservoir						

Appendix A: Burnaby Drinking Water Summary Report By Station- City of Burnaby Sites (2016)												
								Turbidity				
Sample name	Number of Routine Samples	Free Chlorine Residual <0.2 mg/L	Free Chlorine Residual <u>&gt;</u> 0.2 mg/L	Free Chlorine Residual Ave mg/L	E.Coli Positive	Total Coliform Positive	0-1 NTU	>1-2 NTU	>2-3 NTU	>3-5 NTU	>5 NTU	
BUR-490K	26	0	26	1.02	0	0	25	0	0	1	0	
BUR-491K	25	0	25	0.63	0	0	25	0	0	0	0	
BUR-492K	25	0	26	0.78	0	0	25	0	0	0	0	
BUR-493K	25	0	25	0.63	0	0	25	0	0	0	0	
BUR-494K	27	0	25	0.51	0	0	27	0	0	0	0	
BUR-495K	25	0	26	0.66	0	0	25	0	0	0	0	
BUR-496K	26	5	21	0.32	0	0	26	0	0	0	0	
BUR-497K	25	2	23	0.39	0	0	25	0	0	0	0	
BUR-498K	25	0	25	0.64	0	0	25	0	0	0	0	
BUR-499K	25	0	25	0.87	0	0	25	0	0	0	0	
BUR-500K	26	0	26	0.71	0	0	26	0	0	0	0	
BUR-529K	26	0	26	0.79	0	0	26	0	0	0	0	
BUR-530K	26	0	26	0.63	0	0	26	0	0	0	0	
BUR-560K	26	0	26	0.65	0	0	26	0	0	0	0	
BUR-561K	25	0	26	0.79	0	0	26	0	0	0	0	
BUR-562K	26	0	26	0.82	0	0	26	0	0	0	0	
BUR-563K	26	0	26	0.68	0	0	26	0	0	0	0	
BUR-564K	26	0	26	0.80	0	0	26	0	0	0	0	
BUR-565K	26	0	26	0.78	0	0	25	0	0	0	0	
BUR-566K	26	0	26	0.78	0	0	26	0	0	0	0	
BUR-567K	26	0	26	0.78	0	0	26	0	0	0	0	
BUR-568K	25	0	25	0.80	0	0	25	0	0	0	0	
BUR-569K	27	0	27	0.76	0	0	27	0	0	0	0	
BUR-570K	25	0	25	0.73	0	0	25	0	0	0	0	
BUR-572K	26	0	26	0.80	0	0	26	0	0	0	0	
BUR-573K	26	0	26	0.80	0	0	26	0	0	0	0	
BUR-574K	26	0	26	0.87	0	0	26	0	0	0	0	

Appendix A: Burnaby Drinking Water Summary Report By Station- City of Burnaby Sites (2016)											
Turbidity											
Sample name	Number of Routine Samples	Free Chlorine Residual <0.2 mg/L	Free Chlorine Residual <u>&gt;</u> 0.2 mg/L	Free Chlorine Residual Ave mg/L	E.Coli Positive	Total Coliform Positive	0-1 NTU	>1-2 NTU	>2-3 NTU	>3-5 NTU	>5 NTU
BUR-575K	26	0	26	0.78	0	0	26	0	0	0	0
BUR-576K	26	0	26	0.83	0	0	26	0	0	0	0
BUR-577K	26	0	26	0.70	0	0	26	0	0	0	0
BUR-578K	25	0	25	0.79	0	0	25	0	0	0	0
BUR-579K	26	0	26	0.76	0	0	26	0	0	0	0
BUR-580K	26	0	26	0.77	0	0	26	0	0	0	0
BUR-581K	25	0	25	0.66	0	0	25	0	0	0	0
BUR-582K	26	0	26	0.82	0	0	26	0	0	0	0
BUR-583K	26	1	25	0.43	0	0	26	0	0	0	0
BUR-584K	29	0	29	0.77	0	0	29	0	0	0	0
BUR-585K	27	0	27	0.81	0	0	27	0	0	0	0
BUR-586K	26	0	26	0.71	0	0	26	0	0	0	0
BUR-587K	26	0	26	0.70	0	0	26	0	0	0	0
BUR-588K	26	0	26	0.79	0	0	26	0	0	0	0
BUR-589K	27	0	26	0.79	0	0	27	0	0	0	0
BUR-590K	26	0	26	0.82	0	0	26	0	0	0	0
BUR-592K	26	0	26	0.71	0	0	26	0	0	0	0
BUR-593K	26	0	26	0.69	0	0	26	0	0	0	0
BUR-594K	26	0	26	0.77	0	0	26	0	0	0	0
BUR-595K	26	0	26	0.73	0	0	26	0	0	0	0
BUR-596K	26	0	26	0.75	0	0	26	0	0	0	0
BUR-597K	26	0	26	0.67	0	0	26	0	0	0	0
BUR-660K	26	0	26	0.61	0	0	26	0	0	0	0
BUR-661K	26	0	26	0.71	0	0	26	0	0	0	0
BUR-668K	26	0	26	0.73	0	0	26	0	0	0	0
BUR-669K	26	0	26	0.66	0	0	26	0	0	0	0
BUR-800K	25	0	25	0.68	0	0	25	0	0	0	0
BUR-850K	26	0	26	0.88	0	0	26	0	0	0	0
BUR-851K	26	0	26	0.50	0	0	26	0	0	0	0
BUR-852K	26	0	26	0.78	0	0	26	0	0	0	0

Appendix A: Burnaby Drinking Water Summary Report By Station- City of Burnaby Sites (2016)											
									Turbidity		
Sample name	Number of Routine Samples	Free Chlorine Residual <0.2 mg/L	Free Chlorine Residual <u>&gt;</u> 0.2 mg/L	Free Chlorine Residual Ave mg/L	E.Coli Positive	Total Coliform Positive	0-1 NTU	>1-2 NTU	>2-3 NTU	>3-5 NTU	>5 NTU
BUR-583K	26	0	26	0.80	0	0	26	0	0	0	0
BUR-854K	25	0	25	0.73	0	0	25	0	0	0	0
BUR-855K	26	0	26	0.88	0	0	26	0	0	0	0
BUR-856K	26	8	18	0.25	0	0	26	0	0	0	0
BUR-857K	26	0	26	0.74	0	0	26	0	0	0	0
	1,605	16	1,589	0.72	0	0	1,604	0	0	1	0

Drinking Water Reports By Station - City of Burnaby Sites (2016)											
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls			
			14-Jan-16	2.2	<1	<1	0.64	2			
			26-Jan-16	0.67	<1	<1	0.21	4			
			9-Feb-16	0.56	<1	<1	0.3	<2			
			23-Feb-16	0.49	<1	<1	0.27	<2			
			8-Mar-16	1.3	<1	<1	0.42	<2			
			22-Mar-16	0.55	<1	<1	1	<2			
			5-Apr-16	1.9	<1	<1	0.29	<2			
			19-Apr-16	0.76	<1	<1	0.39	2			
			3-May-16	0.94	<1	<1	0.29	<2			
		8550 Barnet	17-May-16	0.63	<1	<1	0.26	<2			
BUR-490K	GRAB		31-May-16	0.88	<1	<1	0.25	<2			
			14-Jun-16	1.08	<1	<1	0.21	8			
			28-Jun-16	0.83	<1	<1	0.37	<2			
			13-Jul-16	0.46	<1	<1	0.28	8			
			26-Jul-16	1.16	<1	<1	0.29	6			
			9-Aug-16	0.85	<1	<1	0.17	2			
			23-Aug-16	0.44	<1	<1	0.28	6			
			6-Sep-16	1.11	<1	<1	0.18	4			
			20-Sep-16	1.4	<1	<1	0.22	2			
			5-Oct-16	1.27	<1	<1	0.18	6			
			18-Oct-16	0.67	<1	<1	0.49	4			
			1-Nov-16	1.02	<1	<1	0.36	16			
			15-Nov-16	0.86	<1	<1	0.41	48			
			29-Nov-16	2.03	<1	<1	4.9	6			
			13-Dec-16	1.31	<1	<1	0.37	<2			
			28-Dec-16	1.08	<1	<1	0.29	NA			
			15-Jan-16	0.72	<1	<1	0.17	<2			
			27-Jan-16	1	<1	<1	0.22	<2			
			10-Feb-16	0.56	<1	<1	0.15	<2			
			24-Feb-16	0.63	<1	<1	0.27	<2			
BUR-491K	GRAB	Foot of Byrne Road	9-Mar-16	0.58	<1	<1	0.13	<2			
	00		23-Mar-16	0.66	<1	<1	0.13	<2			
			6-Apr-16	0.69	<1	<1	0.1	<2			
			20-Apr-16	0.57	<1	<1	0.69	2			
			4-May-16	0.7	<1	<1	0.17	<2			
			18-May-16	0.92	<1	<1	0.36	<2			
Drinking Water Reports By Station - City of Burnaby Sites (2016)											
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Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls			
			1-Jun-16	0.54	<1	<1	0.28	2			
			15-Jun-16	0.64	<1	<1	0.15	<2			
			29-Jun-16	0.84	<1	<1	0.27	2			
			12-Jul-16	1	<1	<1	0.17	<2			
			27-Jul-16	0.22	<1	<1	0.37	<2			
			10-Aug-16	0.67	<1	<1	0.14	<2			
			24-Aug-16	0.57	<1	<1	0.28	<2			
BUR-491K	GRAB	Foot of Byrne Road	7-Sep-16	0.28	<1	<1	0.28	<2			
			21-Sep-16	0.26	<1	<1	0.23	<2			
			4-Oct-16	0.63	<1	<1	0.19	2			
			19-Oct-16	0.77	<1	<1	0.22	<2			
			2-Nov-16	0.64	<1	<1	0.09	<2			
			16-Nov-16	0.61	<1	<1	0.19	<2			
			30-Nov-16	0.42	<1	<1	0.18	2			
			14-Dec-16	0.65	<1	<1	0.14	<2			
			15-Jan-16	0.77	<1	<1	0.11	<2			
			27-Jan-16	0.52	<1	<1	0.14	<2			
			10-Feb-16	0.89	<1	<1	0.09	2			
			24-Feb-16	0.71	<1	<1	0.26	<2			
			9-Mar-16	0.77	<1	<1	0.11	<2			
			23-Mar-16	0.77	<1	<1	0.21	<2			
			6-Apr-16	0.9	<1	<1	0.25	<2			
			20-Apr-16	1.02	<1	<1	1	<2			
			4-May-16	0.89	<1	<1	0.28	<2			
			18-May-16	0.94	<1	<1	0.27	<2			
BUR-492K	GRAB	5700 Blk Marine Drive	1-Jun-16	0.68	<1	<1	0.43	2			
			15-Jun-16	0.9	<1	<1	0.35	2			
			29-Jun-16	0.92	<1	<1	0.41	2			
			12-Jul-16	0.94	<1	<1	0.26	<2			
			27-Jul-16	0.95	<1	<1	0.38	2			
			10-Aug-16	0.75	<1	<1	0.19	<2			
			24-Aug-16	0.75	<1	<1	0.5	<2			
			7-Sep-16	0.79	<1	<1	0.35	<2			
			21-Sep-16	0.95	<1	<1	0.26	<2			
			4-Oct-16	0.55	<1	<1	0.25	<2			
			19-Oct-16	0.63	<1	<1	0.22	<2			

	Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls			
			2-Nov-16	0.69	<1	<1	0.09	<2			
	СРАР	E700 Plk Marina Driva	16-Nov-16	0.63	<1	<1	0.42	<2			
BUR-492K	GRAB	STOOBIK Midrine Drive	30-Nov-16	0.64	<1	<1	0.54	<2			
			14-Dec-16	0.67	<1	<1	0.14	<2			
			15-Jan-16	0.68	<1	<1	0.15	<2			
			27-Jan-16	0.89	<1	<1	0.24	<2			
			10-Feb-16	0.7	<1	<1	0.13	<2			
			24-Feb-16	0.76	<1	<1	0.25	<2			
			9-Mar-16	0.65	<1	<1	0.18	<2			
			23-Mar-16	0.61	<1	<1	0.14	<2			
			6-Apr-16	0.7	<1	<1	0.14	4			
			20-Apr-16	0.68	<1	<1	0.33	<2			
			4-May-16	0.67	<1	<1	0.31	<2			
			18-May-16	0.69	<1	<1	0.28	<2			
			1-Jun-16	0.55	<1	<1	0.34	2			
			15-Jun-16	0.71	<1	<1	0.35	<2			
BUR-493K	GRAB	7740 20th St. (10th Ave. Res.)	29-Jun-16	0.73	<1	<1	0.4	<2			
			12-Jul-16	0.69	<1	<1	0.23	2			
			27-Jul-16	0.7	<1	<1	0.31	4			
			10-Aug-16	0.63	<1	<1	0.29	<2			
			24-Aug-16	0.67	<1	<1	0.34	2			
			7-Sep-16	0.61	<1	<1	0.33	4			
			21-Sep-16	0.83	<1	<1	0.29	8			
			4-Oct-16	0.54	<1	<1	0.27	<2			
			19-Oct-16	0.59	<1	<1	0.34	<2			
			2-Nov-16	0.35	<1	<1	0.25	6			
			16-Nov-16	0.34	<1	<1	0.43	<2			
			30-Nov-16	0.28	<1	<1	0.29	<2			
			14-Dec-16	0.59	<1	<1	0.2	2			
			15-Jan-16	0.69	<1	<1	0.22	<2			
			27-Jan-16	0.57	<1	<1	0.33	6			
			10-Feb-16	0.55	<1	<1	0.36	<2			
BUR-494K	GRAB	3700 Blk Banting Place	24-Feb-16	0.76	<1	<1	0.31	<2			
			9-Mar-16	0.62	<1	<1	0.27	[contamination - poor plate spreading] LA			
			23-Mar-16	0.64	<1	<1	0.33	<2			
			6-Apr-16	0.7	<1	<1	0.29	<2			

Drinking Water Reports By Station - City of Burnaby Sites (2016)											
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls			
			20-Apr-16	0.45	<1	<1	0.4	6			
			4-May-16	0.59	<1	<1	0.25	38			
			, 18-May-16	0.65	<1	<1	0.2	1200			
			25-May-16	0.63	<1	<1		110			
			1-Jun-16	0.43	<1	<1	0.28	230			
			15-Jun-16	0.45	<1	<1	0.4	44			
			29-Jun-16	0.57	<1	<1	0.38	18			
			12-Jul-16	0.54	<1	<1	0.19	66			
			19-Jul-16	0.43	<1	<1	0.28	30			
	CDAD		27-Jul-16	0.39	<1	<1	0.45	2			
BUK-494K	GRAB	3700 BIK Banting Place	10-Aug-16	0.48	<1	<1	0.3	8			
			24-Aug-16	0.49	<1	<1	0.19	2			
			7-Sep-16	0.41	<1	<1	0.3	<2			
			21-Sep-16	0.41	<1	<1	0.23	6			
			4-Oct-16	0.43	<1	<1	0.28	14			
			19-Oct-16	0.44	<1	<1	0.38	6			
			2-Nov-16	0.32	<1	<1	0.43	2			
			16-Nov-16	0.27	<1	<1	0.44	4			
			30-Nov-16	0.27	<1	<1	0.5	<2			
			14-Dec-16	0.5	<1	<1	0.33	HPC CFU/mls         6         38         1200         110         230         44         18         66         30         2         8         2         6         14         6         2         4         2         6         14         6         2         4         2         2         2         2         2         2         2         2         30         2         30         2         30         2         4         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2			
			15-Jan-16	0.67	<1	<1	0.13	<2			
			27-Jan-16	0.62	<1	<1	0.17	<2			
			10-Feb-16	0.67	<1	<1	0.14	<2			
			24-Feb-16	0.59	<1	<1	0.33	<2			
			9-Mar-16	0.57	<1	<1	0.16	<2			
			23-Mar-16	0.77	<1	<1	0.3	<2			
			6-Apr-16	0.9	<1	<1	0.1	<2			
BUR-495K	GRAB	8400 Blk Nelson	20-Apr-16	0.9	<1	<1	0.33	<2			
50N 455N	GIVE	0400 BIC NEISON	4-May-16	0.57	<1	<1	0.2	<2			
			18-May-16	0.8	<1	<1	0.19	<2			
			1-Jun-16	0.61	<1	<1	0.31	2			
			15-Jun-16	0.6	<1	<1	0.26	<2			
			29-Jun-16	0.87	<1	<1	0.3	8			
			12-Jul-16	0.53	<1	<1	0.17	28			
			27-Jul-16	0.81	<1	<1	0.27	6			
			10-Aug-16	0.58	<1	<1	0.26	14			

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			24-Aug-16	0.71	<1	<1	0.34	4		
			7-Sep-16	0.58	<1	<1	0.13	12		
			21-Sep-16	0.74	<1	<1	0.17	38		
			4-Oct-16	0.85	<1	<1	0.2	64		
BUR-495K	GRAB	8400 Blk Nelson	19-Oct-16	0.66	<1	<1	0.21	<2		
			2-Nov-16	0.48	<1	<1	0.11	10		
			16-Nov-16	0.35	<1	<1	0.14	<2		
			30-Nov-16	0.46	<1	<1	0.33	<2		
			14-Dec-16	0.5	<1	<1	0.12	<2		
			15-Jan-16	0.54	<1	<1	0.27	<2		
			27-Jan-16	0.6	<1	<1	0.12	<2		
			10-Feb-16	0.49	<1	<1	0.15	2		
			24-Feb-16	0.54	<1	<1	0.13	<2		
			9-Mar-16	0.32	<1	<1	0.19	<2		
			23-Mar-16	0.45	<1	<1	0.16	<2		
			6-Apr-16	0.26	<1	<1	0.16	6		
			20-Apr-16	0.25	<1	<1	0.21	<2		
			4-May-16	0.17	<1	<1	0.24	8		
			18-May-16	0.36	<1	<1	0.22	2		
			1-Jun-16	0.31	<1	<1	0.36	24		
			15-Jun-16	0.48	<1	<1	0.39	130		
	CDAD		29-Jun-16	0.2	<1	<1	0.35	94		
BUR-490K	GRAB	8255 Wiggins St.	12-Jul-16	0.15	<1	<1	0.23	110		
			19-Jul-16	0.33	<1	<1	0.28	2		
			27-Jul-16	0.45	<1	<1	0.36	4		
			10-Aug-16	0.54	<1	<1	0.2	<2		
			24-Aug-16	0.2	<1	<1	0.23	<2		
			7-Sep-16	0.56	<1	<1	0.29	<2		
			21-Sep-16	0.24	<1	<1	0.19	<2		
			4-Oct-16	0.21	<1	<1	0.25	20		
			19-Oct-16	0.2	<1	<1	0.18	22		
			2-Nov-16	0.04	<1	<1	0.14	20		
			16-Nov-16	0.07	<1	<1	0.28	150		
			30-Nov-16	0.11	<1	<1	0.16	6		
			14-Dec-16	0.33	<1	<1	0.14	14		
BUR-497K	GRAB	8300 Blk Willard St. (Spur & Wiggins)	15-Jan-16	0.47	<1	<1	0.18	<2		

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			27-Jan-16	0.49	<1	<1	0.17	<2		
			10-Feb-16	0.48	<1	<1	0.2	<2		
			24-Feb-16	0.52	<1	<1	0.15	<2		
			9-Mar-16	0.43	<1	<1	0.16	<2		
			23-Mar-16	0.5	<1	<1	0.54	<2		
			6-Apr-16	0.53	<1	<1	0.14	<2		
			20-Apr-16	0.48	<1	<1	0.21	<2		
			4-May-16	0.32	<1	<1	0.25	<2		
			18-May-16	0.27	<1	<1	0.21	<2		
			1-Jun-16	0.2	<1	<1	0.24	<2		
			15-Jun-16	0.3	<1	<1	0.35	<2		
	CDAD	8200 Blk Willard St. (Spur & Wiggins)	29-Jun-16	0.38	<1	<1	0.35	<2		
DUK-497K	GRAD	osoo bik willard st. (spur & wiggins)	12-Jul-16	0.28	<1	<1	0.23	12		
			27-Jul-16	0.36	<1	<1	0.23	20		
			10-Aug-16	0.34	<1	<1	0.33	<2		
			24-Aug-16	0.43	<1	<1	0.28	<2		
			7-Sep-16	1.07	<1	<1	0.31	2		
			21-Sep-16	0.42	<1	<1	0.24	<2		
			4-Oct-16	0.35	<1	<1	0.26	2		
			19-Oct-16	0.19	<1	<1	0.21	2		
			2-Nov-16	0.16	<1	<1	0.13	6		
			16-Nov-16	0.21	<1	<1	0.19	<2		
			30-Nov-16	0.25	<1	<1	0.26	10		
			14-Dec-16	0.35	<1	<1	0.16	26		
			15-Jan-16	0.69	<1	<1	0.12	<2		
			27-Jan-16	0.64	<1	<1	0.15	2		
			10-Feb-16	0.74	<1	<1	0.13	<2		
			24-Feb-16	0.67	<1	<1	0.39	<2		
			9-Mar-16	0.67	<1	<1	0.12	<2		
BUR-498K	GRAB	9001 Riverway Place	23-Mar-16	0.72	<1	<1	0.19	<2		
	Church		6-Apr-16	0.66	<1	<1	0.12	<2		
			20-Apr-16	0.79	<1	<1	0.38	<2		
			4-May-16	0.54	<1	<1	0.23	<2		
			18-May-16	0.59	<1	<1	0.22	<2		
			1-Jun-16	0.57	<1	<1	0.35	<2		
			15-Jun-16	0.89	<1	<1	0.28	<2		

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			29-Jun-16	0.62	<1	<1	0.35	<2		
			12-Jul-16	0.68	<1	<1	0.19	<2		
			27-Jul-16	0.53	<1	<1	0.24	<2		
			10-Aug-16	0.53	<1	<1	0.14	<2		
			24-Aug-16	0.52	<1	<1	0.26	<2		
			7-Sep-16	0.66	<1	<1	0.28	<2		
BUR-498K	GRAB	9001 Riverway Place	21-Sep-16	0.87	<1	<1	0.25	<2		
			4-Oct-16	0.88	<1	<1	0.18	<2		
			19-Oct-16	0.58	<1	<1	0.22	<2		
			2-Nov-16	0.63	<1	<1	0.13	<2		
			16-Nov-16	0.27	<1	<1	0.24	2		
			30-Nov-16	0.51	<1	<1	0.67	<2		
			14-Dec-16	0.6	<1	<1	0.13	<2		
			15-Jan-16	0.83	<1	<1	0.2	<2		
			27-Jan-16	0.45	<1	<1	0.11	<2		
			10-Feb-16	0.97	<1	<1	0.14	<2		
			24-Feb-16	0.8	<1	<1	0.27	<2		
			9-Mar-16	0.84	<1	<1	0.12	<2		
			23-Mar-16	0.86	<1	<1	0.16	<2		
			6-Apr-16	1.07	<1	<1	0.09	<2		
			20-Apr-16	1.04	<1	<1	0.38	<2		
			4-May-16	0.86	<1	<1	0.19	<2		
			18-May-16	1.02	<1	<1	0.19	<2		
			1-Jun-16	0.94	<1	<1	0.24	<2		
BUR-499K	GRAB	3900 Blk North Fraser Way	15-Jun-16	1.09	<1	<1	0.21	<2		
			29-Jun-16	1.16	<1	<1	0.32	<2		
			12-Jul-16	1.03	<1	<1	0.16	2		
			27-Jul-16	0.81	<1	<1	0.28	<2		
			10-Aug-16	0.86	<1	<1	0.13	<2		
			24-Aug-16	0.74	<1	<1	0.19	<2		
			7-Sep-16	0.96	<1	<1	0.3	<2		
			21-Sep-16	1.11	<1	<1	0.23	<2		
			4-Oct-16	1.12	<1	<1	0.23	<2		
			19-Oct-16	0.91	<1	<1	0.14	<2		
			2-Nov-16	0.7	<1	<1	0.09	4		
			16-Nov-16	0.62	<1	<1	0.28	<2		

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
	CDAD	2000 Blk North Frasor May	30-Nov-16	0.21	<1	<1	0.23	<2		
BUK-499K	GKAB	3900 BIK NOTTH FLASER WAY	14-Dec-16	0.66	<1	<1	0.14	14		
			14-Jan-16	0.67	<1	<1	0.21	2		
			26-Jan-16	0.68	<1	<1	0.12	<2		
			9-Feb-16	0.79	<1	<1	0.18	<2		
			23-Feb-16	0.68	<1	<1	0.2	<2		
			8-Mar-16	0.8	<1	<1	0.25	<2		
			22-Mar-16	0.7	<1	<1	0.16	<2		
			5-Apr-16	0.78	<1	<1	0.17	<2		
			19-Apr-16	0.76	<1	<1	0.48	<2		
			3-May-16	0.83	<1	<1	0.18	<2		
			17-May-16	0.66	<1	<1	0.15	10		
			31-May-16	0.8	<1	<1	0.22	<2		
			14-Jun-16	0.65	<1	<1	0.34	4		
	CDAD	E400 Plk Dundas St	28-Jun-16	0.76	<1	<1	0.23	2		
BUR-SUUK	GRAD	5400 BIK Dulluas St.	13-Jul-16	0.79	<1	<1	0.14	<2		
			26-Jul-16	0.78	<1	<1	0.22	<2		
			9-Aug-16	0.73	<1	<1	0.13	<2		
			23-Aug-16	0.68	<1	<1	0.24	4		
			6-Sep-16	0.69	<1	<1	0.14	<2		
			20-Sep-16	0.61	<1	<1	0.21	2		
			5-Oct-16	0.73	<1	<1	0.15	<2		
			18-Oct-16	0.82	<1	<1	0.16	<2		
			1-Nov-16	0.64	<1	<1	0.14	<2		
			15-Nov-16	0.51	<1	<1	0.13	2		
			29-Nov-16	0.52	<1	<1	0.19	<2		
			13-Dec-16	0.54	<1	<1	0.19	<2		
			28-Dec-16	0.79	<1	<1	0.71	NA		
			14-Jan-16	0.9	<1	<1	0.17	<2		
			26-Jan-16	0.85	<1	<1	0.13	<2		
			9-Feb-16	0.94	<1	<1	0.1	4		
BUR-529K	GRAR	5200 Blk Penzance	23-Feb-16	0.89	<1	<1	0.16	<2		
DUN JZJK	GIAD	S200 Bix r enzance	8-Mar-16	0.88	<1	<1	0.15	<2		
			22-Mar-16	0.91	<1	<1	0.13	<2		
			5-Apr-16	1	<1	<1	0.13	<2		
			19-Apr-16	0.91	<1	<1	0.16	<2		

Drinking Water Reports By Station - City of Burnaby Sites (2016)											
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls			
			3-May-16	0.86	<1	<1	0.16	<2			
			17-May-16	0.85	<1	<1	0.17	<2			
			31-May-16	0.49	<1	<1	0.15	<2			
			14-Jun-16	0.59	<1	<1	0.12	<2			
			28-Jun-16	0.88	<1	<1	0.27	<2			
			13-Jul-16	0.8	<1	<1	0.13	<2			
			26-Jul-16	0.9	<1	<1	0.17	<2			
			9-Aug-16	0.73	<1	<1	0.12	<2			
	CDAD	E200 Plk Donzanco	23-Aug-16	0.77	<1	<1	0.13	[Contamination] LA			
BUR-329K	GRAD	SZOU BIK PEIIZAIICE	6-Sep-16	0.82	<1	<1	0.21	2			
			20-Sep-16	0.93	<1	<1	0.18	<2			
			5-Oct-16	0.64	<1	<1	0.11	4			
			18-Oct-16	0.76	<1	<1	0.69	<2			
			1-Nov-16	0.85	<1	<1	0.13	<2			
			15-Nov-16	0.48	<1	<1	0.14	<2			
			29-Nov-16	0.4	<1	<1	0.27	2			
			13-Dec-16	0.54	<1	<1	0.27	2			
			28-Dec-16	0.91	<1	<1	0.41	NA			
			14-Jan-16	0.72	<1	<1	0.1	<2			
			26-Jan-16	0.39	<1	<1	0.13	<2			
			9-Feb-16	0.83	<1	<1	0.82	<2			
			23-Feb-16	0.76	<1	<1	0.35	<2			
			8-Mar-16	0.67	<1	<1	0.2	<2			
			22-Mar-16	0.75	<1	<1	0.12	<2			
			5-Apr-16	0.73	<1	<1	0.14	<2			
			19-Apr-16	0.74	<1	<1	0.2	<2			
BUR-530K	GRAB	400 Blk Northcliffe	3-May-16	0.62	<1	<1	0.16	<2			
	•••••		17-May-16	0.68	<1	<1	0.17	<2			
			31-May-16	0.66	<1	<1	0.27	<2			
			14-Jun-16	0.53	<1	<1	0.13	<2			
			28-Jun-16	0.72	<1	<1	0.25	<2			
			13-Jul-16	0.66	<1	<1	0.11	4			
			26-Jul-16	0.59	<1	<1	0.18	<2			
			9-Aug-16	0.54	<1	<1	0.1	<2			
			23-Aug-16	0.69	<1	<1	0.15	<2			
			6-Sep-16	0.62	<1	<1	0.09	<2			

	Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls			
			20-Sep-16	0.39	<1	<1	0.19	2			
			5-Oct-16	0.48	<1	<1	0.22	2			
			18-Oct-16	0.55	<1	<1	0.15	<2			
	CDAD	400 Plk Northcliffo	1-Nov-16	0.59	<1	<1	0.09	<2			
BOK-330K	GRAD		15-Nov-16	0.62	<1	<1	0.17	<2			
			29-Nov-16	0.51	<1	<1	0.16	6			
			13-Dec-16	0.44	<1	<1	0.13	<2			
			28-Dec-16	0.88	<1	<1	0.3	NA			
			6-Jan-16	0.74	<1	<1	0.1	<2			
			20-Jan-16	0.71	<1	<1	0.14	<2			
			3-Feb-16	0.7	<1	<1	0.13	LA			
			17-Feb-16	0.76	<1	<1	0.25	2			
			2-Mar-16	0.72	<1	<1	0.25	18			
			16-Mar-16	0.59	<1	<1	0.23	<2			
			30-Mar-16	0.95	<1	<1	0.26	<2			
			13-Apr-16	0.76	<1	<1	0.12	<2			
			27-Apr-16	0.7	<1	<1	0.13	<2			
			12-May-16	0.32	<1	<1	0.18	<2			
			25-May-16	0.67	<1	<1	0.15	<2			
			8-Jun-16	0.68	<1	<1	0.21	140			
	GRAR	2600 Blk Brighton	22-Jun-16	0.65	<1	<1	0.35	<2			
BON-SOOK	UNAD	Sooo Bik Brighton	6-Jul-16	0.59	<1	<1	0.14	<2			
			20-Jul-16	0.58	<1	<1	0.2	16			
			3-Aug-16	0.89	<1	<1	0.22	8			
			17-Aug-16	0.66	<1	<1	0.1	2			
			31-Aug-16	0.6	<1	<1	0.14	<2			
			14-Sep-16	0.52	<1	<1	0.1	14			
			29-Sep-16	0.7	<1	<1	0.2	26			
			12-Oct-16	0.49	<1	<1	0.21	4			
			26-Oct-16	0.7	<1	<1	0.16	6			
			9-Nov-16	0.48	<1	<1	0.09	<2			
			23-Nov-16	0.35	<1	<1	0.14	<2			
			7-Dec-16	0.52	<1	<1	0.14	<2			
			21-Dec-16	0.77	<1	<1	0.12	10			
BUR-561K	GRAR	Deer Lake Parkway & Gilnin	6-Jan-16	0.45	<1	<1	0.1	<2			
DOUCOTI	GILAD		3-Feb-16	0.8	<1	<1	0.1	LA			

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			17-Feb-16	0.84	<1	<1	0.1	2		
			2-Mar-16	0.88	<1	<1	0.17	<2		
			16-Mar-16	0.75	<1	<1	0.14	2		
			30-Mar-16	0.8	<1	<1	0.13	6		
			13-Apr-16	0.86	<1	<1	0.14	4		
			27-Apr-16	1.02	<1	<1	0.14	<2		
			12-May-16	0.91	<1	<1	0.2	8		
			25-May-16	0.81	<1	<1	0.23	4		
			8-Jun-16	0.81	<1	<1	0.14	4		
			22-Jun-16	0.76	<1	<1	0.18	<2		
			6-Jul-16	0.85	<1	<1	0.18	<2		
BUR-561K	GRAB	Deer Lake Parkway & Gilpin	20-Jul-16	0.71	<1	<1	0.18	<2		
			3-Aug-16	0.77	<1	<1	0.27	<2		
			17-Aug-16	0.77	<1	<1	0.11	<2		
			31-Aug-16	0.85	<1	<1	0.11	<2		
			14-Sep-16	0.76	<1	<1	0.11	<2		
			29-Sep-16	0.86	<1	<1	0.22	<2		
			12-Oct-16	0.88	<1	<1	0.22	26		
			26-Oct-16	1.01	<1	<1	0.11	6		
			9-Nov-16	0.62	<1	<1	0.08	<2		
			23-Nov-16	0.51	<1	<1	0.1	6		
			7-Dec-16	0.63	<1	<1	0.1	<2		
			21-Dec-16	0.83	<1	<1	0.14	10		
			6-Jan-16	0.79	<1	<1	0.09	<2		
			20-Jan-16	0.79	<1	<1	0.13	<2		
			3-Feb-16	1	<1	<1	0.1	LA		
			17-Feb-16	0.87	<1	<1	0.17	<2		
			2-Mar-16	0.95	<1	<1	0.23	4		
			16-Mar-16	0.83	<1	<1	0.12	<2		
BUR-562K	GRAB	1300 Blk Gilmore St.	30-Mar-16	0.83	<1	<1	0.15	2		
			13-Apr-16	0.86	<1	<1	0.12	4		
			27-Apr-16	1.02	<1	<1	0.16	<2		
			12-May-16	0.95	<1	<1	0.25	2		
			25-May-16	0.9	<1	<1	0.32	<2		
			8-Jun-16	0.78	<1	<1	0.14	<2		
			22-Jun-16	0.77	<1	<1	0.31	<2		

	Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform ME/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CEU/mls			
			6-Jul-16	0.88	<1	<1	0.22	2			
			20-Jul-16	0.83	<1	<1	0.15	<2			
			3-Aug-16	0.99	<1	<1	0.29	<2			
			17-Aug-16	0.56	<1	<1	0.1	<2			
			31-Aug-16	0.87	<1	<1	0.17	<2			
			14-Sep-16	0.94	<1	<1	0.11	<2			
BUR-562K	GRAB	1300 Blk Gilmore St.	29-Sep-16	0.89	<1	<1	0.15	<2			
			12-Oct-16	0.93	<1	<1	0.15	<2			
			26-Oct-16	0.83	<1	<1	0.1	<2			
			9-Nov-16	0.48	<1	<1	0.12	<2			
			23-Nov-16	0.6	<1	<1	0.12	2			
			7-Dec-16	0.42	<1	<1	0.16	<2			
			21-Dec-16	0.76	<1	<1	0.15	<2			
			6-Jan-16	0.54	<1	<1	0.11	<2			
			20-Jan-16	0.65	<1	<1	0.14	<2			
			3-Feb-16	0.38	<1	<1	0.19	LA			
			17-Feb-16	0.58	<1	<1	0.17	<2			
			2-Mar-16	0.77	<1	<1	0.18	4			
			16-Mar-16	0.64	<1	<1	0.26	<2			
			30-Mar-16	0.85	<1	<1	0.14	<2			
			13-Apr-16	0.58	<1	<1	0.12	<2			
			27-Apr-16	0.88	<1	<1	0.13	<2			
			12-May-16	0.8	<1	<1	0.2	4			
			25-May-16	0.81	<1	<1	0.17	2			
BUR-563K	GRAB	6200 Lougheed Hwy (Kingsland Ct. cds)	8-Jun-16	0.81	<1	<1	0.1	<2			
			22-Jun-16	0.74	<1	<1	0.24	4			
			6-Jul-16	0.71	<1	<1	0.15	2			
			20-Jul-16	0.77	<1	<1	0.16	6			
			3-Aug-16	0.61	<1	<1	0.19	4			
			17-Aug-16	0.78	<1	<1	0.08	[R2A Contamination-1 colony spreading] LA			
			31-Aug-16	0.84	<1	<1	0.12	<2			
			14-Sep-16	0.87	<1	<1	0.09	4			
			29-Sep-16	0.94	<1	<1	0.16	6			
			12-Oct-16	0.74	<1	<1	0.29	12			
			26-Oct-16	0.35	<1	<1	0.12	2			
			9-Nov-16	0.36	<1	<1	0.1	2			

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			23-Nov-16	0.36	<1	<1	0.11	2		
BUR-563K	GRAB	6200 Lougheed Hwy (Kingsland Ct. cds)	7-Dec-16	0.4	<1	<1	0.2	<2		
			21-Dec-16	0.88	<1	<1	0.13	2		
			6-Jan-16	0.64	<1	<1	0.11	2		
			20-Jan-16	0.74	<1	<1	0.16	2		
			3-Feb-16	0.73	<1	<1	0.61	LA		
			17-Feb-16	0.86	<1	<1	0.11	<2		
			2-Mar-16	0.81	<1	<1	0.19	<2		
			16-Mar-16	0.69	<1	<1	0.12	<2		
			30-Mar-16	0.85	<1	<1	0.13	4		
			13-Apr-16	0.94	<1	<1	0.13	6		
			27-Apr-16	0.97	<1	<1	0.13	4		
DID 564K			12-May-16	0.74	<1	<1	0.21	28		
			25-May-16	0.81	<1	<1	0.26	<2		
			8-Jun-16	1.11	<1	<1	0.19	8		
	GRAB	4400 Still Creek	22-Jun-16	0.83	<1	<1	0.2	6		
DOIN SOUR	GIVID		6-Jul-16	0.92	<1	<1	0.13	6		
			20-Jul-16	0.79	<1	<1	0.13	16		
			3-Aug-16	0.88	<1	<1	0.27	12		
			17-Aug-16	0.58	<1	<1	0.12	14		
			31-Aug-16	0.97	<1	<1	0.15	<2		
			14-Sep-16	0.89	<1	<1	0.14	20		
			29-Sep-16	0.97	<1	<1	0.18	6		
			12-Oct-16	0.75	<1	<1	0.11	60		
			26-Oct-16	0.87	<1	<1	0.11	6		
			9-Nov-16	0.58	<1	<1	0.17	6		
			23-Nov-16	0.53	<1	<1	0.1	2		
			7-Dec-16	0.58	<1	<1	0.13	8		
			21-Dec-16	0.83	<1	<1	0.17	<2		
			6-Jan-16	0.51	<1	<1	0.1	<2		
			20-Jan-16	0.77	<1	<1	0.11	<2		
			3-Feb-16	0.85	<1	<1	0.13	LA		
BUR-565K	GRAB	5700 Blk Laurel St.	17-Feb-16	0.84	<1	<1	0.12	<2		
			2-Mar-16	0.83	<1	<1	0.18	4		
			16-Mar-16	0.74	<1	<1	0.11	<2		
	1		30-Mar-16	0.7	<1	<1	0.19	<2		

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			13-Apr-16	0.78	<1	<1	0.14	<2		
			27-Apr-16	1.01	<1	<1	0.12	<2		
			12-May-16	0.74	<1	<1	0.29	<2		
			25-May-16	0.71	<1	<1	0.26	<2		
			8-Jun-16	0.77	<1	<1	0.14	<2		
			22-Jun-16	1.16	<1	<1	0.2	<2		
			6-Jul-16	0.82	<1	<1	0.11	<2		
			20-Jul-16	0.72	<1	<1	0.15	<2		
			3-Aug-16	0.83	<1	<1	0.26	<2		
BUR-565K	GRAB	5700 Blk Laurel St.	17-Aug-16	0.82	<1	<1	0.08	<2		
			31-Aug-16	0.95	<1	<1	0.15	2		
			14-Sep-16	0.82	<1	<1	0.15	2		
			29-Sep-16	0.73	<1	<1	0.21	<2		
			12-Oct-16	0.95	<1	<1	0.26	44		
			26-Oct-16	0.92	<1	<1	0.11	<2		
			9-Nov-16	0.55	<1	<1	0.12	<2		
			23-Nov-16	0.63	<1	<1	0.15	<2		
			7-Dec-16	0.46	<1	<1	0.1	<2		
			21-Dec-16	0.79	<1	<1	0.15	HPC CFU/mls         <2		
			6-Jan-16	0.84	<1	<1	0.12	<2		
			20-Jan-16	0.59	<1	<1	0.13	<2		
			3-Feb-16	0.59	<1	<1	0.1	LA		
			17-Feb-16	0.77	<1	<1	0.1	<2		
			2-Mar-16	0.79	<1	<1	0.17	<2		
			16-Mar-16	0.74	<1	<1	0.1	<2		
			30-Mar-16	0.87	<1	<1	0.17	<2		
			13-Apr-16	0.94	<1	<1	0.14	4		
BUR-566K	GRAB	4100 Blk Garden Grove Dr.	27-Apr-16	0.95	<1	<1	0.2	<2		
			12-May-16	0.61	<1	<1	0.27	<2		
			25-May-16	0.86	<1	<1	0.44	<2		
			8-Jun-16	0.86	<1	<1	0.15	<2		
			22-Jun-16	0.75	<1	<1	0.2	<2		
			6-Jul-16	0.78	<1	<1	0.13	<2		
			20-Jul-16	0.85	<1	<1	0.22	<2		
			3-Aug-16	0.8	<1	<1	0.17	<2		
			17-Aug-16	0.78	<1	<1	0.33	<2		

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			31-Aug-16	1.02	<1	<1	0.21	<2		
			14-Sep-16	0.79	<1	<1	0.11	<2		
			29-Sep-16	0.91	<1	<1	0.24	<2		
			12-Oct-16	0.86	<1	<1	0.17	<2		
BUR-566K	GRAB	4100 Blk Garden Grove Dr.	26-Oct-16	0.81	<1	<1	0.09	<2		
			9-Nov-16	0.66	<1	<1	0.38	<2		
			23-Nov-16	0.58	<1	<1	0.13	2		
			7-Dec-16	0.49	<1	<1	0.08	<2		
			21-Dec-16	0.89	<1	<1	0.19	2		
			6-Jan-16	0.83	<1	<1	0.09	<2		
			20-Jan-16	0.3	<1	<1	0.16	<2		
			3-Feb-16	0.89	<1	<1	0.11	LA		
			17-Feb-16	0.83	<1	<1	0.14	<2		
			2-Mar-16	0.81	<1	<1	0.21	<2		
			16-Mar-16	0.82	<1	<1	0.12	<2		
			30-Mar-16	0.86	<1	<1	0.14	<2		
			13-Apr-16	0.82	<1	<1	0.15	4		
			27-Apr-16	0.88	<1	<1	0.11	<2		
			12-May-16	0.81	<1	<1	0.19	6		
			25-May-16	0.86	<1	<1	0.32	<2		
			8-Jun-16	0.89	<1	<1	0.14	<2		
	CRAR	SS of CC Brown Bool Sprott St	22-Jun-16	0.75	<1	<1	0.12	2		
BOK-SOTK	GRAD	35 01 CG BIOWIT POOL, SPIOLE SE.	6-Jul-16	0.8	<1	<1	0.14	20		
			20-Jul-16	0.69	<1	<1	0.34	10		
			3-Aug-16	0.79	<1	<1	0.23	12		
			17-Aug-16	0.84	<1	<1	0.1	16		
			31-Aug-16	0.83	<1	<1	0.15	18		
			14-Sep-16	0.9	<1	<1	0.25	16		
			29-Sep-16	0.89	<1	<1	0.17	4		
			12-Oct-16	0.83	<1	<1	0.37	12		
			26-Oct-16	0.72	<1	<1	0.11	14		
			9-Nov-16	0.67	<1	<1	0.08	<2		
			23-Nov-16	0.61	<1	<1	0.09	14		
			7-Dec-16	0.5	<1	<1	0.11	<2		
			21-Dec-16	0.83	<1	<1	0.15	<2		
BUR-568K	GRAB	3900 Blk Philips	6-Jan-16	0.73	<1	<1	0.13	<2		

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			20-Jan-16	0.76	<1	<1	0.13	<2		
			3-Feb-16	0.71	<1	<1	0.1	HPC CFU/mls         <2		
			17-Feb-16	0.75	<1	<1	0.09	<2		
			2-Mar-16	0.91	<1	<1	0.19	2		
			16-Mar-16	0.75	<1	<1	0.14	<2		
			30-Mar-16	0.76	<1	<1	0.14	<2		
			13-Apr-16	0.98	<1	<1	0.17	<2		
			27-Apr-16	1.01	<1	<1	0.09	<2		
			12-May-16	0.88	<1	<1	0.26	<2		
			25-May-16	0.54	<1	<1	0.42	2		
			8-Jun-16	0.78	<1	<1	0.15	<2		
	CDAD	2000 Plk Philips	22-Jun-16	0.65	<1	<1	0.15	<2		
BUR-300K	GRAD	3900 Bik Philips	6-Jul-16	0.83	<1	<1	0.26	<2		
			20-Jul-16	1.31	<1	<1	0.18	<2		
			3-Aug-16	0.78	<1	<1	0.2	<2		
			17-Aug-16	0.83	<1	<1	0.08	<2		
			31-Aug-16	0.77	<1	<1	0.15	<2		
			14-Sep-16	0.78	<1	<1	0.32	<2		
			29-Sep-16	0.9	<1	<1	0.15	<2		
			12-Oct-16	0.82	<1	<1	0.13	6		
			26-Oct-16	0.75	<1	<1	0.1	<2 <2 <2 <2 <2 <2 6 2 <2 <2 <2 <2 <2		
			9-Nov-16	0.62	<1	<1	0.08	<2		
			23-Nov-16	0.59	<1	<1	0.09	<2		
			21-Dec-16	0.85	<1	<1	0.13	<2		
			5-Jan-16	0.85	<1	<1	0.09	<2		
			5-Jan-16	0.85	<1	<1	0.09	<2		
			19-Jan-16	0.86	<1	<1	0.08	<2		
			2-Feb-16	0.85	<1	<1	0.11	<2		
			16-Feb-16	0.89	<1	<1	0.12	<2		
BUB-569K	GRAB	3200 Blk Smith	1-Mar-16	0.87	<1	<1	0.17	<2		
DON SOSK	GIWIE	S200 Bik Sintin	15-Mar-16	0.85	<1	<1	0.13	<2		
			29-Mar-16	0.86	<1	<1	0.1	<2		
			12-Apr-16	0.83	<1	<1	0.14	<2		
			26-Apr-16	0.86	<1	<1	0.1	<2		
			11-May-16	0.78	<1	<1	0.17	<2		
			24-May-16	0.83	<1	<1	0.11	4		

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			7-Jun-16	0.9	<1	<1	0.36	4		
			21-Jun-16	0.74	<1	<1	0.16	<2		
			5-Jul-16	0.79	<1	<1	0.15	<2		
			19-Jul-16	0.8	<1	<1	0.12	<2		
			2-Aug-16	0.78	<1	<1	0.14	2		
			16-Aug-16	0.79	<1	<1	0.08	<2		
			30-Aug-16	0.74	<1	<1	0.11	<2		
BUR-569K	GRAB	3200 Blk Smith	13-Sep-16	1	<1	<1	0.45	<2		
			28-Sep-16	0.64	<1	<1	0.24	2		
			11-Oct-16	0.6	<1	<1	0.13	<2		
			25-Oct-16	0.64	<1	<1	0.23	<2		
			8-Nov-16	0.52	<1	<1	0.12	2		
			22-Nov-16	0.53	<1	<1	0.29	<2		
			6-Dec-16	Sampled tate         Chlorine Free mg/L         Total Coliform MF/100mLs         Ecoli MF/100mLs         Turbidity NTU         HPC CFU/M           7-Jun-16         0.9         <1	<2					
			20-Dec-16	0.6	<1	<1	0.08	<2		
			15-Jan-16	0.81	<1	<1	0.11	<2		
			27-Jan-16	0.93	<1	<1	0.14	<2		
			10-Feb-16	0.89	<1	<1	0.09	<2		
			24-Feb-16	0.82	<1	<1	0.19	<2		
			9-Mar-16	0.63	<1	<1	0.21	<2		
			23-Mar-16	0.91	<1	<1	0.15	<2		
			6-Apr-16	0.99	<1	<1	0.1	<2		
			20-Apr-16	0.9	<1	<1	0.13	2		
			4-May-16	0.88	<1	<1	0.12	4		
			18-May-16	0.84	<1	<1	0.09	<2		
BUR-570K	GRAB	6000 Blk Buckingham Dr.	1-Jun-16	0.9	<1	<1	0.12	2		
			15-Jun-16	0.75	<1	<1	0.16	6		
			29-Jun-16	0.63	<1	<1	0.39	<2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <		
			12-Jul-16	0.63	<1	<1	0.16	14		
			27-Jul-16	0.61	<1	<1	0.29	12		
			10-Aug-16	0.61	<1	<1	0.17	4		
			24-Aug-16	0.55	<1	<1	0.24	8		
			7-Sep-16	0.58	<1	<1	0.19	<2		
			21-Sep-16	0.62	<1	<1	0.12	6		
			4-Oct-16	0.76	<1	<1	0.18	<2		
			19-Oct-16	0.71	<1	<1	0.19	2		

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			2-Nov-16	0.31	<1	<1	0.1	<2		
	CDAD	6000 Plk Buckingham Dr	16-Nov-16	0.68	<1	<1	0.22	<2		
BUK-STUK	GRAD	OUUU BIK BUCKIIIghain DI.	30-Nov-16	0.46	<1	<1	0.12	<2		
			14-Dec-16	0.83	<1	<1	0.13	<2		
			14-Jan-16	0.81	<1	<1	0.09	<2		
			26-Jan-16	0.88	<1	<1	0.21	<2		
			9-Feb-16	0.92	<1	<1	0.1	<2		
			23-Feb-16	0.85	<1	<1	0.13	<2		
			8-Mar-16	0.52	<1	<1	0.13	<2		
			22-Mar-16	0.97	<1	<1	0.18	<2		
			5-Apr-16	0.86	<1	<1	0.13	<2		
			19-Apr-16	0.77	<1	<1	0.24	<2		
			3-May-16	0.8	<1	<1	0.19	<2		
			17-May-16	0.79	<1	<1	0.16	2		
			31-May-16	0.8	<1	<1	0.21	<2		
			14-Jun-16	0.94	<1	<1	0.15	<2		
BUR-572K	GRAB	8200 Blk Forest Grove	28-Jun-16	0.8	<1	<1	0.2	<2		
BON-572K	UNAD	8200 Bik Forest Grove	13-Jul-16	0.84	<1	<1	0.15	<2		
			26-Jul-16	0.78	<1	<1	0.18	<2		
			9-Aug-16	0.88	<1	<1	0.11	<2		
			23-Aug-16	0.75	<1	<1	0.3	<2		
			6-Sep-16	0.82	<1	<1	0.16	<2		
			20-Sep-16	0.78	<1	<1	0.23	<2		
			5-Oct-16	0.7	<1	<1	0.19	<2		
			18-Oct-16	0.63	<1	<1	0.56	<2		
			1-Nov-16	0.72	<1	<1	0.11	<2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2<		
			15-Nov-16	0.71	<1	<1	0.12			
			29-Nov-16	0.73	<1	<1	0.15	2		
			13-Dec-16	0.75	<1	<1	0.12	<2		
			28-Dec-16	1.06	<1	<1	0.15	NA		
			14-Jan-16	0.87	<1	<1	0.08	<2		
			26-Jan-16	0.83	<1	<1	0.1	8		
BUR-573K	GRAB	4400 Blk Dundas	9-Feb-16	0.84	<1	<1	0.13	2		
BOK-273K	0.0.0		23-Feb-16	0.82	<1	<1	0.12	<2		
			8-Mar-16	0.83	<1	<1	0.11	<2		
			22-Mar-16	0.95	<1	<1	0.27	<2		

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			5-Apr-16	0.9	<1	<1	0.11	2		
			19-Apr-16	0.87	<1	<1	0.16	<2		
			3-May-16	1.26	<1	<1	0.1	6		
			17-May-16	0.8	<1	<1	0.21	110		
			31-May-16	0.86	<1	<1	0.17	12		
			14-Jun-16	0.96	<1	<1	0.12	6		
			28-Jun-16	0.86	<1	<1	0.55	<2		
			13-Jul-16	0.78	<1	<1	0.11	8		
			26-Jul-16	0.7	<1	<1	0.18	24		
BUR-573K	CDAD	1400 Plk Durdes	9-Aug-16	0.68	<1	<1	0.1	34		
BUR-573K	GRAB	4400 BIK Dulidas	23-Aug-16	0.6	<1	<1	0.09	12		
			6-Sep-16	0.73	<1	<1	0.16	14		
			20-Sep-16	0.7	<1	<1	0.17	30		
			5-Oct-16	0.85	<1	<1	0.14	6		
			18-Oct-16	0.72	<1	<1	0.15	8		
			1-Nov-16	0.67	<1	<1	0.12	<2		
			15-Nov-16	0.59	<1	<1	0.11	<2		
			29-Nov-16	0.52	<1	<1	0.12	6		
			13-Dec-16	0.7	<1	<1	0.12	2		
			28-Dec-16	0.82	<1	<1	EcoliTurbidity NTUHPC CFU/mls<1			
	15-Nov-16       0.59       <1	<1	0.07	<2						
			26-Jan-16	0.89	<1	<1	0.17	<2		
			9-Feb-16	0.97	<1	<1	0.11	<2		
			23-Feb-16	0.88	<1	<1	0.18	<2		
			8-Mar-16	0.91	<1	<1	0.19	<2		
			22-Mar-16	0.93	<1	<1	0.14	<2		
			5-Apr-16	1	<1	<1	0.12	<2		
BUR-574K	GRAB	200 Blk N. Gilmore	19-Apr-16	0.9	<1	<1	0.13	<2		
	<b>C</b>		3-May-16	0.88	<1	<1	0.17	<2		
			17-May-16	0.83	<1	<1	0.14	<2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2		
			31-May-16	0.97	<1	<1	0.18	<2		
			14-Jun-16	0.93	<1	<1	0.24	<2		
			28-Jun-16	0.8	<1	<1	0.21	<2		
			13-Jul-16	1.02	<1	<1	0.11	<2		
			26-Jul-16	0.82	<1	<1	0.23	<2		
			9-Aug-16	0.8	<1	<1	0.1	<2		

	Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls			
			23-Aug-16	0.91	<1	<1	0.13	<2			
			6-Sep-16	0.94	<1	<1	0.17	<2			
			20-Sep-16	0.87	<1	<1	0.17	<2			
			5-Oct-16	0.81	<1	<1	0.14	<2			
	CDAD		18-Oct-16	0.8	<1	<1	0.57	<2			
BUK-574K	GRAB	200 Bik N. Gilmore	1-Nov-16	0.92	<1	<1	0.09	2			
			15-Nov-16	0.57	<1	<1	0.11	<2			
			29-Nov-16	0.75	<1	<1	0.13	<2			
			13-Dec-16	0.67	<1	<1	0.11	<2			
			28-Dec-16	1.01	<1	<1	0.17	NA			
			14-Jan-16	0.83	<1	<1	0.08	<2			
			26-Jan-16	0.84	<1	<1	0.1	2			
			9-Feb-16	0.83	<1	<1	0.11	<2			
			23-Feb-16	0.82	<1	<1	0.15	<2			
			8-Mar-16	0.79	<1	<1	0.16	<2			
			22-Mar-16	0.87	<1	<1	0.13	<2			
			5-Apr-16	0.88	<1	<1	0.15	2			
			19-Apr-16	0.81	<1	<1	0.11	<2			
			3-May-16	0.79	<1	<1	0.12	12			
			17-May-16	0.78	<1	<1	0.17	10			
			31-May-16	0.76	<1	<1	0.17	<2			
BUR-575K	GRAB	1100 Blk Madison	14-Jun-16	0.77	1	[CG (Confluent Growth)-Invalid; compromised by too much bacterial growth.]	0.13	28			
			28-Jun-16	0.8	<1	<1	0.2	20			
			13-Jul-16	0.8	35	<1	0.26	24			
			26-Jul-16	0.89	<1	<1	0.29	22			
			9-Aug-16	0.77	<1	<1	0.1	18			
			23-Aug-16	0.93	<1	<1	0.19	12			
			6-Sep-16	0.85	<1	<1	0.17	16			
			20-Sep-16	0.8	<1	<1	0.22	16			
			5-Oct-16	0.73	<1	<1	0.16	22			
			18-Oct-16	0.69	<1	<1	0.24	8			
			1-Nov-16	0.83	<1	<1	0.17	14			

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			15-Nov-16	0.5	<1	<1	0.11	16		
	CDAD	1100 Blk Madison	29-Nov-16	0.67	<1	<1	0.16	2		
BOK-373K	GNAD		13-Dec-16	0.24	<1	<1	0.13	2 <2 NA <2 <2 <2 <2 <2 <2 4 <2 <2 4 2 2 <2 4 2 2 <2 2 <2 2 4 2 2 <2 2 4 2 2 <2 2 4 2 2 <2 2 4 2 2 2 2		
			28-Dec-16	0.9	<1	<1	0.48	NA		
			14-Jan-16	0.94	<1	<1	0.1	<2		
			26-Jan-16	0.72	<1	<1	0.22	<2		
			9-Feb-16	0.92	<1	<1	0.14	6		
			23-Feb-16	0.89	<1	<1	0.16	<2		
			8-Mar-16	0.83	<1	<1	0.14	<2		
			22-Mar-16	0.9	<1	<1	0.13	<2		
			5-Apr-16	0.97	<1	<1	0.11	4		
			19-Apr-16	0.89	<1	<1	0.21	<2		
			3-May-16	0.77	<1	<1	0.12	<2		
			17-May-16	0.9	<1	<1	0.18	4		
			31-May-16	0.88	<1	<1	0.13	2		
			14-Jun-16	0.99	<1	<1	0.14	2		
	CDAD	COOL DIL Currie	28-Jun-16	0.85	<1	<1	0.23	<2		
BUR-570K	GRAB	6200 BIK CULLIS	13-Jul-16	0.95	<1	<1	0.12	2		
			26-Jul-16	0.69	<1	<1	0.19	<2		
			9-Aug-16	0.82	<1	<1	0.1	4		
			23-Aug-16	0.8	<1	<1	0.26	<2		
			6-Sep-16	0.86	<1	<1	0.19	<2		
			20-Sep-16	0.94	<1	<1	0.11	<2		
			5-Oct-16	0.85	<1	<1	0.17	2		
			18-Oct-16	0.77	<1	<1	0.88	[Poor spreading.] LA		
			1-Nov-16	0.67	<1	<1	0.18       4         0.13       2         0.14       2         0.23       <2			
			15-Nov-16	0.66	<1	<1	0.13	4		
			29-Nov-16	0.7	<1	<1	0.2	2		
			13-Dec-16	0.61	<1	<1	0.16	6		
			28-Dec-16	0.91	<1	<1	0.18	NA		
			14-Jan-16	0.76	<1	<1	0.08	<2		
			26-Jan-16	0.49	<1	<1	0.2	<2		
	CDAD	1400 Hoothdolo Dr	9-Feb-16	0.86	<1	<1	0.19	8		
BUK-577K	GKAB	1400 Healfiùale Dr.	23-Feb-16	0.8	<1	<1	0.15	<2		
			8-Mar-16	0.74	<1	<1	0.12	<2		
			22-Mar-16	0.81	<1	<1	0.13	<2		

Drinking Water Reports By Station - City of Burnaby Sites (2016)											
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls			
			5-Apr-16	0.77	<1	<1	0.1	<2			
			19-Apr-16	0.79	<1	<1	0.11	<2			
			3-May-16	0.71	<1	<1	0.17	<2			
			17-May-16	1.07	<1	<1	0.13	<2			
			31-May-16	0.77	<1	<1	0.18	<2			
			14-Jun-16	1.02	<1	<1	0.16	<2			
			28-Jun-16	0.6	<1	<1	0.15	<2			
			13-Jul-16	0.63	<1	<1	0.18	<2			
			26-Jul-16	0.64	<1	<1	0.18	<2			
	CDAD	1400 Heathdale Dr	9-Aug-16	0.61	<1	<1	0.13	<2			
BUR-577K	GRAB	1400 Heatridale Dr.	23-Aug-16	0.54	<1	<1	0.14	<2			
			6-Sep-16	0.61	<1	<1	0.16	<2			
			20-Sep-16	0.71	<1	<1	0.12	<2			
			5-Oct-16	0.6	<1	<1	0.1	<2			
			18-Oct-16	0.52	<1	<1	0.15	<2			
			1-Nov-16	0.6	<1	<1	0.11	<2			
			15-Nov-16	0.73	<1	<1	0.14	<2			
			29-Nov-16	0.58	<1	<1	0.13	<2			
			13-Dec-16	0.31	<1	<1	0.17	<2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <			
			28-Dec-16	0.93	<1	<1	0.28	NA			
			14-Jan-16	0.82	<1	<1	0.08	<2			
			26-Jan-16	0.56	<1	<1	0.24	<2			
			9-Feb-16	0.83	<1	<1	0.08	<2			
			23-Feb-16	0.87	<1	<1	0.18	2			
			8-Mar-16	0.98	<1	<1	0.12	<2			
			22-Mar-16	0.89	<1	<1	0.14	<2			
			5-Apr-16	0.91	<1	<1	0.13	<2			
BUB-578K	GRAB	North side of IGA Grevstone Ave	19-Apr-16	0.88	<1	<1	0.12	4			
Don Syon	GIWIE		3-May-16	0.77	<1	<1	0.19	<2			
			17-May-16	0.76	<1	<1	0.13	<2			
			31-May-16	0.83	<1	<1	0.13	2			
			14-Jun-16	0.83	<1	<1	0.09	<2			
			28-Jun-16	0.89	<1	<1	0.26	2			
			13-Jul-16	0.81	<1	<1	0.15	<2			
			26-Jul-16	0.83	<1	<1	0.36	<2			
			9-Aug-16	0.83	<1	<1	0.1	<2			

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			23-Aug-16	0.78	<1	<1	0.32	<2		
			6-Sep-16	0.94	<1	<1	0.15	<2		
			20-Sep-16	0.75	<1	<1	0.14	<2		
			5-Oct-16	0.83	<1	<1	0.13	<2		
BUR-578K	GRAB	North side of IGA, Greystone Ave.	18-Oct-16	0.74	<1	<1	0.3	<2		
			1-Nov-16	0.71	<1	<1	0.11	<2		
			15-Nov-16	0.64	<1	<1	0.21	<2		
			29-Nov-16	0.54	<1	<1	0.14	<2		
			13-Dec-16	0.5	<1	<1	0.14	<2		
			5-Jan-16	0.81	<1	<1	0.08	<2		
			19-Jan-16	0.88	<1	<1	0.08	<2		
			2-Feb-16	0.57	<1	<1	0.09	<2		
			16-Feb-16	0.84	<1	<1	0.13	<2		
			1-Mar-16	0.85	<1	<1	0.15	<2		
			15-Mar-16	0.82	<1	<1	0.12	<2		
			29-Mar-16	1.2	<1	<1	0.18	<2		
			12-Apr-16	0.87	<1	<1	0.16	<2		
			26-Apr-16	0.82	<1	<1	0.11	6		
			11-May-16	0.79	<1	<1	0.13	6		
			24-May-16	0.73	<1	<1	0.12	4		
			7-Jun-16	0.79	<1	<1	0.16	2		
	GPAR	WS of BGH, on Ingleton	21-Jun-16	0.73	<1	<1	0.14	4		
BON-575K	UNAD	WS of Borr, of fightion	5-Jul-16	0.86	<1	<1	0.18	<2		
			19-Jul-16	0.82	<1	<1	0.15	<2		
			2-Aug-16	0.73	<1	<1	0.16	2		
			16-Aug-16	0.64	<1	<1	0.06	<2		
			30-Aug-16	0.74	<1	<1	0.14	2		
			13-Sep-16	0.65	<1	<1	0.16	4		
			28-Sep-16	0.6	<1	<1	0.16	10		
			11-Oct-16	0.72	<1	<1	0.14	6		
			25-Oct-16	0.83	<1	<1	0.1	<2		
			8-Nov-16	0.57	<1	<1	0.11	2		
			22-Nov-16	0.59	<1	<1	0.14	2		
			6-Dec-16	0.61	<1	<1	0.1	<2		
			20-Dec-16	0.8	<1	<1	0.15	<2		
BUR-580K	GRAB	4400 Blk Moscrop	5-Jan-16	0.8	<1	<1	0.08	<2		

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			19-Jan-16	0.74	<1	<1	0.09	<2		
			2-Feb-16	0.51	<1	<1	0.13	bidity ITU         HPC CFU/mls           0.09         <2		
			16-Feb-16	0.85	<1	<1	0.15	<2		
			1-Mar-16	0.87	<1	<1	0.11	<2		
			15-Mar-16	0.8	<1	<1	0.15	<2		
			29-Mar-16	0.79	<1	<1	0.13	4		
			12-Apr-16	0.83	<1	<1	0.12	2		
			26-Apr-16	0.8	<1	<1	0.1	<2		
			11-May-16	0.8	<1	<1	0.15	<2		
			24-May-16	0.76	<1	<1	0.16	<2		
			7-Jun-16	0.78	<1	<1	0.21	<2		
			21-Jun-16	0.73	<1	<1	0.11	<2		
BUR-580K	GRAB	4400 Blk Moscrop	5-Jul-16	0.74	<1	<1	0.14	2		
			19-Jul-16	1.02	<1	<1	0.17	<2		
			2-Aug-16	0.67	<1	<1	0.15	<2		
			16-Aug-16	0.74	<1	<1	0.12	<2		
			30-Aug-16	0.72	<1	<1	0.21	<2		
			13-Sep-16	0.78	<1	<1	0.21	<2		
			28-Sep-16	0.76	<1	<1	0.28	<2		
			11-Oct-16	0.64	<1	<1	0.15	<2		
			25-Oct-16	0.92	<1	<1	0.1	<2		
			8-Nov-16	0.84	<1	<1	0.1	<2		
			22-Nov-16	0.58	<1	<1	0.19	<2		
			6-Dec-16	0.64	<1	<1	0.1	<2		
			20-Dec-16	0.99	<1	<1	0.09	<2		
			15-Jan-16	0.71	<1	<1	0.15	<2		
			27-Jan-16	0.55	<1	<1	0.15	<2		
			10-Feb-16	0.73	<1	<1	0.13	2		
			24-Feb-16	0.85	<1	<1	0.17	<2		
			9-Mar-16	0.68	<1	<1	0.11	<2		
BUR-581K	GRAB	7900 Blk Kaymar	23-Mar-16	0.93	<1	<1	0.17	<2		
			6-Apr-16	0.78	<1	<1	0.15	<2		
			20-Apr-16	0.74	<1	<1	0.34	<2		
			4-May-16	0.71	<1	<1	0.16	<2		
			18-May-16	0.85	<1	<1	0.18	2		
			1-Jun-16	0.63	<1	<1	0.28	<2		

	Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls			
			15-Jun-16	0.97	<1	<1	0.27	<2			
			29-Jun-16	0.89	<1	<1	0.26	<2			
			12-Jul-16	0.43	<1	<1	0.2	2			
			27-Jul-16	0.61	<1	<1	0.21	<2			
			10-Aug-16	0.68	<1	<1	0.16	2			
			24-Aug-16	0.7	<1	<1	0.19	8			
	CDAD		7-Sep-16	0.72	<1	<1	0.12	<2			
BOK-281K	GRAB	7900 Bik Kaymar	21-Sep-16	0.46	<1	<1	0.16	6			
			4-Oct-16	0.53	<1	<1	0.21	38			
			19-Oct-16	0.48	<1	<1	0.19	8			
			2-Nov-16	0.34	<1	<1	0.11	<2			
			16-Nov-16	0.55	<1	<1	0.14	<2			
	30-Nov-16 0.4 <1	<1	0.17	<2							
			14-Dec-16	0.52	<1	<1	0.18	2			
			5-Jan-16	0.73	<1	<1	0.12	<2			
			19-Jan-16	0.73	<1	<1	0.08	<2			
			2-Feb-16	0.71	<1	<1	0.11	<2			
			16-Feb-16	0.98	<1	<1	0.1	<2			
			1-Mar-16	0.94	<1	<1	0.16	<2			
			15-Mar-16	0.9	<1	<1	0.1	<2			
			29-Mar-16	0.77	<1	<1	0.13	<2			
			12-Apr-16	0.91	<1	<1	0.15	2			
			26-Apr-16	0.86	<1	<1	0.2	<2			
			11-May-16	0.82	<1	<1	0.18	<2			
BIID-592K	GRAR	and St. School 16th Ave	24-May-16	0.81	<1	<1	0.25	HPC CFU/mls <2 <2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3			
BON-382K	UNAD	210 St. School, 10th Ave.	7-Jun-16	0.84	<1	<1	0.33				
			21-Jun-16	0.83	<1	<1	0.41	72			
			5-Jul-16	0.91	<1	<1	0.3	[Poor spreading] LA			
			19-Jul-16	0.91	<1	<1	0.42	12			
			2-Aug-16	0.81	<1	<1	0.16	4			
			16-Aug-16	0.84	<1	<1	0.16	<2			
			30-Aug-16	0.76	<1	<1	0.3	24			
			13-Sep-16	0.77	<1	<1	0.18	<2			
			28-Sep-16	1	<1	<1	0.34	16			
			11-Oct-16	0.88	<1	<1	0.32	6			
			25-Oct-16	0.99	<1	<1	0.19	<2			

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			8-Nov-16	0.67	<1	<1	0.14	<2		
	CDAD	and St. School 16th Ava	22-Nov-16	0.53	<1	<1	0.37	2		
BUR-362K	GNAD	2110 St. School, 10th Ave.	6-Dec-16	0.54	<1	<1	0.07	2		
			20-Dec-16	0.93	<1	<1	0.09	HPC CFU/mls         <2		
			5-Jan-16	0.14	<1	<1	0.16	26		
			19-Jan-16	0.47	<1	<1	0.08	<2		
			2-Feb-16	0.58	<1	<1	0.09	<2		
			16-Feb-16	0.64	<1	<1	0.12	<2		
			1-Mar-16	0.63	<1	<1	0.13	2		
			15-Mar-16	0.71	<1	<1	0.1	<2		
			29-Mar-16	0.42	<1	<1	0.17	<2		
			12-Apr-16	0.65	<1	<1	0.14	2		
			26-Apr-16	0.4	<1	<1	0.14	<2		
			11-May-16	0.49	<1	<1	0.2	<2		
			24-May-16	0.25	<1	<1	0.24	90		
			7-Jun-16	0.36	<1	<1	0.27	40		
BUR-583K	GRAB	New Vista Place	21-Jun-16	0.49	<1	<1	0.27	6		
DOI-2021	UNAD		5-Jul-16	0.59	<1	<1	0.3	6		
			19-Jul-16	0.2	<1	<1	0.18	2		
			2-Aug-16	0.25	<1	<1	0.26	210		
			16-Aug-16	0.57	<1	<1	0.15	12		
			30-Aug-16	0.49	<1	<1	0.23	16		
			13-Sep-16	0.72	<1	<1	0.18	8		
			28-Sep-16	0.28	<1	<1	0.24	2		
			11-Oct-16	0.23	<1	<1	0.22	94		
			25-Oct-16	0.37	<1	<1	0.14	$ \begin{array}{c} 2\\ <2\\ 26\\ <2\\ <2\\ <2\\ <2\\ <2\\ 2\\ <2\\ 2\\ <2\\ 2\\ <2\\ 90\\ 40\\ 6\\ 6\\ 6\\ 2\\ 90\\ 40\\ 6\\ 6\\ 6\\ 2\\ 20\\ 90\\ 40\\ 6\\ 6\\ 6\\ 2\\ 90\\ 40\\ 6\\ 6\\ 6\\ 2\\ 20\\ 90\\ 40\\ 6\\ 6\\ 6\\ 2\\ 20\\ 210\\ 12\\ 16\\ 8\\ 2\\ 94\\ <2\\ <2\\ 94\\ <2\\ <2\\ <2\\ 4\\ 4\\ 4\\ 4\\ 2\\ <2\\ <2\\ 6\\ <2\\ 6\\ <2 \end{array} $		
			8-Nov-16	0.39	<1	<1	0.11	<2		
			22-Nov-16	0.35	<1	<1	0.1	<2		
			6-Dec-16	0.25	<1	<1	0.14	4		
			20-Dec-16	0.34	<1	<1	0.14	4		
			5-Jan-16	0.76	<1	<1	0.08	<2		
			19-Jan-16	0.79	<1	<1	0.09	<2		
BUR-584K	GRAR	7200 Blk Edmonds St	2-Feb-16	0.83	<1	<1	0.11	6		
2011 30-IN		7200 DIK EUHOHUS SL.	16-Feb-16	0.86	<1	<1	0.11	<2		
			1-Mar-16	0.88	<1	<1	0.15	<2		
			15-Mar-16	0.75	<1	<1	0.1	<2		

Drinking Water Reports By Station - City of Burnaby Sites (2016)											
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls			
			29-Mar-16	0.9	<1	<1	0.1	<2			
			12-Apr-16	0.76	<1	<1	0.11	<2			
			26-Apr-16	0.81	<1	<1	0.24	16			
			11-May-16	0.64	<1	<1	0.37	<2			
			24-May-16	1.12	<1	<1	0.23	760			
			1-Jun-16	0.78	<1	<1	0.32	30			
			7-Jun-16	0.72	<1	<1	0.39	340			
			16-Jun-16	0.82	<1	<1	0.29	42			
			21-Jun-16	0.56	<1	<1	0.25	290			
			5-Jul-16	0.84	<1	<1	0.24	940			
			11-Jul-16	1	<1	<1		800			
BUR-584K	GRAB	7200 Blk Edmonds St.	19-Jul-16	0.64	<1	<1	0.25	130			
			2-Aug-16	0.84	<1	<1	0.15	76			
			16-Aug-16	0.88	<1	<1	0.14	22			
			30-Aug-16	0.83	<1	<1	0.25	140			
			13-Sep-16	0.68	<1	<1	0.23	<2			
			28-Sep-16	1	<1	<1	0.41	20			
			11-Oct-16	0.64	<1	<1	0.32	110			
			25-Oct-16	0.55	<1	<1	0.1	6			
			8-Nov-16	0.73	<1	<1	0.13	<2			
			22-Nov-16	0.55	<1	<1	0.51	<2			
			6-Dec-16	0.47	<1	<1	0.09	<2			
			20-Dec-16	0.74	<1	<1	0.1	<2			
			5-Jan-16	0.83	<1	<1	0.08	<2			
			19-Jan-16	0.85	<1	<1	0.08	<2			
			2-Feb-16	0.86	<1	<1	0.08	<2			
			16-Feb-16	0.88	<1	<1	0.12	<2			
			1-Mar-16	0.92	<1	<1	0.27	<2			
			15-Mar-16	0.88	<1	<1	0.17	<2			
BUR-585K	GRAB	5400 Blk Rumble St.	29-Mar-16	0.83	<1	<1	0.11	2			
			12-Apr-16	0.86	<1	<1	0.11	<2			
			26-Apr-16	0.85	<1	<1	0.13	<2			
			11-May-16	0.88	<1	<1	0.39	<2			
			24-May-16	0.79	<1	<1	0.21	<2			
			7-Jun-16	0.77	<1	<1	0.49	22			
			21-Jun-16	0.68	1	<1	0.42	2			

	Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls			
			Sampled ame         Sampled bate         Chlorine Free mg/L         Total Coliform MF/100mLs         Ecoli MF/100mLs         Turbidity MF/100mLs           28-Jun-16         0.8         <1	<2							
			5-Jul-16	0.83	<1	<1	0.31	4			
			19-Jul-16	0.87	<1	<1	0.36	<2			
			2-Aug-16	0.93	<1	<1	0.15	2			
			16-Aug-16	0.8	<1	<1	0.1	2			
			30-Aug-16	0.85	<1	<1	0.25	<2			
	CDAD	E 400 Dile Dumble St	13-Sep-16	0.68	<1	<1	0.12	<2			
BUK-282K	GRAB	5400 Bik Rumble St.	28-Sep-16	0.95	<1	<1	0.39	<2			
			11-Oct-16	0.89	<1	<1	0.23	<2			
			25-Oct-16	0.88	<1	<1	0.15	4			
			8-Nov-16	0.71	<1	<1	0.17	<2			
			22-Nov-16	0.52	<1	<1	0.35	<2			
			6-Dec-16	0.55	<1	<1	0.09	<2			
			20-Dec-16	0.85	<1	<1	0.11	<2			
			5-Jan-16	0.76	<1	<1	0.09	<2			
			19-Jan-16	0.74	<1	<1	0.09	<2			
			2-Feb-16	0.75	<1	<1	0.12	<2			
			16-Feb-16	0.78	<1	<1	0.14	<2			
			1-Mar-16	0.74	<1	<1	0.26	<2			
			15-Mar-16	0.8	<1	<1	0.38	<2			
			29-Mar-16	0.76	<1	<1	0.15	<2			
			12-Apr-16	0.68	<1	<1	0.3	<2			
			26-Apr-16	0.7	<1	<1	0.21	<2			
			11-May-16	0.74	<1	<1	0.28	<2			
BUR-586K	GRAB	3800 Blk Rumble St (Greenall & Rumble)	24-May-16	0.55	<1	<1	0.2	8			
BON SOOK	GIVID		7-Jun-16	0.64	<1	<1	0.28	10			
			21-Jun-16	0.53	<1	<1	0.33	10			
			5-Jul-16	0.82	<1	<1	0.31	20			
			19-Jul-16	0.83	<1	<1	0.38	24			
			2-Aug-16	0.82	<1	<1	0.13	2			
			16-Aug-16	0.82	<1	<1	0.1	<2			
			30-Aug-16	0.8	<1	<1	0.22	2			
			13-Sep-16	0.69	<1	<1	0.18	4			
			28-Sep-16	0.76	<1	<1	0.47	<2			
			11-Oct-16	0.72	<1	<1	0.23	2			
			25-Oct-16	0.84	<1	<1	0.13	8			

Drinking Water Reports By Station - City of Burnaby Sites (2016)											
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls			
			8-Nov-16	0.62	<1	<1	0.38	<2			
	CDAD	2800 Blk Bumble St. (Creenall & Bumble)	22-Nov-16	0.45	<1	<1	0.21	<2			
BOK-280K	GRAB	3800 Bik Rumble St. (Greenali & Rumble)	6-Dec-16	0.54	<1	<1	0.15	2			
			20-Dec-16	0.7	<1	<1	0.13	2			
			5-Jan-16	0.73	<1	<1	0.15	2			
			19-Jan-16	0.76	<1	<1	0.17	<2			
			2-Feb-16	0.72	<1	<1	0.14	2			
			16-Feb-16	0.7	<1	<1	0.19	<2			
			1-Mar-16	0.8	<1	<1	0.14	4			
			15-Mar-16	0.86	<1	<1	0.15	<2			
			29-Mar-16	0.79	<1	<1	0.18	<2			
			12-Apr-16	0.82	<1	<1	0.14	<2			
			26-Apr-16	0.75	<1	<1	0.19	<2			
			11-May-16	0.74	<1	<1	0.17	<2			
			24-May-16	0.82	<1	<1	1	<2			
			7-Jun-16	0.73	<1	<1	0.42	<2			
	GRAR	1100 Blk Kingsway	21-Jun-16	0.87	<1	<1	0.51	<2			
BON-387K	UNAD	4400 Bik Kingsway	5-Jul-16	0.58	<1	<1	0.25	<2			
			19-Jul-16	0.64	<1	<1	0.15	<2			
			2-Aug-16	0.72	<1	<1	0.14	<2			
			16-Aug-16	0.77	<1	<1	0.17	6			
			30-Aug-16	0.58	<1	<1	0.22	<2			
			13-Sep-16	0.39	<1	<1	0.15	<2			
			28-Sep-16	0.87	<1	<1	0.63	<2			
			11-Oct-16	0.47	<1	<1	0.27	<2			
			25-Oct-16	0.91	<1	<1	0.13	<2			
			8-Nov-16	0.51	<1	<1	0.31	<2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <			
			22-Nov-16	0.48	<1	<1	0.38	<2			
			6-Dec-16	0.46	<1	<1	0.1	[Contamination.] LA			
			20-Dec-16	0.85	<1	<1	0.12	<2			
			6-Jan-16	0.7	<1	<1	0.1	<2			
			19-Jan-16	0.71	<1	<1	0.09	<2			
BUR-588K	GRAB	7500 Blk Cumberland St	2-Feb-16	0.83	<1	<1	0.13	<2			
BUK-588K			16-Feb-16	0.83	<1	<1	0.25	2			
			1-Mar-16	0.89	<1	<1	0.26	<2			
			15-Mar-16	0.79	<1	<1	0.15	<2			

Drinking Water Reports By Station - City of Burnaby Sites (2016)											
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls			
			29-Mar-16	0.86	<1	<1	0.17	<2			
			12-Apr-16	0.82	<1	<1	0.1	<2			
			26-Apr-16	0.91	<1	<1	0.19	<2			
			11-May-16	0.87	<1	<1	0.28	<2			
			24-May-16	0.73	<1	<1	0.25	<2			
			7-Jun-16	0.8	<1	<1	0.33	<2			
			21-Jun-16	0.71	<1	<1	0.32	<2			
			5-Jul-16	0.76	<1	<1	0.22	20			
			19-Jul-16	0.81	<1	<1	0.32	48			
	CDAD	7500 Plls Current endered St	2-Aug-16	0.95	<1	<1	0.13	36			
BOK-288K	GRAB	7500 Bik Cumberland St.	16-Aug-16	0.88	<1	<1	0.32	12			
			30-Aug-16	0.79	<1	<1	0.3	14			
			13-Sep-16	0.7	<1	<1	0.21	2			
			28-Sep-16	0.98	<1	<1	0.31	<2			
			11-Oct-16	0.82	<1	<1	0.24	2			
			25-Oct-16	0.84	<1	<1	0.19	<2			
			8-Nov-16	0.61	<1	<1	0.21	<2			
			22-Nov-16	0.46	<1	<1	0.2	<2			
			6-Dec-16	0.63	<1	<1	0.08	<2			
			20-Dec-16	0.89	<1	<1	NTU         HPC CFU/mls           0.17         <2				
	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	<2									
			19-Jan-16	0.83	<1	<1	0.14	<2			
			2-Feb-16	0.85	<1	<1	0.11	<2			
			16-Feb-16	0.85	<1	<1	0.14	<2			
			1-Mar-16	0.9	<1	<1	0.11	<2			
			15-Mar-16	0.75	<1	<1	0.2	<2			
			29-Mar-16	0.83	<1	<1	0.13	2			
BUR-589K	GRAB	6500 Blk Marlborough St	12-Apr-16	0.76	<1	<1	0.2	<2			
BON SOSK	GIVID		26-Apr-16	0.78	<1	<1	0.15	<2			
			11-May-16	0.67	<1	<1	0.32	<2			
			24-May-16	0.83	<1	<1	0.24	14			
			7-Jun-16	0.72	<1	<1	0.42	18			
			21-Jun-16	0.77	<1	<1	0.31	12			
			5-Jul-16	0.85	<1	<1	0.51	830			
			11-Jul-16	0.83	<1	<1		4			
			19-Jul-16	0.87	<1	<1	0.26	22			

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			2-Aug-16	0.77	<1	<1	0.17	8		
			16-Aug-16	0.9	<1	<1	0.14	<2		
			30-Aug-16	0.86	<1	<1	0.28	12		
			13-Sep-16	0.65	<1	<1	0.25	<2		
			28-Sep-16	0.81	<1	<1	0.32	8		
BUR-589K	GRAB	6500 Blk Marlborough St.	11-Oct-16	0.81	<1	<1	0.23	<2		
			25-Oct-16	1	<1	<1	0.19	<2		
			8-Nov-16	0.55	<1	<1	0.31	2		
			22-Nov-16	0.54	<1	<1	0.34	<2		
			6-Dec-16	0.6	<1	<1	0.14	2		
			20-Dec-16	0.84	<1	<1	0.18	<2		
			6-Jan-16	0.54	<1	<1	0.08	<2		
			19-Jan-16	0.83	<1	<1	0.15	<2		
			2-Feb-16	0.89	<1	<1	0.13	<2		
			16-Feb-16	0.85	<1	<1	0.16	<2		
			1-Mar-16	0.92	<1	<1	0.12	<2		
			15-Mar-16	0.95	<1	<1	0.09	<2		
			29-Mar-16	0.88	<1	<1	0.09	<2		
			12-Apr-16	0.95	<1	<1	0.11	2		
			26-Apr-16	0.86	<1	<1	0.18	4		
			11-May-16	0.86	<1	<1	0.31	6		
			24-May-16	0.83	<1	<1	0.21	6		
			7-Jun-16	0.76	<1	<1	0.33	12		
BUR-590K	GRAB	6100 Blk Imperial St.	21-Jun-16	0.8	<1	<1	0.24	22		
			5-Jul-16	0.95	<1	<1	0.3	40		
			19-Jul-16	1.02	<1	<1	0.43	14		
			2-Aug-16	0.83	<1	<1	0.13	14		
			16-Aug-16	0.87	<1	<1	0.08	2		
			30-Aug-16	0.8	<1	<1	0.21	12		
			13-Sep-16	0.74	<1	<1	0.21	14		
			28-Sep-16	1.13	<1	<1	0.61	62		
			11-Oct-16	0.83	<1	<1	0.34	12		
			25-Oct-16	0.97	<1	<1	0.13	8		
			8-Nov-16	0.71	<1	<1	0.15	2		
			22-Nov-16	0.42	<1	<1	0.39	<2		
			6-Dec-16	0.3	<1	<1	0.08	2		

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
BUR-590K	GRAB	6100 Blk Imperial St.	20-Dec-16	0.72	<1	<1	0.11	<2		
			6-Jan-16	0.84	<1	<1	0.08	<2		
			20-Jan-16	0.44	<1	<1	0.1	<2		
			3-Feb-16	0.89	<1	<1	0.1	LA		
			17-Feb-16	0.85	<1	<1	0.08	<2		
			2-Mar-16	0.96	<1	<1	0.12	<2		
			16-Mar-16	0.88	<1	<1	0.09	<2		
			30-Mar-16	0.81	<1	<1	0.2	<2		
			13-Apr-16	0.85	<1	<1	0.11	<2		
			27-Apr-16	0.74	<1	<1	0.13	<2		
			12-May-16	0.29	<1	<1	0.27	<2		
			25-May-16	0.78	<1	<1	0.16	<2		
BUR-592K			8-Jun-16	0.54	<1	<1	0.22	<2		
	GRAB	9800 Lyphurst St	22-Jun-16	0.66	<1	<1	0.26	<2		
	GIAD	5000 Lynnuist St.	6-Jul-16	0.71	<1	<1	0.18	<2		
			20-Jul-16	0.66	<1	<1	0.16	<2		
			3-Aug-16	0.77	<1	<1	0.25	4		
			17-Aug-16	0.68	<1	<1	0.1	<2		
			31-Aug-16	0.71	<1	<1	0.13	<2		
			14-Sep-16	0.71	<1	<1	0.15	<2		
			29-Sep-16	0.73	<1	<1	0.25	<2		
			12-Oct-16	0.63	<1	<1	0.17	2		
			26-Oct-16	1	<1	<1	0.12	10		
			9-Nov-16	0.54	<1	<1	0.13	<2		
			23-Nov-16	0.56	<1	<1	0.2	<2		
			7-Dec-16	0.43	<1	<1	0.09	2		
	<u> </u>		21-Dec-16	0.85	<1	<1	0.15	4		
			6-Jan-16	0.71	<1	<1	0.09	<2		
			20-Jan-16	0.74	<1	<1	0.17	<2		
			3-Feb-16	0.75	<1	<1	0.09	LA		
			17-Feb-16	0.78	<1	<1	0.09	<2		
BUR-593K	GRAB	3300 Blk Lakecity	2-Mar-16	0.71	<1	<1	0.13	<2		
			16-Mar-16	0.75	<1	<1	0.08	<2		
			30-Mar-16	0.75	<1	<1	0.16	<2		
			13-Apr-16	0.75	<1	<1	0.12	<2		
		1	27-Apr-16	1.26	<1	<1	0.12	<2		

Drinking Water Reports By Station - City of Burnaby Sites (2016)											
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls			
			12-May-16	0.54	<1	<1	0.23	<2			
			25-May-16	0.65	<1	<1	0.14	<2			
			8-Jun-16	0.68	<1	<1	0.15	2			
			22-Jun-16	0.54	<1	<1	0.19	<2			
			6-Jul-16	0.61	<1	<1	0.17	2			
			20-Jul-16	0.57	<1	<1	0.18	<2			
			3-Aug-16	0.66	<1	<1	0.23	2			
			17-Aug-16	0.65	<1	<1	0.09	4			
BUR-593K	GRAB	3300 Blk Lakecity	31-Aug-16	0.69	<1	<1	0.13	<2			
			14-Sep-16	0.53	<1	<1	0.11	<2			
			29-Sep-16	0.52	<1	<1	0.23	<2			
			12-Oct-16	1.04	<1	<1	0.16	2			
			26-Oct-16	0.65	<1	<1	0.11	<2			
			9-Nov-16	0.61	<1	<1	0.13	<2			
			23-Nov-16	0.39	<1	<1	0.11	<2			
			7-Dec-16	0.55	<1	<1	0.13	<2			
			21-Dec-16	0.76	<1	<1	0.15	<2			
		6-Jan-16	0.81	<1	<1	0.08	<2				
			20-Jan-16	0.81	<1	<1	0.08	<2			
			3-Feb-16	0.96	<1	<1	0.1	LA			
			17-Feb-16	0.87	<1	<1	0.09	<2			
			2-Mar-16	0.8	<1	<1	0.1	<2			
			16-Mar-16	0.82	<1	<1	0.08	2			
			30-Mar-16	0.89	<1	<1	0.13	<2			
			13-Apr-16	0.9	<1	<1	0.11	<2			
			27-Apr-16	0.78	<1	<1	0.15	<2			
BUR-594K	GRAB	9000 Blk Centaurus Circle	12-May-16	0.75	<1	<1	0.32	<2			
			25-May-16	0.88	<1	<1	0.12	<2			
			8-Jun-16	0.87	<1	<1	0.1	<2			
			22-Jun-16	0.71	<1	<1	0.26	<2			
			6-Jul-16	0.75	<1	<1	0.26	<2			
			20-Jul-16	0.7	<1	<1	0.14	2			
			3-Aug-16	0.9	<1	<1	0.23	<2			
			17-Aug-16	0.7	<1	<1	0.11	<2			
			31-Aug-16	0.55	<1	<1	0.16	<2			
			14-Sep-16	0.7	<1	<1	0.15	<2			

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			29-Sep-16	0.73	<1	<1	0.19	<2		
			12-Oct-16	0.65	<1	<1	0.34	2		
			26-Oct-16	1	<1	<1	0.1	<2		
BUR-594K	GRAB	9000 Blk Centaurus Circle	9-Nov-16	0.76	<1	<1	0.11	<2		
			23-Nov-16	0.33	<1	<1	0.2	2		
			7-Dec-16	0.54	<1	<1	0.15	<2		
			21-Dec-16	0.97	<1	<1	0.1	<2		
			6-Jan-16	0.77	<1	<1	0.09	<2		
			20-Jan-16	0.8	<1	<1	0.11	[Plate spreading error] LA		
			3-Feb-16	0.84	<1	<1	0.11	LA		
			17-Feb-16	0.86	<1	<1	0.1	<2		
			2-Mar-16	0.9	<1	<1	0.13	<2		
			16-Mar-16	0.88	<1	<1	0.08	<2		
			30-Mar-16	0.8	<1	<1	0.16	<2		
			13-Apr-16	0.82	<1	<1	0.09	2		
			27-Apr-16	0.65	<1	<1	0.14	<2		
			12-May-16	0.64	<1	<1	0.27	<2		
			25-May-16	0.74	<1	<1	0.18	<2		
			8-Jun-16	0.53	<1	<1	0.16	<2		
BUR-595K	GRAB	Rochester St	22-Jun-16	0.65	<1	<1	0.22	<2		
BOI-333K	UNAD	Nochester St.	6-Jul-16	0.61	<1	<1	0.24	2		
			20-Jul-16	0.7	<1	<1	0.17	8		
			3-Aug-16	0.8	<1	<1	0.19	2		
			17-Aug-16	0.73	<1	<1	0.11	2		
			31-Aug-16	0.69	<1	<1	0.12	<2		
			14-Sep-16	0.68	<1	<1	0.18	<2		
			29-Sep-16	0.61	<1	<1	0.25	<2		
			12-Oct-16	0.6	<1	<1	0.27	<2		
			26-Oct-16	1.01	<1	<1	0.11	<2		
			9-Nov-16	0.79	<1	<1	0.13	<2		
			23-Nov-16	0.63	<1	<1	0.15	<2		
			7-Dec-16	0.54	<1	<1	0.11	<2		
			21-Dec-16	0.78	<1	<1	0.11	<2		
			14-Jan-16	0.72	<1	<1	0.09	<2		
BUR-596K	GRAB	561 Duthie	26-Jan-16	0.76	<1	<1	0.12	<2		
			9-Feb-16	0.73	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	<1	0.28	<2		

Drinking Water Reports By Station - City of Burnaby Sites (2016)											
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls			
			23-Feb-16	0.76	<1	<1	0.11	<2			
			8-Mar-16	0.7	<1	<1	0.12	<2			
			22-Mar-16	0.75	<1	<1	0.14	<2			
			5-Apr-16	0.78	<1	<1	0.13	2			
			19-Apr-16	0.82	<1	<1	0.14	<2			
			3-May-16	0.74	<1	<1	0.12	<2			
			17-May-16	0.74	<1	<1	0.17	<2			
			31-May-16	0.88	<1	<1	0.13	<2			
			14-Jun-16	0.88	1	<1	0.12	2			
			28-Jun-16	0.78	<1	<1	0.36	2			
			13-Jul-16	0.69	<1	<1	0.1	2			
BUR-596K	GRAB	561 Duthie	26-Jul-16	0.84	<1	<1	0.2	2			
			9-Aug-16	0.7	<1	<1	0.14	4			
			23-Aug-16	0.77	<1	<1	0.12	6			
			6-Sep-16	0.75	<1	<1	0.14	2			
			20-Sep-16	0.76	<1	<1	0.11	22			
			5-Oct-16	0.82	<1	<1	0.14	2			
			18-Oct-16	0.59	<1	<1	0.23	2			
			1-Nov-16	0.68	<1	<1	0.09	4			
			15-Nov-16	0.65	<1	<1	0.09	8			
			29-Nov-16	0.54	<1	<1	0.15	122 $36$ 2 $.1$ 2 $.2$ 2 $14$ 4 $12$ 6 $14$ 2 $14$ 2 $14$ 2 $14$ 2 $23$ 2 $09$ 4 $09$ 8 $15$ <2			
			13-Dec-16	0.65	<1	<1	0.18	<2			
			28-Dec-16	0.91	<1	<1	0.24	NA			
			14-Jan-16	0.67	<1	<1	0.14	<2			
			26-Jan-16	0.51	<1	<1	0.36	<2			
			9-Feb-16	0.66	<1	<1	0.2	<2			
			23-Feb-16	0.77	<1	<1	0.15	<2			
			8-Mar-16	0.79	<1	<1	0.25	<2			
			22-Mar-16	0.79	<1	<1	0.18	<2			
BUR-597K	GRAB	25 m. N. of Univ. High St. & Univ. Cresc.	5-Apr-16	0.7	<1	<1	0.29	2			
			19-Apr-16	0.72	<1	<1	0.32	<2			
			3-May-16	0.58	<1	<1	0.24	<2			
			17-May-16	0.74	<1	<1	0.22	<2			
			31-May-16	0.73	<1	<1	0.19	<2			
			14-Jun-16	0.51	<1	<1	0.24	2			
			28-Jun-16	0.71	<1	<1	0.4	2			

	Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls			
			13-Jul-16	0.8	<1	<1	0.24	2			
			26-Jul-16	0.78	<1	<1	0.24	<2			
			9-Aug-16	0.71	<1	<1	0.14	2			
			23-Aug-16	0.6	<1	<1	0.28	<2			
			6-Sep-16	0.66	<1	<1	0.2	<2			
			20-Sep-16	0.67	<1	<1	0.68	4			
BUR-597K	GRAB	25 m. N. of Univ. High St. & Univ. Cresc.	5-Oct-16	0.57	<1	<1	0.23	<2			
			18-Oct-16	0.38	<1	<1	0.35	28			
			1-Nov-16	0.63	<1	<1	0.1	<2			
			15-Nov-16	0.83	<1	<1	0.13	<2			
			29-Nov-16	0.53	<1	<1	0.19	<2			
			13-Dec-16	0.63	<1	<1	0.19	<2			
			28-Dec-16	0.79	<1	<1	0.17	NA			
			6-Jan-16	0.58	<1	<1	0.15	<2			
			20-Jan-16	0.72	<1	<1	0.09	<2			
			3-Feb-16	0.74	<1	<1	0.11	LA			
			17-Feb-16	0.64	<1	<1	0.14	<2			
			2-Mar-16	0.52	<1	<1	0.25	<2			
			16-Mar-16	0.68	<1	<1	0.11	<2			
			30-Mar-16	0.77	<1	<1	0.14	<2			
			13-Apr-16	0.76	<1	<1	0.11	<2			
			27-Apr-16	0.58	<1	<1	0.13	<2			
			12-May-16	0.54	<1	<1	0.2	<2			
			25-May-16	0.6	<1	<1	0.12	2			
BUR-660K	GRAB	North Rd. across from Hume Park	8-Jun-16	0.73	<1	<1	0.13	2			
			22-Jun-16	0.55	<1	<1	0.26	<2			
			6-Jul-16	0.51	<1	<1	0.16	<2			
			20-Jul-16	0.47	<1	<1	0.15	16			
			3-Aug-16	0.58	<1	<1	0.17	4			
			17-Aug-16	0.63	<1	<1	0.09	20			
			31-Aug-16	0.75	<1	<1	0.15	22			
			14-Sep-16	0.58	<1	<1	0.11	28			
			29-Sep-16	0.55	<1	<1	0.22	22			
			12-Oct-16	0.49	<1	<1	0.17	8			
			26-Oct-16	0.75	<1	<1	0.11	<2			
			9-Nov-16	0.72	<1	<1	0.12	2			

Drinking Water Reports By Station - City of Burnaby Sites (2016)										
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			23-Nov-16	0.52	<1	<1	0.11	14		
BUR-660K	GRAB	North Rd. across from Hume Park	7-Dec-16	0.4	<1	<1	0.2	4		
			21-Dec-16	0.62	<1	<1	0.15	<2		
			5-Jan-16	0.74	<1	<1	0.09	2		
			19-Jan-16	0.78	<1	<1	0.11	<2		
			2-Feb-16	0.43	<1	<1	0.12	<2		
			16-Feb-16	0.79	<1	<1	0.1	<2		
			1-Mar-16	0.79	<1	<1	0.17	<2		
			15-Mar-16	0.69	<1	<1	0.11	2		
			29-Mar-16	0.8	<1	<1	0.11	<2		
RUR-661K			12-Apr-16	0.73	<1	<1	0.13	<2		
			26-Apr-16	0.85	<1	<1	0.12	<2		
			11-May-16	0.8	<1	<1	0.16	6		
			24-May-16	0.75	<1	<1	0.14	<2		
			7-Jun-16	0.77	<1	<1	0.3	<2		
	GRAB	5300 Kira Court	21-Jun-16	0.75	<1	<1	0.15	<2		
BON-001K	UNAD		5-Jul-16	0.7	<1	<1	0.35	<2		
			19-Jul-16	0.71	<1	<1	0.14	<2		
			2-Aug-16	0.72	<1	<1	0.13	<2		
			16-Aug-16	0.71	<1	<1	0.08	2		
			30-Aug-16	0.73	<1	<1	0.12	<2		
			13-Sep-16	0.67	<1	<1	0.14	2		
			28-Sep-16	0.62	<1	<1	0.23	<2		
			11-Oct-16	0.76	<1	<1	0.13	<2		
			25-Oct-16	0.84	<1	<1	0.19	<2		
			8-Nov-16	0.68	<1	<1	0.14	<2		
			22-Nov-16	0.54	<1	<1	0.14	<2		
			6-Dec-16	0.38	<1	<1	0.09	4		
			20-Dec-16	0.82	<1	<1	0.1	<2		
			14-Jan-16	0.78	<1	<1	0.08	[Contamination] LA		
			26-Jan-16	0.53	<1	<1	0.1	<2		
			9-Feb-16	0.79	<1	<1	0.14	<2		
BUR-668K	GRAB	1000 Blk Ayshire Dr.	23-Feb-16	0.8	<1	<1	0.15	<2		
			8-Mar-16	0.87	<1	<1	0.33	<2		
			22-Mar-16	0.89	<1	<1	0.12	<2		
			5-Apr-16	0.82	<1	<1	0.13	<2		
		Drinking Water Repo	rts By Stati	on - City c	of Burnaby S	Sites (2016)				
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Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls		
			19-Apr-16	0.81	<1	<1	0.14	<2		
			3-May-16	0.76	<1	<1	0.2	<2		
			17-May-16	0.72	<1	<1	0.17	[Contaminated plate.] NA		
			31-May-16	0.85	<1	<1	0.13	<2		
			14-Jun-16	0.8	<1	<1	0.13	<2		
			28-Jun-16	0.69	<1	<1	0.19	<2		
			13-Jul-16	0.79	<1	<1	0.14	<2		
			26-Jul-16	0.7	<1	<1	0.34	<2		
			9-Aug-16	0.74	<1	<1	0.09	<2		
BUR-668K	GRAB	1000 Blk Ayshire Dr.	23-Aug-16	0.82	<1	<1	0.19	<2		
			6-Sep-16	0.67	<1	<1	0.11	<2		
			20-Sep-16	0.67	<1	<1	0.19	<2		
			5-Oct-16	0.63	<1	<1	0.12	<2		
			18-Oct-16	0.69	<1	<1	0.33	<2		
			1-Nov-16	0.65	<1	<1	0.11	2		
			15-Nov-16	0.7	<1	<1	0.11	<2		
			29-Nov-16	0.48	<1	<1	0.14	<2		
			13-Dec-16	0.45	<1	<1	0.2	2		
			28-Dec-16	0.79	<1	<1	0.16	NA		
			6-Jan-16	0.75	<1	<1	0.12	6		
			20-Jan-16	0.78	<1	<1	0.14	2		
			3-Feb-16	0.7	<1	<1	0.12	LA		
			17-Feb-16	0.81	<1	<1	0.09	10		
			2-Mar-16	0.76	<1	<1	0.21	8		
			16-Mar-16	0.71	<1	<1	0.11	6		
			30-Mar-16	0.8	<1	<1	0.15	8		
			13-Apr-16	0.69	<1	<1	0.15	20		
BUR-669K	GRAB	Monarch & Gatenby (@ of 4405 Gatenby)	27-Apr-16	0.62	<1	<1	0.41	100		
			12-May-16	0.61	<1	<1	0.52	44		
			25-May-16	0.69	<1	<1	0.25	36		
			8-Jun-16	0.68	<1	<1	0.77	170		
			22-Jun-16	0.66	<1	<1	0.32	120		
			6-Jul-16	0.61	<1	<1	0.21	20		
			20-Jul-16	0.71	<1	<1	0.18	48		
			3-Aug-16	0.63	<1	<1	0.21	40		
		17-Aug-16	0.72	<1	<1	0.08	14			

	Drinking Water Reports By Station - City of Burnaby Sites (2016)							
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls
			31-Aug-16	0.59	<1	<1	0.15	66
			14-Sep-16	0.54	<1	<1	0.12	32
			29-Sep-16	0.61	<1	<1	0.23	2
			12-Oct-16	0.54	<1	<1	0.14	26
BUR-669K	GRAB	Monarch & Gatenby (@ of 4405 Gatenby)	26-Oct-16	0.64	<1	<1	0.11	24
			9-Nov-16	0.64	<1	<1	0.1	60
			23-Nov-16	0.48	<1	<1	0.13	<2
			7-Dec-16	0.55	<1	<1	0.13	6
			21-Dec-16	0.65	<1	<1	0.15	2
			15-Jan-16	0.77	<1	<1	0.14	2
			27-Jan-16	0.45	<1	<1	0.11	<2
			10-Feb-16	0.81	<1	<1	0.12	<2
			24-Feb-16	0.78	<1	<1	0.14	<2
			9-Mar-16	0.73	<1	<1	0.1	<2
			23-Mar-16	0.77	<1	<1	0.17	<2
			6-Apr-16	0.81	<1	<1	0.12	2
			20-Apr-16	0.85	<1	<1	0.26	<2
			4-May-16	0.78	<1	<1	0.14	<2
		7400 Blk Mulberry Place	18-May-16	0.73	<1	<1	0.13	<2
			1-Jun-16	0.59	<1	<1	0.21	<2
			15-Jun-16	0.77	<1	<1	0.22	2
BUR-800K	GRAB		29-Jun-16	0.65	<1	<1	0.23	2
			12-Jul-16	0.67	<1	<1	0.13	4
			27-Jul-16	0.73	<1	<1	0.3	22
			10-Aug-16	0.62	<1	<1	0.16	4
			24-Aug-16	0.64	<1	<1	0.2	26
			7-Sep-16	0.55	<1	<1	0.25	8
			21-Sep-16	0.6	<1	<1	0.13	14
			4-Oct-16	0.59	<1	<1	0.19	40
			19-Oct-16	0.62	<1	<1	0.19	<2
			2-Nov-16	0.68	<1	<1	0.11	6
			16-Nov-16	0.59	<1	<1	0.29	<2
			30-Nov-16	0.53	<1	<1	0.21	8
			14-Dec-16	0.64	<1	<1	0.13	2
	CDAD	Near Vipond and McKay	5-Jan-16	0.87	<1	<1	0.1	<2
BUK-85UK	GKAB	меат утропа апа міскаў	19-Jan-16	0.84	<1	<1	0.11	<2

	Drinking Water Reports By Station - City of Burnaby Sites (2016)							
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls
			2-Feb-16	0.78	<1	<1	0.18	4
			16-Feb-16	0.84	<1	<1	0.13	<2
			1-Mar-16	0.9	<1	<1	0.16	<2
			15-Mar-16	0.79	<1	<1	0.14	<2
			29-Mar-16	1.8	<1	<1	0.09	<2
			12-Apr-16	0.87	<1	<1	0.15	<2
			26-Apr-16	0.89	<1	<1	0.3	<2
			11-May-16	0.94	<1	<1	0.34	2
			24-May-16	0.76	<1	<1	0.39	<2
			7-Jun-16	0.84	<1	<1	0.44	2
			21-Jun-16	0.91	<1	<1	0.32	<2
	CDAD	Near Vipond and McKay	5-Jul-16	0.89	<1	<1	0.34	2
BUR-05UK	GRAD		19-Jul-16	0.99	<1	<1	0.39	<2
			2-Aug-16	0.82	<1	<1	0.2	<2
			16-Aug-16	0.84	<1	<1	0.19	<2
			30-Aug-16	0.89	<1	<1	0.33	<2
			13-Sep-16	0.75	<1	<1	0.33	<2
			28-Sep-16	0.95	<1	<1	0.34	2
			11-Oct-16	0.89	<1	<1	0.24	<2
			25-Oct-16	0.97	<1	<1	0.15	2
			8-Nov-16	0.79	<1	<1	1	2
			22-Nov-16	0.72	<1	<1	0.36	<2
			6-Dec-16	0.4	<1	<1	0.15	<2
			20-Dec-16	0.91	<1	<1	0.18	<2
			5-Jan-16	0.54	<1	<1	0.1	<2
			19-Jan-16	0.52	<1	<1	0.11	<2
			2-Feb-16	0.55	<1	<1	0.11	<2
			16-Feb-16	0.59	<1	<1	0.2	<2
			1-Mar-16	0.62	<1	<1	0.14	<2
BUR-851K	GRAB	9225 Holmes St.	15-Mar-16	0.69	<1	<1	0.16	<2
	UNAB		29-Mar-16	0.72	<1	<1	0.09	<2
			12-Apr-16	0.86	<1	<1	0.1	<2
			26-Apr-16	0.61	<1	<1	0.21	<2
			11-May-16	0.65	<1	<1	0.2	<2
			24-May-16	0.52	<1	<1	0.29	2
			7-Jun-16	0.55	<1	<1	0.34	<2

	Drinking Water Reports By Station - City of Burnaby Sites (2016)							
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls
			21-Jun-16	0.81	<1	<1	0.3	<2
			5-Jul-16	0.35	<1	<1	0.19	<2
			19-Jul-16	0.28	<1	<1	0.23	<2
			2-Aug-16	0.57	<1	<1	0.12	<2
			16-Aug-16	0.39	<1	<1	0.07	<2
			30-Aug-16	0.43	<1	<1	0.17	<2
	CDAD	022E Holmos St	13-Sep-16	0.39	<1	<1	0.21	<2
DUK-05UK	GRAD	9225 Holmes St.	28-Sep-16	0.31	<1	<1	0.27	<2
			11-Oct-16	0.31	<1	<1	0.19	<2
			25-Oct-16	0.35	<1	<1	0.16	<2
			8-Nov-16	0.43	<1	<1	0.17	<2
			22-Nov-16	0.21	<1	<1	0.17	2
			6-Dec-16	0.26	<1	<1	0.08	<2
			20-Dec-16	0.52	<1	<1	0.12	<2
			14-Jan-16	0.83	<1	<1	0.09	<2
			26-Jan-16	0.85	<1	<1	0.1	<2
			9-Feb-16	0.83	<1	<1	0.12	<2
			23-Feb-16	0.77	<1	<1	0.1	<2
			8-Mar-16	0.91	<1	<1	0.21	<2
			22-Mar-16	0.83	<1	<1	0.23	<2
			5-Apr-16	0.89	<1	<1	0.13	<2
			19-Apr-16	0.85	<1	<1	0.15	<2
			3-May-16	0.8	<1	<1	0.17	2
			17-May-16	0.83	<1	<1	0.14	<2
BUR-852K	GRAB	West of 7027 Gibson	31-May-16	0.78	<1	<1	0.11	<2
	<b>C</b>		14-Jun-16	0.86	<1	<1	0.16	4
			28-Jun-16	0.8	<1	<1	0.2	<2
			13-Jul-16	0.91	<1	<1	0.17	<2
			26-Jul-16	0.77	<1	<1	0.2	<2
			9-Aug-16	0.7	<1	<1	0.1	2
			23-Aug-16	0.73	<1	<1	0.15	2
			6-Sep-16	0.75	<1	<1	0.11	6
			20-Sep-16	0.79	<1	<1	0.15	14
			5-Oct-16	0.77	<1	<1	0.12	2
			18-Oct-16	0.64	<1	<1	0.12	<2
			1-Nov-16	0.71	<1	<1	0.1	6

	Drinking Water Reports By Station - City of Burnaby Sites (2016)							
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls
			15-Nov-16	0.63	<1	<1	0.1	4
	CDAD	West of 7027 Cibson	29-Nov-16	0.58	<1	<1	0.13	<2
BUR-052K	GRAD	West of 7027 Glosoff	13-Dec-16	0.6	<1	<1	0.35	2
			28-Dec-16	0.93	<1	<1	0.52	NA
			14-Jan-16	0.87	<1	<1	0.07	2
			26-Jan-16	0.5	<1	<1	0.11	<2
			9-Feb-16	0.96	<1	<1	0.24	<2
			23-Feb-16	0.89	<1	<1	0.11	<2
			8-Mar-16	0.85	<1	<1	0.12	<2
			22-Mar-16	0.85	<1	<1	0.15	<2
			5-Apr-16	1	<1	<1	0.13	<2
			19-Apr-16	0.85	<1	<1	0.13	<2
			3-May-16	0.84	<1	<1	0.14	<2
			17-May-16	0.87	<1	<1	0.2	<2
			31-May-16	0.65	<1	<1	0.23	<2
			14-Jun-16	0.87	<1	<1	0.16	<2
	GRAR	1521 Sporling	28-Jun-16	0.84	<1	<1	0.34	<2
BOI-833K	UNAD	1991 Shering	13-Jul-16	0.78	<1	<1	0.09	<2
			26-Jul-16	0.97	<1	<1	0.2	<2
			9-Aug-16	0.86	<1	<1	0.09	<2
			23-Aug-16	0.73	<1	<1	0.15	<2
			6-Sep-16	0.8	<1	<1	0.16	4
			20-Sep-16	0.73	<1	<1	0.28	<2
			5-Oct-16	0.73	<1	<1	0.12	<2
			18-Oct-16	0.75	<1	<1	0.8	<2
			1-Nov-16	0.85	<1	<1	0.08	<2
			15-Nov-16	0.7	<1	<1	0.17	<2
			29-Nov-16	0.64	<1	<1	0.1	<2
			13-Dec-16	0.44	<1	<1	0.12	<2
			28-Dec-16	0.94	<1	<1	0.14	NA
			15-Jan-16	0.66	<1	<1	0.18	2
			27-Jan-16	0.85	<1	<1	0.11	<2
BUR-854K	GRAB	5569 Carson	10-Feb-16	0.86	<1	<1	0.1	<2
501 054N			24-Feb-16	0.69	<1	<1	0.24	<2
			9-Mar-16	0.73	<1	<1	0.25	<2
			23-Mar-16	0.79	<1	<1	0.24	<2

		Drinking Water Repo	rts By Stati	on - City o	of Burnaby S	Sites (2016)		
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls
			6-Apr-16	0.73	<1	<1	0.16	<2
			20-Apr-16	0.71	<1	<1	0.31	<2
			4-May-16	0.77	<1	<1	0.14	<2
			18-May-16	0.75	<1	<1	0.34	<2
			1-Jun-16	0.49	<1	<1	0.37	<2
			15-Jun-16	0.75	<1	<1	0.27	<2
			29-Jun-16	0.87	<1	<1	0.35	<2
			12-Jul-16	0.68	<1	<1	0.23	<2
			27-Jul-16	0.72	<1	<1	0.27	<2
BUR-854K	GRAB	5569 Carson	10-Aug-16	0.72	<1	<1	0.19	<2
			24-Aug-16	0.82	<1	<1	0.41	<2
			7-Sep-16	0.75	<1	<1	0.2	<2
			21-Sep-16	0.74	<1	<1	0.24	<2
			4-Oct-16	1	<1	<1	0.94	<2
			19-Oct-16	0.67	<1	<1	0.19	2
			2-Nov-16	0.76	<1	<1	0.12	<2
			16-Nov-16	0.57	<1	<1	0.22	<2
			30-Nov-16	0.59	<1	<1	0.17	<2
			14-Dec-16	0.62	<1	<1	0.11	<2
			6-Jan-16	0.81	<1	<1	0.1	<2
			20-Jan-16	0.79	<1	<1	0.09	<2
			3-Feb-16	0.98	<1	<1	0.09	LA
			17-Feb-16	0.86	<1	<1	0.11	<2
			2-Mar-16	0.95	<1	<1	0.11	2
			16-Mar-16	0.85	<1	<1	0.1	<2
			30-Mar-16	0.88	<1	<1	0.28	<2
			13-Apr-16	0.74	<1	<1	0.12	2
BUR-855K	GRAB	5009 Manor	27-Apr-16	0.9	<1	<1	0.14	8
			12-May-16	0.68	<1	<1	0.35	22
			25-May-16	0.81	<1	<1	0.27	6
			8-Jun-16	1.08	<1	<1	0.17	38
			22-Jun-16	0.79	<1	<1	0.18	36
			6-Jul-16	1.01	<1	<1	0.15	38
			20-Jul-16	0.85	<1	<1	0.38	100
			3-Aug-16	0.82	<1	<1	0.17	52
			17-Aug-16	0.87	<1	<1	0.12	52

	Drinking Water Reports By Station - City of Burnaby Sites (2016)							
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls
			31-Aug-16	0.98	<1	<1	0.14	20
			14-Sep-16	0.91	<1	<1	0.1	42
			29-Sep-16	1.48	<1	<1	0.2	54
			12-Oct-16	0.93	<1	<1	0.14	74
BUR-855K	GRAB	5009 Manor	26-Oct-16	0.87	<1	<1	0.11	38
			9-Nov-16	0.69	<1	<1	0.09	30
			23-Nov-16	0.77	<1	<1	0.1	<2
			7-Dec-16	0.73	<1	<1	0.11	<2
			21-Dec-16	0.93	<1	<1	0.15	<2
			14-Jan-16	0.19	<1	<1	0.14	<2
			26-Jan-16	0.33	<1	<1	0.14	<2
			9-Feb-16	0.27	<1	<1	0.24	<2
			23-Feb-16	0.34	<1	<1	0.22	2
		Centennial Reservoir	8-Mar-16	0.62	<1	<1	0.18	<2
			22-Mar-16	0.3	<1	<1	0.15	2
			5-Apr-16	0.35	<1	<1	0.2	<2
			19-Apr-16	0.34	<1	<1	0.19	<2
			3-May-16	0.35	<1	<1	0.19	<2
			17-May-16	0.34	<1	<1	0.19	<2
			31-May-16	0.23	<1	<1	0.19	<2
			14-Jun-16	0.22	<1	<1	0.17	2
	CDAD		28-Jun-16	0.22	<1	<1	0.24	50
BUK-830K	GRAD		13-Jul-16	0.16	<1	<1	0.24	2
			26-Jul-16	0.2	<1	<1	0.25	<2
			9-Aug-16	0.19	<1	<1	0.12	2
			23-Aug-16	0.32	<1	<1	0.37	2
			6-Sep-16	0.19	<1	<1	0.14	<2
			20-Sep-16	0.29	<1	<1	0.28	10
			5-Oct-16	0.27	1	<1	0.22	94
			18-Oct-16	0.21	<1	<1	0.23	<2
			1-Nov-16	0.05	<1	<1	0.19	<2
			15-Nov-16	0.05	<1	<1	0.2	<2
			29-Nov-16	0.05	<1	<1	0.2	<2
			13-Dec-16	0.06	<1	<1	0.18	58
			28-Dec-16	0.31	<1	<1	0.41	NA
BUR-857K	GRAB	Curtis Reservoir	14-Jan-16	0.79	<1	<1	0.08	<2

		Drinking Water Repo	rts By Stati	on - City c	of Burnaby S	Sites (2016)		
Sampling point	Sample type	Sample reported name	Sampled date	Chlorine Free mg/L	Total Coliform MF/100mLs	Ecoli MF/100mLs	Turbidity NTU	HPC CFU/mls
			26-Jan-16	0.29	<1	<1	0.15	<2
			9-Feb-16	0.79	<1	<1	0.12	2
			23-Feb-16	0.8	<1	<1	0.18	2
			8-Mar-16	0.81	<1	<1	0.15	<2
			22-Mar-16	0.82	<1	<1	0.12	<2
			5-Apr-16	0.84	<1	<1	0.1	<2
		Curtis Reservoir	19-Apr-16	0.82	<1	<1	0.1	<2
	GRAB		3-May-16	0.72	<1	<1	0.16	<2
			17-May-16	0.8	<1	<1	0.15	<2
			31-May-16	0.76	<1	<1	0.25	<2
			14-Jun-16	0.82	<1	<1	0.2	<2
			28-Jun-16	0.75	<1	<1	0.15	<2
BUR-857K			13-Jul-16	0.71	<1	<1	0.11	<2
			26-Jul-16	0.83	<1	<1	0.2	<2
			9-Aug-16	0.76	<1	<1	0.13	<2
			23-Aug-16	0.76	<1	<1	0.2	<2
			6-Sep-16	0.87	<1	<1	0.11	<2
			20-Sep-16	0.73	<1	<1	0.16	<2
			5-Oct-16	0.78	<1	<1	0.12	<2
			18-Oct-16	0.65	<1	<1	0.21	<2
			1-Nov-16	0.61	<1	<1	0.13	<2
			15-Nov-16	0.7	<1	<1	0.22	2
			29-Nov-16	0.4	<1	<1	0.27	<2
			13-Dec-16	0.56	<1	<1	0.16	<2
			28-Dec-16	0.94	<1	<1	0.19	NA



APPENDIX B: Metro Vancouver Water Quality Control Annual Report for 2016



# **2016 Annual Drinking Water Quality Report**

# Water

# **Greater Vancouver Water District 2016 Quality Control Annual Report**

# Volume 1



20402370



#### Foreword

This report has been produced to meet the requirement for water suppliers to produce an annual report on water quality as per the BC Drinking Water Protection Regulation and as described in the Water Quality Monitoring and Reporting Plan. Volume I of the annual report uses data summaries and graphics to highlight the water quality issues and Volume II provides Chemical and Physical Monitoring results (the actual data). Both Volume I and Volume II will be available on the Metro Vancouver website.

This report discusses numerous water quality parameters with potential health effects. For detailed information on drinking water health effects, the following web sites are suggested:

Health Canada: http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/index-eng.php US EPA: http://www.epa.gov/safewater/mcl.html World Health Organization: http://www.who.int/water\_sanitation\_health/publications/2011/dwg\_guidelines/en/index.html

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#### 1 EXECUTIVE SUMMARY

- Source Water Quality
  - In 2016, the turbidity levels of the delivered water easily met the requirements of the Guidelines for Canadian Drinking Water Quality (GCDWQ).
  - The Capilano supply was in service for the entire year. Heavy rainfall events in early January resulted in Capilano source water turbidity peaking at 35 Nephelometric Turbidity Unit (NTU). Even with the higher turbidity, the delivered filtered Capilano water was less than 0.1 NTU for the entire year.
  - The Seymour supply was in service for the entire year and source water turbidity entering the SCFP, was generally less than 1 NTU throughout the year except during the heavy rainfall events in January which resulted in the source water turbidity peaking at 5 NTU. Even with the higher turbidity, the delivered filtered Seymour water was less than 0.1 NTU.
  - The Coquitlam supply was in service for the entire year. The unfiltered Coquitlam source water was less than 1 NTU for the entire year.
  - The microbiological quality of the three source waters was excellent in 2016. The levels
    of bacteria and protozoa detected were low and indicative of high quality source water.
    All three sources easily met the bacteriological requirements for avoiding filtration outlined
    in the Turbidity section of the GCDWQ.
  - Results of the analyses of the source water for herbicides, pesticides, and volatile organic compounds and radionuclides were all found to be below the recommended limits for these substances as listed in the GCDWQ.
- Water Treatment
  - The Seymour-Capilano Filtration Plant provided full filtration and the plant performance, as measured by the quality of the delivered water, was excellent in 2016. The daily average turbidity of water leaving the clearwells to enter the GVWD transmission system was less than 0.07 NTU in 2016.
  - Turbidity levels for Individual Filter Effluent (IFE) met the turbidity requirements of the GCDWQ except for two minor excursions in February 2016. On February 23, 2016 two IFE exceeded 1 NTU for 15 minutes and 8 minutes, respectively.
  - Filtration consistently removed iron, colour and organics from the Capilano and Seymour source water.
  - Levels of total aluminum in filtered water were consistently below the GCDWQ operational guideline value of 0.2 mg/L for direct filtration plants using aluminum-based coagulants. The maximum value for 2016 was 0.05 mg/L.
  - The secondary disinfection stations boosted chlorine as required.

- Distribution System Water Quality
  - Bacteriological water quality was excellent in the GVWD transmission mains. There was no *E. coli* detected in any of the samples collected.
  - Bacteriological water quality was excellent in the GVWD in-system storage reservoirs. There was no *E. coli* detected in any of the samples collected.
  - Bacteriological water quality was excellent in the distribution systems of the member municipalities. Of approximately 20,000 municipal samples collected for testing in 2016 a high percentage (99.8%) were free of total coliforms which was similar to 2015 (99.8%). No *E. coli* positive samples were detected in 2016.
  - The running average levels of the Trihalomethane group of chlorine disinfection byproducts detected in the delivered water in the GVWD were well below the Maximum Acceptable Concentration (MAC) in the GCDWQ of 100µg/L (0.1 mg/L). The running average levels for the Haloacetic acid group of chlorine disinfection by-products were below the GCDWQ MAC of 80µg/L (0.08 mg/L).

# 2 ACRONYMS

AO	Aesthetic Objective (characteristics such as taste, colour, appearance, temperature that are not health related)
BCDWPR	British Columbia Drinking Water Protection Regulation
BTEX	Benzene, Ethylbenzene, Toluene, Xylene
CALA	Canadian Association for Laboratory Accreditation
BHT	Capilano Break Head Tank
CRWPS	Capilano Raw Water Pump Station
CFE	Combined Filter Effluent
CFU	Colony Forming Units
CTD	Conductivity/Temperature/Depth
D.S.	Distribution System
DBP	Disinfection By-product
DOC	Dissolved Organic Carbon
DWTP	Drinking Water Treatment Program
E. coli	Escherichia coli
ERF	Energy Recovery Facility
EPA	Environmental Protection Agency (USA)
ESWTR	Enhanced Surface Water Treatment Rule (USA)
GCDWQ	Guidelines for Canadian Drinking Water Quality
GVWD	Greater Vancouver Water District
HAA	Haloacetic Acid
HPC	Heterotrophic Plate Count
IFE	Individual Filter Effluent
IMAC	Interim Maximum Acceptable Concentration
MAC	Maximum Acceptable Concentration
MCL	Maximum Contaminant Level
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
mg/L	Milligram per litre (0.001 g/L)
μg/L	Microgram per litre (0.000001 g/L)
mL	Milliliter
MF	Membrane Filtration
mJ/cm <sup>2</sup>	Millijoule per centimeter squared
MPN	Most Probable Number
MV	Metro Vancouver
N/A	Not Available
NTU	Nephelometric Turbidity Unit
PAH	Polynuclear Aromatic Hydrocarbon
рН	Measure of acidity or basicity of water; pH 7 is neutral
ppb	Parts per Billion (Equivalent of microgram per litre)
ppm	Parts per Million (Equivalent of milligram per litre)
RCW	Recycled Clarified Water
RWT	Raw Water Tunnel
SCADA	Supervisory Control and Data Acquisition
SCFP	Seymour-Capilano Filtration Plant
T.S.	Transmission System
THAA₅	Total Haloacetic₅ Acids
THM	Trihalomethane
TOC	Total Organic Carbon
TTHM	Total Trihalomethane
TWT	Treated Water Tunnel
UV <sub>254</sub>	Ultraviolet Absorbance at 254 nm
WHO	World Health Organization
WQMRP	Water Quality Monitoring and Reporting Plan

#### 3 WATER SAMPLING AND TESTING PROGRAM

Water Type	Parameter	Frequency
Untreated,	Total coliform and <i>E. coli</i>	Daily
source water	Turbidity	Daily
	Giardia and Cryptosporidium	Monthly at Capilano and Coquitlam
	Ammonia, colour, iron, organic carbon, pH	Weekly
	Alkalinity, chloride, calcium, hardness, magnesium, manganese, nitrate, nitrite, potassium, phosphate, sulphate	Monthly
	Aluminum, copper, sodium, total and suspended solids	Bi-monthly
	Trihalomethanes, haloacetic acids	Quarterly
	Antimony, arsenic, barium, boron, cadmium, cyanide, chromium, lead, mercury, nickel, phenols, selenium, silver, zinc	Semi-annually
	Pesticides and herbicides	Annually
	PAHs, BTEXs	Annually
	VOC	Annually
	Radioisotopes	Annually
Treated water	Total coliform and <i>E. coli</i>	Daily
	Turbidity	Daily
	Temperature	Daily
	Ammonia, colour, iron, organic carbon, pH, aluminum at SCFP	Weekly
	Aluminum, copper, sodium, total and suspended solids	Bi-monthly
	Trihalomethanes, haloacetic acids	Quarterly
	Antimony, arsenic, barium, boron, cadmium, cyanide, chromium, lead, mercury, nickel, phenols, selenium, silver, zinc	Semi-annually
Metro	Total coliform and <i>E. coli</i>	Weekly per site
Vancouver	Heterotrophic plate count	Weekly per site
water mains	Free chlorine	Weekly per site
	Trihalomethanes, haloacetic acids, pH	Quarterly at selected sites
	PAHs, BTEXs	Semi-annually at selected sites
Metro	Total coliform and <i>E. coli</i>	Weekly per site
Vancouver	Heterotrophic plate count	Weekly per site
Reservoirs	Free chlorine	Weekly per site
Municipal	Total coliform and <i>E. coli</i>	Weekly per site
Distribution	Heterotrophic plate count	Weekly per site
system sites	Free chlorine	Weekly per site
	Turbidity	Weekly per site
	Trihalomethanes, haloacetic acids, pH	Quarterly at selected sites

#### 4 SOURCE WATER QUALITY

The first barrier in place to protect the quality of the drinking water supply is the protection of the watershed to ensure the best quality source water. Source water monitoring provides ongoing confirmation that the barrier is effective, identifies seasonal changes and provides the monitoring information necessary to adjust the level of water treatment that is in place. Regular monitoring of the water sources is also a requirement of the Water Quality Monitoring and Reporting Plan (WQMRP).

#### 4.1 BACTERIOLOGICAL QUALITY OF THE SOURCE WATER

The bacteriological quality of the source water is an important indicator of the degree of contamination, and the treatment required to ensure a safe water supply. The Provincial Drinking Water Protection Regulation references the Canadian Guideline for Turbidity (October 2003) which stipulates the bacteriological quality of the source water in its criteria for the exemption of filtration as follows: Prior to the point where the disinfectant is applied, the number of *Escherichia coli (E. coli)* bacteria in the source water can exceed 20/100 mL (or, if *E. coli* data are not available, the number of total coliform bacteria can exceed 100/100 mL) in not more than 10% of the weekly samples from the previous 6 months.

Table 1 below summarizes *E. coli* data for all three Metro Vancouver water sources. The levels of *E. coli* for all three sources were below the 10% limit in the turbidity guideline.

Month	Capilano	Seymour	Coquitlam
Jan	3.8	6.6	7.2
Feb	0	0	0
Mar	0	0	0
Apr	0	0	0
May	0	0	0.55
Jun	0	0	0.55
Jul	0	0	0.55
Aug	0	0	0.55
Sep	0	0	2.2
Oct	2.2	3.3	2.2
Nov	2.2	3.3	1.6
Dec	2.2	3.4	1.7

# Table 1: Percent of samples in six months (current month plus five previous months) where number of E. coli /100 mL exceeded 20

Figure 1 shows the results of the analysis of the source water from 2012 to 2016 at all three intakes compared to the limits for source water bacterial levels in the 2003 turbidity guideline. As in the previous years, all three sources easily met the limit of not more than 10% exceeding 20 *E. coli*/100 mL. As was also the case in previous years, samples collected at the intakes in the fall and winter had the highest *E. coli* levels. These *E. coli* can be traced back to high levels at the main tributaries of the supply lakes and a first flush phenomenon after a period of dry weather.

#### Figure 1: Percent of samples exceeding 20 E. coli/100 mL at all three sources



Because of the protection of the watersheds from human sources of fecal waste, it is most likely that animals are the source of the *E. coli* detected in the watersheds.

#### 4.2 SOURCE WATER MONITORING FOR GIARDIA AND CRYPTOSPORIDIUM

Unfiltered surface water supplies have the potential of containing the protozoan pathogens *Giardia* and *Cryptosporidium*. Outbreaks of Giardiasis occurred in a number of locations in B.C. and Washington State in the late 1980s, and Metro Vancouver has been monitoring raw water and animal droppings for *Giardia* since 1987. Since 1992, Metro Vancouver has participated in a project with the Enhanced Water Testing Laboratory, University of British Columbia, to gather more information about the number and nature of the cysts found in the Greater Vancouver water supplies. The project involves collecting samples from the Capilano and Coquitlam supplies upstream of disinfection. Routine monitoring of Seymour source water was discontinued in 2011 because water treatment at the SCFP meets the disinfection requirements for both *Giardia* and *Cryptosporidium* in the GCDWQ. At the SCFP, monitoring for *Giardia* and *Cryptosporidium* has focused on the recycled water returning to the head of the plant and this monitoring has confirmed that the procedures in place effectively control the levels of *Giardia* and *Cryptosporidium* in the recycled wash water from the filters.

The results of the 2016 testing program are contained in the "Report to Metro Vancouver - *Giardia* and *Cryptosporidium* Study January - December, 2016" which was prepared by the BC Public Health Microbiology & Reference Laboratories, Environmental Microbiology, and can be found in Appendix 4. Six of 12 (50%) samples collected at Capilano and two of the 12 (17%) collected at Coquitlam were positive for *Giardia* (Table 2).

As discussed in the previous paragraph Seymour samples for 2016 are all process control samples and not Seymour source water as they were prior to 2011 (shown as N/A in the table).

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Capilano	64	52	49	73	50	75	50	18	18	50
Seymour	29	14	24	47	N/A	N/A	N/A	N/A	N/A	N/A
Coquitlam	27	54	27	53	51	50	23	8	0	17

 Table 2: Percentage of Water Samples Positive for Giardia

Three of 12 (25%) samples collected at Capilano were positive for *Cryptosporidium*, 0 of 12 (0%) were positive at Coquitlam. As discussed in the section on Giardia above, Seymour samples for 2016 are all process control samples and not Seymour source water as they were prior to 2011 (shown as N/A in the table).

 Table 3: Percentage of Water Samples Positive for Cryptosporidium

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Capilano	19	18	10	12	6	16	9	9	9	25
Seymour	0	2	0	0	N/A	N/A	N/A	N/A	N/A	N/A
Coquitlam	2	0	2	2	3	8	9	0	0	0

Year to year fluctuations are demonstrated for *Giardia* and Cryptosporidium and there has always been considerable variation in the results from year to year.

## 4.3 TURBIDITY

MV water sources have historically been susceptible to turbidity upsets due to high runoff from storms which can cause slides and stream scouring in the watersheds or from re-suspension of sediment from the edges of the lakes during periods of low water levels. The Health Canada 2003 guideline allows a utility to avoid filtration if the turbidity does not exceed the requirements (see next paragraph) and provided that a number of other provisions including source water protection and water treatment requirements are in place. Historically the turbidity levels on both the Capilano and Seymour sources would not meet these criteria therefore plans were developed to filter both supplies. Filtration of 100% of the Seymour supply began on January 15, 2010, and filtration and distribution of the Capilano supply through the Seymour transmission system commenced on February 25, 2015. Both the raw and treated water tunnels were fully operational on April 15, 2015.

Section 3.3 of the 2003 Guidelines for Canadian Drinking Water Quality Supporting Documentation titled "Turbidity, Criteria for Exclusion of Filtration in Waterworks Systems" contains the following requirement for the turbidity: "Average daily source water turbidity levels measured at equal intervals (at least every 4 hours), immediately prior to where the disinfectant is applied, are around 1.0 NTU but do not exceed 5.0 NTU for more than 2 days in a 12-month period." In the GVWD, the turbidity of source water is monitored upstream of disinfection using an in-line turbidity meter. The data is captured as 10 minute averages and is stored in the Supervisory Control and Data Acquisition (SCADA) system. These 10-minute average data points (144/day) have been averaged to produce a daily average turbidity which is shown in Figure 2.

Figure 2: 2016 Average Daily Turbidity of Source Water (from In-Line Readings)



Capilano and Seymour water was filtered so these source water criteria don't apply to the delivered water. Coquitlam (unfiltered) was in service for all of 2016.

#### 4.4 CHEMISTRY

4.4.1 Chemical and Physical Characteristics of the Source Water

The chemical and physical characteristics of the Metro Vancouver source water are summarized in Appendix 1 of this report; detailed analytical results are provided in Volume II. The results from the chemical and physical analyses of the source water in 2016 were similar to those for other years.

#### 4.4.2 Herbicides, Pesticides, Volatile Organic Compounds, Radioactivity, and Uranium

Analyses of the source water for a variety of organic compounds including all the compounds with Maximum Acceptable Concentrations (MACs) in the Guidelines for Canadian Drinking Water Quality is usually carried out on annual basis in accordance with the WQMRP. The results are contained in Appendix 2 of this report and in Volume II of the QC Annual Report. One constituent was detectable in the Capilano, Seymour, and Coquitlam sources and it was below the applicable Canadian Guideline health based limits (MAC); these levels are indicative of erosion of natural deposits, meaning the contribution to total radiation exposure from our drinking water is small, and typical of most areas.

#### 4.5 LIMNOLOGY

The Reservoir Water Quality Monitoring Program started in 2014 as a sampling and analysis structure for the limnology (chemical, physical and biological parameters) of the Capilano, Seymour and Coquitlam Reservoirs. Reservoir monitoring information is important in proactively managing our reservoirs as water quality could be impacted by environmental variability and climate change. This program will assist in ensuring that trends and possible changes are tracked with scientific data.

Water sampling of the source reservoirs is conducted between April and November of each year when biological productivity is highest.

Metro Vancouver employs the services of a limnological consultant to review the annual program data, look for changes and monitor long term trends. Results continue to confirm the three reservoirs remain in an ultra-oligotrophic state because of their low overall primary and secondary productivity. In fact, the rates of zooplankton production were the lowest reported among many lakes and reservoirs in British Columbia and elsewhere. This classification is highly desired for source water systems and indicates that GVWD reservoirs continue to support clean water naturally sustained by watershed and lacustrine processes. The results of the 2016 Reservoir Water Quality Monitoring Program can be found in Appendix 3.

Throughout North America there has been increased interest in blue-green algae in recent years, in particular Merismopedia sp. because of its ability to produce toxins that are collectively known as microcystins. While present in most water systems, the concentration of microcystins in Metro Vancouver reservoirs remain far below levels known to affect human health and far below the required reporting guidelines. Metro Vancouver will continue to monitor for microcystin-producing Merismopedia and will adjust the reservoir monitoring program as sampling technologies improve. This data can be used in models to help predict changes over time related to climatic and environmental characteristic changes and aid in making proactive decisions on ongoing reservoir management strategies.

#### 5 QUALITY CONTROL ASSESSMENT OF WATER TREATMENT

Water treatment is the second barrier (after source water protection) relied on to assure the quality of the water supply.

#### 5.1 CAPILANO SOURCE

Completion of the Twin Tunnels Project in 2015 successfully conclude Metro Vancouver's regional long-range water treatment enhancement plans which spanned more than ten years. Each tunnel is 3.8 metres in diameter, 7.1 kilometres long, and 160 to 640 meters below ground level, running beneath Grouse Mountain and Mount Fromme. The water from the Raw Water Tunnel (RWT) is filtered and treated alongside the Seymour source water. Both treated sources enter the Clearwell for further treatment before the blended water is distributed to the region. Blended treated water returns to Capilano through the Treated Water Tunnel (TWT) and provides high quality drinking water to the Capilano area while the remainder is distributed through the Seymour system.

In addition to the Twin Tunnels and the Seymour-Capilano Filtration Plant (SCFP), other components of the Seymour-Capilano Filtration Project include the Capilano Raw Water Pump Station (CRWPS), the Energy Recovery Facility (ERF), and the Capilano Break Head Tank (BHT), all adjacent to the Capilano Reservoir. The CRWPS houses 8 pumps used to pump Capilano source water through the RWT to the SCFP, which is at a higher elevation than the Capilano Reservoir. With the treated water returning through the TWT, excess pressure allows the ERF turbine to recover energy that partially offsets the power requirements of the CRWPS.

#### 5.2 SEYMOUR-CAPILANO FILTRATION PLANT

The Seymour-Capilano Filtration Plant (SCFP) is a chemically assisted direct filtration plant which uses poly aluminum chloride (PACI) as a coagulant with polymers to improve particle removal. These substances help aggregate particles to form a visible floc. The flocculated particles are removed by passing this water through a filter medium of anthracite and sand. The result is the production of filtered water which is then exposed to UV light as the water leaves the filter. Post UV filtered water has sodium hypochlorite (chlorine) and lime added before the water enters the clearwells. The West and East Clearwells are large water storage

reservoirs that store and allow controlled passage of water with some mixing or blending of the lime and chlorine that have been added. Clearwells allow sufficient retention or contact time with chlorine to provide any further disinfection required after filtration and UV. Carbon dioxide in solution is added to trim pH. After stabilization of the filtered water in the clearwells, the finished water is ready to enter the transmission system at the Seymour Treated Water Valve Chamber.

SCFP has been operational since December 2009 and the quality of the water produced has been excellent.

5.2.1 Filtration

As a result of treatment now in place on the Capilano and Seymour water sources there have been a number of changes in the characteristics of the delivered water. Some of these changes are visible, some not. The most obvious visible change in the water is the decrease in colour and increase in the clarity. There is a total loss of brown hue that can sometimes characterize Capilano and Seymour waters before filtration. This change in colour is because the natural components that cause the brown hue are removed in the filtration process. Suspended particles in water that cause light to scatter (turbidity) are also removed. The end product is water that is very clear. Due to the purity of the water it may have a slight bluish colour.

Figure 3 is a graph of the apparent colour of SCFP filtered water and Capilano and Seymour source waters for 2016. In late fall, during a storm event the apparent colour of the Seymour source water that was feeding the filtration plant looked brown and exceeded 50 ACU; after the removal of its natural brown colours through filtration, the colour of the filtered water that was delivered to the public was never greater than 3 ACU.



#### Figure 3: Apparent Colour Levels Before and After Filtration 2016

Figure 4 compares turbidity of the two source waters that feed the filtration plant to the turbidity level of the finished filtered water for 2016. Without filtration the Seymour source would have delivered water with an average daily turbidity greater than 1 NTU for 55 days and turbidity >10 NTU (visible as cloudy water) did not occur during the year. If the Capilano source had not been filtered and was delivered, in 2016 it would have exceeded 1 NTU on 152 days. Since both sources were filtered at SCFP, the maximum average daily turbidity of the delivered water was 0.09 NTU and the average was 0.06 NTU.



Figure 4: Average Daily Turbidity Levels Before and After Filtration 2016

Removal of turbidity in the source water improves the appearance of the water but it also has the benefit of removing certain types of pathogenic microorganisms that may be present in source water. At a minimum, properly run direct filtration plants such as SCFP will remove up to 2.5 log (one log is a 90% reduction) of *Cryptosporidium* and *Giardia* plus 1 log of viruses. To ensure this removal it is critical that the performance of each filter, determined by the turbidity of its effluent, is monitored on a continuous basis.

The GCDWQ (2012) states, "Where possible, filtration systems should be designed and operated to reduce turbidity levels as low as possible with a treated water turbidity target of less than 0.1 NTU at all times." If <0.1 NTU is not achievable, the treated water turbidity levels from individual filters (Individual Filter Effluent IFE):

"for chemically-assisted filtration, shall be less than or equal to 0.3 NTU in at least 95% of the measurements made, or at least 95% of the time for each calendar month, and shall not exceed 1.0 NTU at any time."

Ideally the turbidity from each individual filter would never exceed 0.1 NTU; however, there are rare occurrences of turbidity readings that exceed the ideal level. The turbidity performance of all twenty-four filters was measured by examining the percent of time that the turbidity of each individual filter effluent (IFE) met the turbidity guidelines of not greater than 1.0 NTU and at least 95% of time less than 0.3 NTU (Table 4).

Month	Occurrences of IFE Turbidity Greater than 1.0 NTU None allowed	Percent of Time IFE Turbidity Less than 0.3 NTU Minimum 95% allowed
Jan.	0	100%
Feb.	2	99.965%
Mar.	0	100%
Apr.	0	99.999%
Мау	0	99.999%
Jun.	0	100%
Jul.	0	100%
Aug.	0	100%
Sep.	0	100%
Oct.	0	100%
Nov.	0	100%
Dec.	0	100%

Table 4: Monthly Filter Effluent Turbidity Summary

A water treatment facility such as SCFP should be able to produce a filter effluent that is less than 0.1 NTU. Under normal operating conditions the turbidity of the filtered water at SCFP is less than 0.08 NTU.

In February 2016 the SCFP experienced problems relating to the Filter Aid Polymer (FAP) which led to turbidity issues on a number of filters on various days. On February 23, 2016, several filters had problems with turbidity and experienced two minor turbidity excursions which resulted in their individual filter turbidities being greater than 1 NTU. For one filter this lasted 15 minutes and for the other 8 minutes. As the turbidity increased, the intensity of the UV reactors treating the water automatically increased and chlorination and pH adjustment operated normally during this time. VCH was notified of this event.

The FAP problem originated with the product manufacturer and other utilities in North America experienced issues as well. Subsequent batches of the product received seems to have corrected the problems experienced in February.

All water that flows through the filters immediately passes through UV reactors. The intensity of the UV lamps automatically increases when there is an increase in turbidity of the water coming out of the filter. After UV, the water is chlorinated as it enters the clearwell, where more than 1 hour of contact time is provided. It is important to note that 99.965% of the water produced in February at SCFP met the 3 log Giardia and 3 log Cryptosporidium removal/inactivation requirement (99.9% removal).

#### 5.2.2 Ultraviolet Treatment

The effluent from each filter is treated with UV as the water exits the filter. UV treatment is effective in altering the DNA structure of *Cryptosporidium* and *Giardia* thus rendering oocysts

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and cysts of these parasites non-infectious. Other disinfectants, especially chlorine, are ineffective against Cryptosporidia oocysts. In the unlikely event of a breakthrough of Cryptosporidia oocysts, especially at the end of a filter run, UV light is present to render any potentially present parasites non-infectious. Oocysts are not able to proliferate inside the intestines of human hosts to cause illness after a sufficient dose of UV light. The target dose for UV to achieve 2 Log (99%) of *Cryptosporidium* and *Giardia* inactivation is 21mJ/cm2.

Under normal operating conditions two rows of lamps operating at 75% power provide sufficient UV to meet the dosage requirement for 2 log reduction of *Cryptosporidium* and *Giardia*.

Table 5 summarizes the performance of the SCFP UV system in 2016

Month	Percent of Monthly Volume UV ≥ 2 log Giardia Inactivation				
Jan.	99.97%				
Feb.	99.97%				
Mar.	99.94%				
Apr.	99.89%				
May	99.86%				
Jun.	99.99%				
Jul.	99.94%				
Aug.	99.90%				
Sep.	99.95%				
Oct.	99.95%				
Nov.	99.64%				
Dec.	99.95%				

 Table 5: Percent of Volume UV Dosage Met Requirements at SCFP

### 5.3 COQUITLAM WATER TREATMENT PLANT

The Coquitlam Ultraviolet (UV) Disinfection facility commenced full operation in June 2014. The Coquitlam UV facility provides for primary disinfection capability (3-log reduction) of *Cryptosporidium* and *Giardia*. Ozonation provides pre-treatment, and chlorination is used for secondary disinfection at the source as well as at secondary disinfection stations servicing Coquitlam water, to minimize bacterial regrowth in the distribution system. Ozonation and chlorination each provide 4-log virus inactivation. Soda ash is added for pH and alkalinity adjustment to combat corrosion.

Ozone helps remove micro-organisms from the water, reduces disinfection by-products and improves water clarity, which increases the efficiency of the subsequent UV process. The water is directed into eight ultraviolet units, each containing 40 ultraviolet lamps encased in protective sleeves. As water flows through the units, UV light emitted from the lamps passes through the water, and aids in achieving 3-log inactivation of chlorine-resistant micro-organisms, such as *Cryptosporidium* and *Giardia*. The US EPA requires that the UV disinfection process results in target *Cryptosporidium* and *Giardia* inactivation in at least 95%

of the treated water volume on a monthly basis (the US EPA standard is used because there isn't a similar Canadian standard).

Table 6 summarizes the performance of the COQ UV system in 2016.

<b>Table 6: Performance</b>	of Coc	quitlam P	Primary	Disinfection	Facilities

Facility	Performance	Discussion
Ozonation	Operated 99.9% of time	Acts as a pretreatment, enhancing the removal of organics and increasing the UVT making UV treatment more effective.
Ultraviolet	No loss of UV in 2016. 99.8 % of volume on spec	UV performance met US EPA requirements. (95% of monthly volume required)
Chlorination100% of water was chlorinated. Lowest dose w 0.22 mg/L for a short while due to flow stoppage.		This facility provides secondary disinfection except during a UV outage when it is used for primary disinfection.
	Upgrades are underway to convert from gaseous chlorine to sodium hypochlorite solution (SHS) and expected to complete in 2017.	If Coquitlam chlorination was needed as a primary disinfection facility, Cl₂ residual would be increased by 0.2 mg/L to partially offset the loss of UV treatment.

## Table 7: Percent of Volume UV Dosage Met Requirements at CWTP

Month	Percent of Monthly Volume⊔UV ≥ 3 log Giardia Inactivation Minimum 95% Required				
Jan.	99.874%				
Feb.	99.621%				
Mar.	99.850%				
Apr.	99.779%				
May	99.878%				
Jun.	99.910%				
Jul.	99.864%				
Aug.	99.572%				
Sep.	99.819%				
Oct.	99.875%				
Nov.	99.705%				
Dec.	99.910%				

#### 5.4 SECONDARY DISINFECTION

There are eight secondary disinfection stations operated by Metro Vancouver. The purpose of these stations is to increase the chlorine residual in the water flowing through the stations to meet a target residual based on a number of factors including source water turbidity, the amount of bacterial regrowth detected in the municipal distribution system samples and the chlorine demand in the water. With filtered water supplied, the rate of chlorine decay has been reduced to a level that the amount of chlorine required to maintain a residual in the distribution system is significantly lower. This has allowed reduction of the target chlorine dose leaving the secondary facilities (receiving filtered water) to between 0.6 to 0.8 mg/L. The secondary disinfection stations receiving the filtered water rarely have an incoming chlorine residual low enough to require boosting, thus the amount of sodium hypochlorite being used at these stations has been considerably reduced. Many secondary disinfection stations are running in stand-by mode when supplied with filtered water. When supplied with unfiltered Coquitlam water, the secondary disinfection stations activate to boost chlorine.

Facility	Performance*	Discussion
Clayton	Whalley/Clayton: 99.6% Jericho/Clayton: 99.5%	Supplied by Coquitlam source. No operational issues.
Chilco	99.2%	Supplied by SCFP water. No operational issues.
Pitt River	Haney Main No.2: 99.5% Haney Main No.3: 99.5%	Supplied by Coquitlam source. No operational issues.
Newton	100%	Primarily supplied by Coquitlam source but supplied by SCFP water since Oct 22,2016 No operational issues.
Kersland	99.4%	Supplied by SCFP water. No operational issues.
Central Park	South Burnaby Main No.1: 99.5% South Burnaby Main No.2: 99.5%	Primarily supplied by SCFP water. No operational issues.
Cape Horn	Coquitlam Main No.2: 99.5% Coquitlam Main No.3: 99.5%	Supplied by Coquitlam source. No operational issues.
Vancouver Heights	99.4%	Supplied by SCFP water. No operational issues.

#### **Table 8: Performance of Secondary Disinfection Facilities**

\*Percent of time that free chlorine residual in water leaving facility met target when operating.

#### 5.5 CORROSION CONTROL

Before 1998, the delivered water from all three sources had a pH lower than the aesthetic limit of the GCDWQ of pH 6.5 (the GCDWQ was changed in 2015 to 7.0 for pH). As part of the upgrade of the water treatment of the Seymour source water, a corrosion control facility using soda ash (sodium carbonate) was put into service at Rice Lake in 1998. A similar facility was added at Coquitlam in 2000 simultaneously with the ozonation facility. In early 2010 corrosion control for the Seymour source was moved to the SCFP. In the SCFP process, filtered water receives a lime/water slurry to raise its pH and boost its alkalinity before it enters the clearwells; it is finally adjusted with the addition of carbon dioxide gas (CO<sub>2</sub>).

Starting in 2015, Capilano water was treated at the SCFP and underwent the lime/CO<sub>2</sub> treatment process for pH and alkalinity adjustment. The average pH of the treated water from Capilano, Seymour and Coquitlam was 7.5 during 2016 and met the aesthetic objective.

Facility	Performance	Discussion
Seymour Capilano - Corrosion Control	pH ranged from 7.0 – 8.2	The annual average pH was 7.5.
Coquitlam -Corrosion Control	pH ranged from 6.2 – 9.3	The annual average pH was 7.6. The pH was <7.0 for 7 hours, 50 minutes in 2016.

#### Table 9: Performance of Corrosion Control Facilities

The chemical and physical characteristics of the Metro Vancouver treated water are summarized in Appendix 1 of this report; detailed analytical results are provided in Volume II.

#### 6 DISTRIBUTION SYSTEM WATER QUALITY

Schedule A of the BC Drinking Water Protection Regulation contains standards for the bacteriological quality of potable water in the province. There are three components of this standard that apply to large utilities such as the GVWD and its members.

- Part 1: no sample should be positive for *E. coli*
- **Part 2:** not more than 10% of the samples in a 30 day period should be positive for total coliform bacteria when more than 1 sample is collected
- **Part 3:** no sample should contain more than 10 total coliform bacteria per 100 mL

The BC Regulation does not contain any water standards other than the three limits for *E. coli* and total coliform bacteria. Information on the significance of the detection of these organisms can be found in the Guidelines for Canadian Drinking Water Quality - Supporting Documents.

"E. coli is a member of the total coliform group of bacteria and is the only member that is found exclusively in the faeces of humans and other animals. Its presence in water indicates not only recent faecal contamination of the water but also the possible presence of intestinal disease-causing bacteria, viruses, and protozoa." "The presence of total coliform bacteria in water in the distribution system (but not in water leaving the treatment plant) indicates that the distribution system may be vulnerable to contamination or may simply be experiencing bacterial regrowth." To summarize, the detection of an *E. coli* bacteria in a sample of treated water is an indication of a potentially serious risk. The detection of total coliform bacteria may indicate intrusion into the system or it may indicate that these bacteria are growing in the distribution system itself (regrowth).

The number of *E. coli* detected in both the GVWD and the municipal drinking water samples is typically very low – out of approximately 27,000 samples collected from the GVWD and municipal systems, analyzed in 2016, no samples were positive for *E. coli*. The detection of an *E. coli* triggers a protocol which involves immediate notification of health and municipal officials, re-sampling and a thorough investigation into the possible causes. Only 51 of the approximately 20,000 samples collected from the municipal distribution systems tested positive for total coliforms in 2016. The majority of the coliforms in the municipal system appeared in the warmer water months (65% in July through October) and at sites with a measurable free chlorine residual.

The most likely source of these organisms can be attributed to bacterial regrowth. The one fact that should be emphasized is that 99.8% of the samples in 2016 had no coliforms present – a good indicator of effective water treatment and good distribution water quality.

#### 6.1 MICROBIOLOGICAL WATER QUALITY IN THE GVWD SYSTEM

6.1.1 GVWD Water Mains

Over 3500 GVWD water main samples were collected and tested for the presence of indicator bacteria. The compliance of monitoring results from GVWD transmission mains with the criteria in the BC Drinking Water Protection Regulation is shown below in Figure 5. There were another 2000 samples collected from the chlorine evaluation stations and the 10-minute chlorine line at each source but these samples are not included in the calculations for compliance monitoring.

#### Figure 5: Bacteriological Quality of Water in GVWD Mains, 2016



In 2016 the percentage of samples positive for total coliform bacteria from the GVWD mains was very low, well below the 10% standard. Of the more than 3500 samples processed, only 21 samples tested positive for total coliforms and none of the samples were positive for *E. coli* bacteria.

6.1.2 GVWD Reservoirs

In 2016, over 1700 samples were collected from the 21 reservoirs and tanks that are located throughout the GVWD water system. No samples were positive for total coliforms. No sample from a reservoir was positive for *E. coli*.

The compliance of monitoring results from GVWD reservoirs with the criteria in the BC Drinking Water Protection Regulation is shown below in Figure 6.

#### Figure 6: Bacteriological Quality of Water in GVWD Reservoirs, 2016



Reservoir water quality is optimized by the use of secondary disinfection coupled with an active reservoir exercising program that includes a minimum of weekly monitoring of the chlorine residuals and bacteriology results which can result in changes to filling levels if necessary. Table 10 provides an overview of the status of the GVWD reservoirs. During certain times of the year, it is not possible to cycle reservoirs as much as would be desired due to operational constraints. Despite these constraints, water quality as determined by coliform bacteria was satisfactory in all reservoirs.

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## Table 10: Status of GVWD Reservoirs 2016

Reservoir	Average Free Chlorine (mg/L)				
(Capacity in Million Litres)	2013	2014	2015	2016	2016 Comments (if applicable)
Burnaby Mtn. Reservoir (14.1)	0.47	0.47	0.45	0.47	
Burnaby Tank (2.4)	0.51	0.50	0.50	0.55	Cleaned by divers in January.
Cape Horn Reservoir (42.2)	0.40	0.42	0.42	0.47	
Clayton Tank (7.3)	0.54	0.69	0.71	0.64	
Central Park (37.0)	0.50	0.55	0.58	0.52	
Glenmore Tanks (1.0)	0.53	0.52	0.62	0.65	Both cells were cleaned and disinfected in December.
Grandview Reservoir (14.3)	0.72	0.70	0.59	0.56	
Greenwood Reservoir (9.2)	0.59	0.55	0.60	0.62	Cleaned by divers in February.
Hellings Tank (4.4)	0.42	0.40	0.46	0.47	Seismic upgrades which began in 2015 were completed, and tank was cleaned, disinfected and returned to service in February.
Kennedy Reservoir (17.3)	0.48	0.47	0.49	0.49	
Kersland Reservoirs (78.7)	0.52	0.56	0.52	0.53	
Little Mountain Reservoirs (177.4)	0.66	0.70	0.66	0.66	
Maple Ridge Reservoir (24.2)	0.57	0.53	0.49	0.52	
Newton Reservoirs (33.6)	0.42	0.42	0.45	0.54	
Pebble Hill Reservoirs (44.8)	0.48	0.42	0.50	0.60	Cells 1 was in use the entire year. Cell #3 was cleaned, disinfected and put into service in May, it was removed from service to reduce storage and improve local chlorine residuals in October. Cell #2 was not used in 2016.
Prospect Reservoir (4.6)	0.62	0.63	0.60	0.62	Cleaned and disinfected in February 2016.
Sasamat Reservoir (27.6)	0.45	0.46	0.53	0.53	
Sunnyside Reservoirs (28.8)	0.60	0.49	0.47	0.55	Cell 1 was cleaned, disinfected, and returned to service in April.
Vancouver Heights Reservoir (45.6)	0.68	0.65	0.66	0.65	
Westburnco Reservoir (77.1)	0.58	0.55	0.62	0.61	
Whalley Reservoir (35.7)	0.66	0.63	0.56	0.59	

#### 6.2 MICROBIOLOGICAL WATER QUALITY IN MUNICIPAL SYSTEMS

For samples collected from municipal systems, the percent positive per month for total coliform bacteria from 2013 - 2016 is shown in



Figure 7: Percent of Samples per Month Positive for Total Coliform Bacteria 2013 to 2016

The percentage of samples positive for total coliform bacteria in 2016 remained relatively the same as compared to 2015.

Schedule A of the BC Drinking Water Protection Regulation contains standards for the bacteriological quality of potable water in the province. There are three components of this standard that apply to municipalities:

- Part 1: no sample should be positive for *E. coli*
- **Part 2:** not more than 10% of the samples in a 30 day period should be positive for total coliform bacteria when more than 1 sample is collected
- **Part 3:** no sample should contain more than 10 total coliform bacteria per 100 mL

For samples from municipal systems, this requirement was met in 2016 with the following exceptions:

#### Part 3:

- One sample in June contained more than 10 total coliform bacteria.
- Two samples in July contained more than 10 total coliform bacteria.
- Two samples in September contained more than 10 total coliform bacteria.
- Two samples in November contained more than 10 total coliform bacteria.

Table 11 shows the compliance of the samples collected in the member municipal distribution systems with the three bacteriological standards in the BC DWPR.

Table 11: Municipal Water Quality Compared to the Bacteriological Standards of the BC DWPR for 2016 for 20 Member Jurisdictions.

Month	Number that met Part 1	Number that met Part 2	Number that met Part 3	Number meeting all DWPR
January	20	20	20	20
February	20	20	20	20
March	20	20	20	20
April	20	20	20	20
May	20	20	20	20
June	20	20	19	19
July	20	20	18	18
August	20	20	20	20
September	20	20	19	19
October	20	20	18	18
November	20	20	20	20
December	20	20	20	20

### 6.3 DISINFECTION BY-PRODUCTS IN THE DISTRIBUTION SYSTEM

As the treated water moves through the GVWD and later the municipal infrastructure of pipes and reservoirs, changes in water quality occur mainly due to the reaction between the chlorine in the water (added during primary and secondary disinfection) and naturally occurring organic matter in the water.

One of the most significant changes is the production of chlorinated disinfection by-products (DBPs). DBP is a term used to describe a group of organic and inorganic compounds formed during water disinfection.

Reactions between dissolved natural organic matter and chlorine can lead to the formation of a variety of halogenated DBPs. There are two major groups of chlorinated DBPs: the total trihalomethanes (TTHMs) and the total haloacetic acids (THAA<sub>5</sub>). Factors that affect DBP formation are: amount of chlorine added to water, reaction time, concentration and characteristics of dissolved organic materials (precursors), water temperature, and water pH. In general, DBPs continue to form as long as chlorine and reactive DBP precursors are present in the water.

The maximum acceptable concentration (MAC) in the Canadian Guidelines for TTHMs is a locational yearly running average of 100  $\mu$ g/L (0.1 mg/L) based on quarterly samples. Comparison of TTHM levels in the Metro Vancouver and municipal systems in 2016 is shown in Figure 8. All TTHM results were below the MAC of 100  $\mu$ g/L.

The other group of disinfection by-products of interest is the Haloacetic Acid (THAA<sub>5</sub>) group. The maximum acceptable concentration (MAC) in the Canadian Guidelines for Total HAAs (THAA<sub>5</sub>) is a locational yearly running average of 80  $\mu$ g/L (0.08 mg/L) based on quarterly samples. Comparison of THAA<sub>5</sub> in the Metro Vancouver and municipal systems in 2016 is shown in Figure 9. All THAA<sub>5</sub> results were below the MAC of 80  $\mu$ g/L from sites within the Metro Vancouver and municipal systems.
### Figure 8: Average Total Trihalomethane Levels in 2016





# Figure 9: Average Total Haloacetic Acid Levels in 2016



$\mathbf{r}$	0-19 µg/L	$\sum$	20-39 µg/L		40-59 µg/L
⊲	60-79 µg/L		80-99 µg/L		>100 µg/L
	Metro Vancouver	Site	٢	Munic	cipal Site
MAC	for Total THAA val	ues is 80	µg/L (or ppb)		

#### QUALITY CONTROL / QUALITY ASSURANCE

In 1994, as required by a new Ministry of Health program, the Bacteriology Section of the Metro Vancouver laboratory received approval from the Provincial Medical Health Officer to perform bacteriological analysis of potable water as required in the B.C. Safe Drinking Water Regulation (changed to the BC Drinking Water Protection Regulation in 2001). An ongoing requirement of this approval is successful participation in the Clinical Microbiology Proficiency Testing (CMPT) program or its equivalent. The bacteriological laboratory has successfully participated in this program since 1994. Representatives of the Approval Committee for Bacteriology Laboratories carried out an inspection of the Metro Vancouver laboratory facilities at LCOC in the fall of 2016 as part of the process leading up to approval of the laboratory by the Provincial Health Officer which has been received. The next inspection is scheduled for 2019.

In addition to the approval process discussed above, the Metro Vancouver Laboratory is accredited by the Canadian Association for Laboratory Accreditation (CALA) for the analysis of parameters for which the laboratory has requested certification. The MV Laboratory has been inspected by representatives from CALA bi-annually since 1995, and most recently in 2015 as required by the accreditation process. Accreditation for the laboratory from the Standards Council of Canada was first received early in 1996 and continued until the middle of 2005, when accreditation was granted by CALA directly. Based on the September 2015 inspection, CALA issued the latest accreditation for the Metro Vancouver Laboratory in early 2016. The next CALA inspection will take place in the fall of 2017.

Appendix 1. Chemical & Physical Analysis Summaries

#### Semetrovancouver

SERVICES AND SOLUTIONS FOR A LIVABLE REGION

# Physical and Chemical Analysis of Water Supply Greater Vancouver Water District

2016 - Capilano Water System								
	Untreated	5	SCFP Treated	d				
<u>Parameter</u>	<u>Average</u>	<u>Average</u>	<u>Range</u>	<u>Days</u> <u>Guideline</u> <u>Exceeded</u>	<u>Canadian</u> <u>Guideline Limit</u>	<u>Reason</u> <u>Guideline</u> <u>Established</u>		
Alkalinity as CaCO <sub>3</sub> (mg/L)	3.2	7.3	4.6-8.9		none			
A luminium Dissolved ( $\mu$ g/L)	61	21	13-31		none			
Aluminium Total (µg/L)	188	29	15-85		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)	2.9	2.9	2.5-3.0	0	1000	Health		
Boron Total (mg/L)	< 0.01	<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	0	none	Health		
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	0	5	Health		
Calcium Total (mg/L)	1.30	3.07	2.26-3.57		none			
Carbon Organic Dissolved (mg/L)	1.88	0.6	0.5-1.0		none			
Carbon Organic Total (mg/L)	1.88	0.65	0.5-1.0		none			
Chlorate (mg/L)	< 0.01	0.03	0.01 - 0.05	0	1.0	Health		
Chloride Total (mg/L)	0.58	2.4	2.1-3.0	0	≤ 250	Aesthetic		
Chromium Total (µg/L)	< 0.05	< 0.05	<0.05 - 0.05	0	50	Health		
Color Apparent (ACU)	23	<1	<1		none			
Color True (TCU)	12	<1	<1	0	≤ 15	Aesthetic		
Conductivity (umhos/cm)	12	26	21-34		none			
Copper Total (µg/L)	4.9	<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)	4.10	8.6	6.2-9.9		none			
Iron Dissolved (µg/L)	64	<5	<5		none			
Iron Total (µg/L)	247	<5	<5-34	0	≤ 300	Aesthetic		
Lead Total (µg/L)	<0.5	<0.5	<0.5	0	10	Health		
Magnesium Total (µg/L)	191	170	135-244		none			
Manganese Dissolved (µg/L)	13.6	2.1	1.3-4.6		none			
Manganese Total (µg/L)	14.7	5.2	1.7-12.0	0	≤ 50	Aesthetic		
Mercury Total (µg/L)	< 0.05	< 0.05	< 0.05	0	1.0	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	0.03-0.09	0	45	Health		
Nitrogen - Nitrite as N (mg/L)	< 0.01	< 0.01	< 0.01	0	3.0	Health		
pH	6.5	7.2	7.0-7.4	0	6.5 to 8.5	Aesthetic		
Phenols (µg/L)	<5	<5	<5		none			
Phosphorus Total (µg/L)	<5	<5	<5		none			
Potassium Total (mg/L)	162	152	134-183		none			
Residue Total (mg/L)	21	24	18-29		none			
Residue Total Dissolved (mg/L)	12	18	11-22	0	≤ 500	Aesthetic		
Residue Total Fixed (mg/L)	12	18	14-21		none			
Residue Total Volatile (mg/L)	9	6	3-8		none			
Selenium Total (µg/L)	<0.5	<0.5	<0.5	0	50	Health		
Silica as SiO <sub>2</sub> (mg/L)	3.6	3.4	3.0-4.4		none			
Silver Total (µg/L)	<0.5	<0.5	<0.5		none			
Sodium Total (mg/L)	0.63	1.51	1.34-1.78	0	≤ 200	Aesthetic		
Sulphate (mg/L)	0.8	1.0	0.8-1.3	0	≤ 500	Aesthetic		
Turbidity (NTU)	1.72	0.012	0.07-0.27	0	≤ 1.0	Health		
Uranium Total (µg/L)	0.043	0.009	0.009	0	20	Health		
UV254 (Abs/cm)	0.076	0.011	0.007-0.016		none			
Zinc Total (ug/L)	-3		-3	0	< 5000	Aesthetic		

These figures are average 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 analysed. Methods and terms are based on those of "Standard Methods for the Examination of Water and Waste Water" 22nd Edition 2012. Less than (<) denotes not detectable with the technique used for determination. Untreated water is from the intake prior to the raw water tunnel, treated water is from a single site in the GVWD distribution system downstream of SCFP clearwell. Guidelines are taken from "Guidelines for Canadian Drinking Water Quality - Sixth Edition" Health and Welfare Canada 1996, updated to Oct 2014. Treated turbidity guideline applies to Indivual Filter Effluent readings. Capilano Source was operational for 366 days in 2016.

#### SERVICES AND SOLUTIONS FOR A LIVABLE REGION

## Physical and Chemical Analysis of Water Supply Greater Vancouver Water District

	2016 -	Seymou	r Water	System		
	Untreated	5	SCFP Treate	d		
<u>Parameter</u>	Average	Average	<u>Range</u>	<u>Days</u> <u>Guideline</u> <u>Exceeded</u>	<u>Canadian</u> Guideline Limit	<u>Reason</u> <u>Guideline</u> <u>Established</u>
Alkalinity as CaCO <sub>3</sub> (mg/L)	3.8	7.1	4.5-8.9		none	
Aluminium Dissolved (µg/L)	50	22	13-34		none	
Aluminium Total (µg/L)	93	27	14-51	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	2.8	2.4-2.9	0	1000	Health
Boron Total (mg/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	0	none	Health
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	0	5	Health
Calcium Total (mg/L)	1.67	3.04	2.20-3.54		none	
Carbon Organic Dissolved (mg/L)	1.64	0.66	0.5-1.0		none	
Carbon Organic Total (mg/L)	1.70	0.64	0.5-1.0		none	
Chlorate (mg/L)	<0.01	0.03	0.01 - 0.05	0	1.0	Health
Chloride Total (mg/L)	<0.5	2.4	2.1-3.0	0	≤ 250	Aesthetic
Chromium Total (µg/L)	0.16	<0.05	<0.05 - 0.05	0	50	Health
Color Apparent (ACU)	22	<1	<1		none	
Color True (TCU)	12	<1	<1	0	≤ 15	Aesthetic
Conductivity (umhos/cm)	14	26	21-34	0	none	
Copper Total (µg/L)	20	<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)	4.9	8.5	0.1-9.9		none	
Iron Dissolved (µg/L)	105	<5	<5		none	A 41 41-
Lead Tatal (ug/L)	<0.5	<0.5	< 3-9	0	≤ 300 10	Aesthetic
Magnasium Total ( $\mu g/L$ )	<0.5	<0.5	124 242	0	10	пеаш
Manganese Dissolved ( $\mu g/L$ )	4.3	68	25.18.0		none	
Manganese Total ( $\mu g/L$ )	4.5	7.2	2.3-18.0	0	< 50	Aesthetic
Marcury Total (ug/L)	<0.05	<0.05	<0.05	0	30 10	Health
Molybdenum Total (ug/L)	<0.05	<0.5	<0.5	0	none	Ticalin
Nickel Total ( $\mu g/L$ )	<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	0.03-0.09	0	45	Health
Nitrogen - Nitrite as N (mg/L)	< 0.01	< 0.01	< 0.01	0	3.0	Health
рН	6.6	7.2	6.9-7.4	0	6.5 to 8.5	Aesthetic
Phenols (µg/L)	<5	<5	<5		none	
Phosphorus Total (µg/L)	<5	<5	<5		none	
Potassium Total (µg/L)	161	152	134-184		none	
Residue Total (mg/L)	20	22	16-25		none	
Residue Total Dissolved (mg/L)	18	19	15-22	0	≤ 500	Aesthetic
Residue Total Fixed (mg/L)	12	15	12-16		none	
Residue Total Volatile (mg/L)	8	7	4-9		none	
Selenium Total (µg/L)	<0.5	< 0.5	<0.5	0	50	Health
Silica as SiO <sub>2</sub> (mg/L)	3.3	3.4	3.0-4.4		none	
Silver Total (µg/L)	<0.5	<0.5	<0.5		none	
Sodium Total (mg/L)	0.56	1.53	1.32-1.79	0	≤ 200	Aesthetic
Sulphate (mg/L)	1.2	1.0	0.8-1.3	0	≤ 500	Aesthetic
Turbidity (NTU)	0.87	0.11	0.06-0.24	0	≤ 1.0	Health
Uranium Total (µg/L)	0.039	0.009	0.009		20	Health
UV254 Abs/cm)	83	97.4	95.9-98.2		none	
UV254Abs/cm) True	0.078	0.011	0.007-0.016		none	
Zinc Total (ug/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 analysed. Methods and terms are based on those of "Standard Methods for the Examination of Water and Waste Water" 22nd Edition 2012. Less than (<) denotes not detectable with the technique used for determination. Untreated water is from the intake or a sample site prior to coagulation, treated water is from a sample site downstream of SCFP clearwell. Guidelines are taken from "Guidelines for Canadian Drinking Water Quality - Sixth Edition" Health and Welfare Canada 1996, updated to Oct 2014. Seymour source water is filtered, disinfected with UV light and sodium hypochlorite for primary disinfection, lime is added to increase pH and alkalinity while CO2 is added to adjust pH. Treated turbidity guideline applies to Indivual Filter Effluent readings. Seymour Source was operational for 366 days in 2016.

SERVICES AND SOLUTIONS FOR A LIVABLE REGION

# Physical and Chemical Analysis of Water Supply Greater Vancouver Water District

	2016 - Co	oquitlam	Water S	System		
	Untreated		Treated	-		
<u>Parameter</u>	<u>Average</u>	<u>Average</u>	<u>Range</u>	<u>Days</u> <u>Guideline</u> <u>Exceeded</u>	<u>Canadian</u> Guideline Limit	<u>Reason</u> <u>Guideline</u> <u>Established</u>
Alkalinity as CaCO <sub>3</sub> (mg/L)	1.8	10	8.6-12.1		none	
A luminium Dissolved ( $\mu g/L$ )	59	60	37-88		none	
Aluminium Total (µg/L)	84	80	48-106		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)	2.5	2.4	2.2-2.6	0	1000	Health
Boron Total (mg/L)	< 0.01	< 0.01	< 0.01	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 (mg/L)	0.86	0.86	0.79-0.93		none	
Carbon Organic Dissolved (mg/L)	1.62	1.52	1.2-2.1		none	
Carbon Organic Total (mg/L)	1.63	1.53	1.2-2.2		none	
Chlorate (mg/L)	< 0.01	< 0.01	< 0.01	0	1.0	Health
Chloride Total (mg/L)	0.52	1.9	1.7-2.1	0	≤ 250	Aesthetic
Chromium Total (µg/L)	< 0.05	< 0.05	< 0.05	0	50	Health
Color Apparent (ACU)	15	2	<1-5		none	
Color True (TCU)	9	<1	<1	0	≤ 15	Aesthetic
Conductivity (umhos/cm)	9	29	26-34		none	
Copper Total (µg/L)	4.9	<0.5	<0.5	-	≤ 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)	2.5	2.5	2.4-2.7		none	
Iron Dissolved (µg/L)	17	18	15-26	-	none	
Iron Total ( $\mu$ g/L)	45	45	34-59	0	≤ 300	Aesthetic
Lead Total (µg/L)	<0.5	<0.5	<0.5		10	Health
Magnesium Total (µg/L)	98	97	89-103		none	
Manganese Dissolved (µg/L)	3.5	2.2	1.9-2.5	0	none	
Manganese Total (µg/L)	3.9	2.8	2.4-3.4	0	≤50 1.0	Aesthetic
Mercury Total (µg/L)	<0.05	<0.05	<0.05	0	1.0	Health
Molybdenum Total (µg/L)	<0.5	<0.5	<0.5		none	
Nickel I otal ( $\mu g/L$ )	<0.5	<0.5	<0.5		none	
Nitrogen - Ammonia as N (mg/L)	<0.02	<0.02	<0.02	0	none	II hh
Nitrogen - Nitrate as N (IIg/L)	0.087	0.085	0.03-0.12	0	43	Health
Nurogen - Nunte as N (mg/L)	<0.01	<0.01	< 0.01	0	3.0 ( 5 to 9 5	Health
pn Dhanals (ug/L)	0.5	7.5	0.0-7.5	0	0.5 10 8.5	Aesthetic
Phosphorus Total (ug/L)	5	5	5		none	
Potassium Total (µg/L)	116	110	104 124		none	
$\frac{PO(assum Total(\mu g/L))}{Posidue Total(mg/L)}$	15	29	28.30		none	
Residue Total Dissolved (mg/L)	8	20	16-25	0	< 500	Aesthetic
Residue Total Fixed (mg/L)	9	20	18-21	0	= 500	restricte
Residue Total Volatile (mg/L)	6	9	8-11		none	
Selenium Total (ug/L)	<0.5	<05	<0.5	0	50	Health
Silica as SiO <sub>2</sub> (mg/L)	2.5	2.5	2.4-2.7	0	none	Tieutifi
Silver Total (ug/L)	<0.5	<0.5	<0.5		none	
Sodium Total (mg/L)	0.48	52	2.9-6.8	0	≤200	Aesthetic
Sulphate (mg/L)	0.6	0.6	0.6-0.7	0	≤500	Aesthetic
Turbidity (NTU)	0.33	0.28	0.21-0.39	0		restrictio
Uranium Total ( $\mu g/L$ )	0.044	-	-	0	20	Health
UV254 (Abs/cm)	0.063	0.011	0.007-0.016	0	none	canin
UV254 App (Abs/cm)	0.07	0.022	0.015-0.035			
Zinc Total (µg/L)	<3	<3	<3	0	≤ 5000	Aesthetic

These figures are average 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 analysed. Methods and terms are based on those of "Standard Methods for the Examination of Water and Waste Water" 22nd Edition 2012. Less than (<) denotes not detectable with the technique used for determination. 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 "Guidelines for Canadian Drinking Water Quality - Sixth Edition" Health and Welfare Canada 1996,updated to Oct 2014. Coquitlam water is treated with ozone, then UV for primary disinfection. Soda ash is added to increase pH. Chlorine is added for secondary disinfection. Coquitlam source was operational for 366 days in 2016.

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Appendix 2. Analysis of Water for Selected Organic Components and Radionuclides

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

	Units	Date Sampled	MAC	AO	Capilano	Seymour	Coquitlam
Atrazine	µg/L	12-Oct-16	5		<0.5	<0.5	<0.5
Azinphos-Methyl	µg/L	12-Oct-16	20		<2.0	<2.0	<2.0
Bendiocarb	µg/L	12-Oct-16	40		<2	<2	<2
Benzene	µg/L	12-Oct-16	5		<0.4	<0.4	<0.4
Benzo(a)pyrene	µg/L	12-Oct-16	0.04		<0.0050	<0.0050	<0.0050
Bromoxynil	µg/L	12-Oct-16	5		<0.50	<0.50	<0.50
Carbaryl	µg/L	12-Oct-16	90		<5	<5	<5
Carbofuran	µg/L	12-Oct-16	90		<5	<5	<5
Carbon Tetrachloride	µg/L	12-Oct-16	2		<0.50	<0.50	<0.50
Cyanobacterial toxins— Microcystin-LR	µg/L	Apr-Nov-16	1.5		<0.20	<0.20	<0.20
Chlorpyrifos	µg/L	12-Oct-16	90		<2.0	<2.0	<2.0
Diazinon	µg/L	12-Oct-16	20		<2	<2	<2
Dicamba	µg/L	12-Oct-16	120		<1.0	<1.0	<1.0
Dichlofop-Methyl	µg/L	12-Oct-16	9		<0.90	<0.90	<0.90
Dichlorobenzene, 1,2-	µg/L	12-Oct-16	200	≤ 3	<0.50	<0.50	<0.50
Dichlorobenzene, 1,4-	µg/L	12-Oct-16	5	≤ 1	<0.50	<0.50	<0.50
Dichloroethane, 1,2-	µg/L	12-Oct-16	5		<0.50	<0.50	<0.50
Dichloroethylene, 1,1-	µg/L	12-Oct-16	14		<0.50	<0.50	<0.50
Dichloromethane	µg/L	12-Oct-16	50		<2.0	<2.0	<2.0
Dichlorophenol, 2,4-	µg/L	12-Oct-16	900	≤ 0.3	<0.10	<0.10	<0.10
Dichlorophenoxyacetic acid, 2,4-(2,4-D)	µg/L	12-Oct-16	100		<1.0	<1.0	<1.0
Dimethoate	µg/L	12-Oct-16	20		<2	<2	<2
Diquat	µg/L	12-Oct-16	70		<7.0	<7.0	<7.0
Diuron	µg/L	12-Oct-16	150		<10	<10	<10
Ethylbenzene	µg/L	12-Oct-16	140	≤ 1.6	<0.40	<0.40	<0.40
Glyphosate	µg/L	12-Oct-16	280		<10	<10	<10
Malathion	µg/L	12-Oct-16	190		<2.0	<2.0	<2.0
2-Methyl-4- chlorophenoxyacetic acid (MCPA)	µg/L	12-Oct-16	100		<2.0	<2.0	<2.0
Methyl t-butyl ether (MTBE)	µg/L	12-Oct-16		≤ 15	<4	<4	<4
Metolachlor	µg/L	12-Oct-16	50		<5	<5	<5
Metribuzin	µg/L	12-Oct-16	80		<5.0	<5.0	<5.0
Monochlorobenzene	µg/L	12-Oct-16	80	≤ 30	<0.50	<0.50	<0.50
N-Nitroso dimethylamine (NDMA)	µg/L	12-Oct-16	0.04		<0.002	<0.002	<0.002
Nitrilotriacetic Acid (NTA)	mg/L	12-Oct-16	400		<0.050	<0.050	<0.050
Paraquat (as Dichloride)	µg/L	12-Oct-16	10		<1.0	<1.0	<1.0

	Units	Date Sampled	MAC	AO	Capilano	Seymour	Coquitlam
Pentachlorophenol	µg/L	12-Oct-16	60	≤30	<0.10	<0.10	<0.10
Phorate	µg/L	12-Oct-16	2		<1	<1	<1
Picloram	µg/L	12-Oct-16	190		<5.0	<5.0	<5.0
Simazine	µg/L	12-Oct-16	10		<2	<2	<2
Terbufos	µg/L	12-Oct-16	1		<1	<1	<1
Tetrachloroethylene	µg/L	12-Oct-16	30		<0.50	<0.50	<0.50
Tetrachlorophenol, 2,3,4,6-	µg/L	12-Oct-16	100	≤ 1	<0.10	<0.10	<0.10
Toluene	µg/L	12-Oct-16	60	24	<0.40	<0.40	<0.40
Trichloroethylene	µg/L	12-Oct-16	5		<0.50	<0.50	<0.50
Trichlorophenol, 2,4,6-	µg/L	12-Oct-16	≤2	≤ 2	<0.10	<0.10	<0.10
Trifluralin	µg/L	12-Oct-16	45		<5	<5	<5
Uranium	µg/L	12-Oct-16	20		0.043	0.039	0.044
Vinyl Chloride	µg/L	12-Oct-16	2		<0.50	<0.50	<0.50
Xylene (Total)	µg/L	12-Oct-16	90	≤ 20	<0.40	<0.40	<0.40

# Analysis of Source Water for PAH's

Parameters	Units	Сарі	lano	Seyr	nour	Coquitlam		
		10-Feb	29-Nov	9-Feb	29-Nov	9-Feb	29-Nov	
Acenaphthene	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
Acenaphthylene	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
Anthracene	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
Benzo(a)anthracene	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
Benzo(b)fluoranthene	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
Benzo(k)fluoranthene	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
Benzo(g,h,i)perylene	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
Benzo(a)pyrene <sup>1</sup>	µg/L	<0.010	< 0.005	<0.010	<0.005	<0.010	<0.005	
Chrysene	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
Dibenzo(a,h)anthracene	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
Fluoranthene	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
Fluorene	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
Indeno(1,2,3-c,d)pyrene	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
Naphthalene	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
Phenanthrene	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
Pyrene	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	

# Analysis of Source Water for Radioactivity

				Сар	Capilano		mour	Coquitlam	
Radioactivity	Units	Date Sampled	MAC <sup>1</sup>	MDA <sup>3</sup>	Activity	MDA <sup>3</sup>	Activity	MDA <sup>3</sup>	Activity
Gross Alpha	Bq/L	12-Oct-16	<0.5	0.04	<0.04	0.04	<0.04	0.03	<0.03
Gross Beta	Bq/L	12-Oct-16	<1.0	0.06	0.07	0.06	0.06	0.06	0.06
Cobalt-60	Bq/L	12-Oct-16	2 <sup>2</sup>	0.32	<0.32	0.32	<0.32	0.33	<0.33
Cesium-134	Bq/L	12-Oct-16	7 <sup>2</sup>	0.30	<0.30	0.31	<0.31	0.34	<0.34
Cesium-137	Bq/L	12-Oct-16	10	0.27	<0.27	0.28	<0.28	0.28	<0.28
lodine-131	Bq/L	12-Oct-16	6	1.20	<1.20	1.07	<1.07	1.23	<1.23
Lead-210	Bq/L	12-Oct-16	0.2	0.08	<0.08	0.09	<0.09	0.09	<0.09
Radium-226	Bq/L	12-Oct-16	0.5	0.01	<0.01	0.01	<0.01	0.01	< 0.01
Radon-222	Bq/L	12-Oct-16	None	0.98	<0.98	0.97	<0.97	0.98	<0.98
Strontium-90	Bq/L	12-Oct-16	5	0.04	<0.04	0.05	<0.05	0.04	<0.04
Tritium (H-3)	Bq/L	12-0ct-16	7000	6.07	<6.07	6.03	<6.03	6.14	<6.14

#### Footnotes:

<sup>1</sup>MAC from Guidelines for Canadian Drinking Water Quality (GCDWQ), Oct. 2014 <sup>2</sup>MAC from Guidelines for Canadian Drinking Water Quality (GCDWQ), 6<sup>th</sup> Ed. 1996 <sup>3</sup>MDA Minimum Detectable Activity

Parameters		MAC	Barnston IslandMaple Ridge MainMain atMACAOat ReservoirWilloughby PSMain		Barnston IslandMaple Ridge MainMain atat ReservoirWilloughby PS		Clayton	South Burnaby Main #2		
				13-Feb	1-Dec	11-Feb	29-Nov	22-June	29-Nov	30-Nov
Benzene	μg/L	5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	μg/L	140	1.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	μg/L	60	24	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes (Total)	μg/L	90	20	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75

# Monitoring of Selected GVWD Water Mains for BTEXs

# Monitoring of Selected GVWD Mains for PAHs

		Coqu	itlam							Wha	alley				
		Main #2 &		West	ournco	Barn	ston	Que	ens-	Keni	nedy	Haney	/ Main	36th	Ave
Parameters	Units	#	3	Rese	rvoir	Isla	and	bord	ough	Link	Main	#	2	M	ain
		9-Feb	1-Dec	9-Feb	29-Nov	11-Feb	29-Nov	12-Feb	29-Nov	10-Feb	29-Nov	13-Feb	1-Dec	11-Feb	29-Nov
Acenaphthene	μg/L	<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	<0.050
Acenaphthylene	μg/L	<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	<0.050
Anthracene	μg/L	<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	<0.050
Benzo(a)anthracene	μg/L	<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	<0.050
Benzo(b)fluoranthene	μg/L	<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	<0.050
Benzo(k)fluoranthene	μg/L	<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	<0.050
Benzo(g,h,i)perylene	μg/L	<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	<0.050
Benzo(a)pyrene <sup>1</sup>	μg/L	<0.010	<0.005	<0.010	<0.005	<0.010	<0.005	<0.010	<0.005	<0.010	<0.005	<0.010	<0.005	<0.010	<0.005
Chrysene	μg/L	<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	<0.050
Dibenzo(a,h)anthracene	μg/L	<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	<0.050
Fluoranthene	μg/L	<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	<0.050
Fluorene	μg/L	<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	<0.050
Indeno(1,2,3,c,d)pyrene	μg/L	<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	<0.050
Naphthalene	μg/L	<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	<0.050
Phenanthrene	μg/L	<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	<0.050
Pyrene	μg/L	<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	<0.050

<sup>1</sup>Benzopyrene is the only PAH compound that has guideline limit. Maximum Acceptable Concentration of Benzopyrene is 0.04µg/L

# Appendix 3

Analysis of Source Waters for the Reservoir Limnology Program Table 1 shows the (mean) chlorophyll-a concentration, and the values of chemical analytes in each reservoir during monitoring in April through November in 2015 and 2016.

		Сар	ilano	Seyr	nour	Coqu	itlam
	Units	2015	2016	2015	2016	2015	2016
Chlorophyll-a	μg/L	0.40	0.58	0.72	0.71	0.42	0.69
Nitrate	μg/L	66.6	60.3	56.7	52.3	71.4	69
Total Nitrogen	μg/L	170.2	111.8	153.4	96.9	168.7	116.6
Total Dissolved Phosphorus	μg/L	2.1	<2.0	2.2	3.0	<2.0	<2.0
Total Phosphorus	μg/L	2.6	3.0	3.0	3.6	2.2	2.1
Dissolved Organic Carbon	mg/L	2.1	2.0	2.1	2.0	2.5	1.8
Alkalinity	mg/L	3.4	3.0	4.2	4.0	1.7	1.8
рН		6.8	6.6	6.7	6.6	6.4	6.3

#### Table 1: Comparison of Chlorophyll-a and Chemical Analyte Concentrations for Reservoirs 2015 to 2016



#### Figure 1: Seasonal Average Density of Major Phytoplankton Groups in Capilano Reservoir



Figure2: Seasonal average density of major phytoplankton groups in Seymour Reservoir



Figure 3: Seasonal Average Density of Major Phytoplankton Groups in Coquitlam Reservoir



#### Figure 4. Monthly average zooplankton density and biomass in Capilano Reservoir in 2016

Figure 1. Monthly average zooplankton density and biomass in Seymour Reservoir in 2016





#### Figure 7. Monthly average zooplankton density and biomass in Coquitlam Reservoir in 2016

# Appendix 4 Report to Metro Vancouver-Giardia and Cryptosporidium Study

20402370

January – December, 2016

# REPORT

# ТО

# **METRO VANCOUVER**

## GIARDIA and CRYPTOSPORIDUM STUDY January – December, 2016

## March 30, 2017 (Revised) January 31, 2017 (Initial release) BCCDC Public Health Laboratory Environmental Microbiology Room 3028 - 655 West 12th Avenue Vancouver, BC V5Z 4R4 Phone: (604) 707-2620 Fax: (604) 707-2600

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#### Report to Metro Vancouver Detection of Waterborne *Giardia* and *Cryptosporidium* Study January - December, 2016

### PURPOSE

To detect and quantify *Giardia* cysts and *Cryptosporidium* oocysts present in Filta-Max filters submitted regularly by Metro Vancouver from each of Capilano and Coquitlam reservoirs, as well as Recycled Clarified Water from Seymour-Capilano Filtration Plant (SCFP-RCW).

#### INTRODUCTION

*Giardia* and *Cryptosporidium* are parasites that infect the intestinal tracts of a wide range of animals. In humans, infection with *Giardia lamblia* or *Cryptosporidium* species can cause gastroenteritis. As the cyst and oocyst forms of *Giardia* and *Cryptosporidium* are resistant to chlorination, they are of great concern for drinking water purveyors (1-3). On behalf of Metro Vancouver, Environmental Microbiology Laboratory at BCCDC Public Health Laboratory (BCCDC PHL) is examining the source water of Capilano and Coquitlam reservoirs, as well as Recycled Clarified Water at the Seymour Capilano Filtration Plant for presence of *Giardia* cysts and *Cryptosporidium* oocysts. All sample collection, testing, analysis and reporting occurred on a monthly basis.

#### METHODS

The Environmental Microbiology Laboratory at BCCDC PHL uses the United States Environmental Protection Agency (USEPA) Method 1623: *Cryptosporidium* and *Giardia* in Water by Filtration/IMS/FA (4) for the detection of oocysts and cysts in water. Method 1623 is a performance-based method applicable to the determination of *Cryptosporidium* and *Giardia* in aqueous matrices. It requires the filtration of a large volume of water and immunomagnetic separation (IMS) to further concentrate and purify the oocysts and cysts from sample material captured. Immunofluorescence microscopy is performed after the IMS purification to identification and enumeration of oocysts and cysts, with confirmation using 4'-6-diamidino-2-phenylindole (DAPI) staining and differential interference contrast (DIC) microscopy.

Raw water samples were collected by Metro Vancouver staff at specific sampling sites in the reservoirs and filtration plant. Samples were filtered in the field using IDEXX FiltaMax foam filter modules. Filters were transported to the Environmental Microbiology Laboratory at BCCDC PHL by Metro Vancouver staff, where they were processed and analysed within 96 hours.

### **RESULTS & DISCUSSIONS**

During 2016, a total of 36 Filta-Max filters were examined (excluding matrix spikes). These included:

- 12 filters from the Capilano reservoir
- 12 filters from the Coquitlam reservoir
- 12 filters from SCFP-RCW

Negative and positive controls were tested as required by the Environmental Microbiology Laboratory's Quality Assurance program. Summary of our findings are presented in Figures 1 - 3 and Tables 1 - 5. An average of 50.0 L of raw water was filtered for both the Capilano and Coquitlam reservoirs. The average detection limit for Capilano and Coquitlam were <2.0 (oo)cysts per 100 L for both reservoirs; the average volume of water filtered and detection limit for SCFP-RCW were 274.8 L and 0.4 (oo)cysts per 100 L respectively (Appendix A, Tables A1-A3).



Figure 1: 2016 Capilano Reservoir Cryptosporidium Oocysts and Giardia Cysts Counts per 100 Litres of Raw Water

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Figure 2: 2016 Coquitlam Reservoir Cryptosporidium Oocysts and Giardia Cysts Counts per 100 Litres of Raw Water



Figure 3: 2016 Seymour Capilano Filtration Plant – Recycled Clarified Water *Cryptosporidium* Oocysts and *Giardia* Cysts Counts per 100 Litres of Raw Water

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Across all sites, *Giardia* cysts were detected more frequently than *Cryptosporidium* oocysts. Capilano had the highest positive detection rate amongst all of the sampling sites, with *Giardia* cysts and *Cryptosporidium* oocysts at 50.0% and 16.7% respectively. It is interesting to note that all *Cryptosporidium* positive filters from Capilano also had *Giardia* cysts present. Furthermore, the positivity rate of *Giardia* cysts at this site was higher when compared to the previous year (18.2% in 2015).

	Capilano Reservoir	Coquitlam Reservoir	SCFP - RCW
Number of Water Filter Tested	12	12	12
% Filters – <i>Giardia</i> Positive	50.0%	16.7%	16.7%
% Filters – Cryptosporidium Positive	25.0%	0%	0%

Table 1: 2016 Giardia and Cryptosporidium Percent Positives for Metro Vancouver Water Filters

Sampling Sites	# of Water Filters Tested	Average Detection Limit (oo)cysts/ 100 L	Max Detection Limit (oo)cysts/ 100L	Min Detection Limit (oo)cysts/ 100L	# of <i>Giardia</i> Positive Filters	Max # of <i>Giardia</i> cysts/ 100L	# of <i>Crypt</i> o Positive Filters	Max # of <i>Crypto</i> oocysts/ 100L
All Sites	36	1.47	2.9	1.4	10	6.0	3	2.0
Capilano Reservoir	12	<2.0	6.0	2.0	6	6.0	3	2.0
Coquitlam Reservoir	12	<2.0	2.0	2.0	2	2.0	0	0.0
SCFP - RCW	12	<0.4	0.7	0.2	2	0.7	0	0.0

Table 2: 2016 Giardia Cyst and Cryptosporidium Oocyst Concentrations for Positive Water Filters

Results for staining by IFA, DAPI and internal morphology, as determined through DIC microscopy, for every identified cyst and oocyst were recorded and summarized in Tables A4 – A9 in the Appendix A.

While the primary purpose of the DAPI stain was to confirm the presence of *Giardia* cyst and *Cryptosporidium* oocyst, it can also serve as an indicator of nuclei integrity of cyst/oocyst as it indicates the presence of DNA. DAPI staining results of the *Giardia* cysts differ between each sampling sites, with both DAPI positive and DAPI negative cysts observed at all three sites (Table 3). A negative DAPI result may indicate that the cyst detected was either aged or damaged.

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	Total number of cysts	DAPI - DAPI +		D.I.C.					
Site		Light blue					Cysts with internal structure		
		internal staining, no distinct nuclei, green rim	Intense blue internal staining	Nuclei stained sky blue	Empty cysts (no cytoplasm)	Cysts with amorphous structure	Nuclei	Median body	Axoneme
Capilano	9	6 (60.0%)	0 (0.0%)	3 (30.0%)	0 (0.0%)	7 (70.0%)	2 (20.0%)	0 (0.0%)	0 (0.0%)
Coquitlam	2	1 (50.0%)	0 (0.0%)	1 (50.0%)	0 (0.0%)	2 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
SCFPRCW	2	1 (50.0%)	0 (0.0%)	1 (50.0%)	0 (0.0%)	1 (50.0%)	1 (50.0%)	0 (0.0%)	0 (0.0%)

Table 3: 2016 Summary of morphological results for Giardia cysts observed under fluorescence microscope

Use of DIC microscopy is primarily for *Giardia* cyst and *Cryptosporidium* oocyst confirmation; it can also serve as an indicator of cyst/oocysts' cytoplasm and cell wall integrity. While no median body or axoneme was observed for all *Giardia* cysts detected, the cytoplasm was observed; that is, the cysts were not empty and could be viable.

In contrast to *Giardia* cysts, all *Cryptosporidium* oocysts detected in Capilano reservoir contained visibly stained nuclei (Table 4 & 5). The differences in DAPI stained nuclei rates between *Giardia* cysts and *Cryptosporidium* oocysts likely reflects that *Cryptosporidium* oocysts are more resistant to environmental stresses than *Giardia* cysts, allowing oocysts to remain viable for longer periods in the environment.

	Total number of oocysts	DAPI -	DAI	기 +	D.I.C.			
Site		Light blue internal staining, no distinct nuclei,	Intense blue internal staining	Nuclei stained sky blue	Empty oocysts	Oocysts with amorphous structure	Oocysts with internal structure Number of	
		green rim					sporozoites	
Capilano	3	0 (0.0%)	0 (0.0%)	3 (100.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	
Coquitlam	0	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
SCFPRCW	0	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	

Table 4: 2016 Summary of morphological results for Cryptosporidium oocysts observed under fluorescence microscope

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Number of Nuclei		Giardia Cysts		Cryptosporidium Oocysts				
Number of Nuclei	Capilano	Coquitlam	SCFP-RCW	Capilano	Coquitlam	SCFP-RCW		
0*	7 (70.0%)	1 (50.0%)	1 (50.0%)	0 (0.0%)	-	-		
1	1 (10.0%)	1 (50.0%)	-	0 (0.0%)	-	-		
2	-	0 (0.0%)	1 (50.0%)	0 (0.0%)	-	-		
3	1 (10.0%)	0 (0.0%)	-	3 (100.0%)	-	-		
4	1 (10.0%)	0 (0.0%)	-	0 (0.0%)	-	-		
Total # of (oo)cysts	10	2	2	3	0	0		

\* DAPI negative or only intense blue internal staining of cytoplasm.

# Table 5: 2016 Comparisons of number of nuclei in each Giardia cysts and Cryptosporidium Oocysts between different sites

Due to the variations of water chemistry and organic matters between geographical area and temporally within each sampling sites, a matrix spike is performed annually to provide recovery rate estimation from each site. The results of matrix spike recovery results (2006-2016) are compiled in Table 6. Matrix recovery rates fluctuate from year to year even within each site. This variation is not uncommon for the test and has been noted in USEPA's Method 1623.

	Capilano		Coqui	tlam	SCFF	SCFP-RCW		
Year	Cysts	Oocysts	Cysts	Oocysts	Cysts	Oocysts		
2006	27.3%	7.1%	18.0%	10.0%	-	-		
2007	37.4%	27.6%	54.0%	28.0%	-	-		
2008	55.0%	25.0%	39.0%	28.0%	-	-		
2009	40.0%	10.0%	37.0%	16.0%	-	-		
2010	43.0%	28.0%	49.0%	26.0%	13.0%	17.0%		
2011	44.0%	27.0%	47.0%	22.0%	0.0%	1.0%		
2012	76.5%	38.4%	49.0%	35.0%	13.7%	7.0%		
2013	59.4%	22.4%	64.4%	16.3%	14.9%	6.12%		
2014	·-	* _	39.4%	55.0%	14.1%	18.0%		
2015	40.4%	26.3%	60.6%	2.0%	26.5%	9.1%		
2016	47.5%	35.4%	50.5%	22.2%	14.0%	9.1%		

\*- no matrix sample collected

Table 6: Matrix water results from 2006 - 2016

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### SUMMARY

In brief, we reported that:

- Cryptosporidium oocysts were detected from Capilano reservoir raw water (25.0% of filters). Cryptosporidium oocysts were not detected in Coquitlam reservoir and SCFP-RCW.
- 2. *Giardia* cysts were detected in filters from all three sites, with the Capilano reservoir having the highest positivity rate. 50.0% of all filters received from Capilano were positive for *Giardia*, while 16.7% positivity rate was found for both Coquitlam reservoir and SCFP-RCW.
- 3. The highest level of *Giardia* cysts detected in 2016 was from Capilano reservoir in November (6.0 cysts per 100 L). The highest level of *Cryptosporidium* oocysts detected was 2.0 per 100 L for Capilano.
- 4. Most of the *Giardia* cysts detected showed evidence of degradation. The *Cryptosporidium* oocysts detected, in contrast, retained more of their nuclei and internal structure integrity.

These *semi-quantitative* data (reported oocyst and cyst levels) should be interpreted in the context of and with the understanding that the current standard laboratory methods, USEPA Method 1623, used for detecting and analysing parasites in water matrices has its limitations, with variable recovery rates depending on the water matrix and environmental conditions.

### ACKNOWLEDGMENTS

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### **PHSA Laboratories**

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## APPENDIX A

	WF#	Site Location	Sampling Date	Month	Detection Limit	No. of Cysts	No. of Oocysts	Volume of Water	20 <sup>°</sup> Monthly	11 - 2015 y Average
					(per 100L)	per 100L	per 100L	Filtered (L)	No. of Cysts per 100L	No. of Oocysts per 100L
1	7786	CAPILANO Reservoir	3-Jan-16	Jan	<2.0	2.0	2.0	50.0	3.1	0.4
2	7791	CAPILANO Reservoir	8-Feb-16	Feb	<2.0	4.0	0.0	50.0	2.2	0.2
3	7797	CAPILANO Reservoir	6-Mar-16	Mar	<2.0	2.0	0.0	50.0	0.0	2.7
4	7802	CAPILANO Reservoir	3-Apr-16	Apr	<2.0	0.0	0.0	50.0	2.7	0.0
5	7807	CAPILANO Reservoir	1-May-16	Мау	<2.0	2.0	0.0	50.0	0.2	2.4
6	7812	CAPILANO Reservoir	5-Jun-16	Jun	<2.0	0.0	0.0	50.0	0.0	0.7
7	7817	CAPILANO Reservoir	3-Jul-16	Jul	<2.0	0.0	0.0	50.0	0.3	0.8
8	7822	CAPILANO Reservoir	7-Aug-16	Aug	<2.0	0.0	0.0	50.0	0.3	0.3
9	7827	CAPILANO Reservoir	5-Sep-16	Sep	<2.0	0.0	0.0	50.0	0.0	1.7
10	7832	CAPILANO Reservoir	2-Oct-16	Oct	<2.0	0.0	0.0	50.0	0.0	1.3
11	7837	CAPILANO Reservoir	6-Nov-16	Nov	<2.0	6.0	2.0	50.0	0.3	2.3
12	7844	CAPILANO Reservoir	8-Dec-16	Dec	<2.0	4.0	2.0	50.0	2.3	0.0
			A	verages	<2.0	1.7	0.5	50.0		

Table A1: 2016 Metro Vancouver Capilano Reservoir Monthly Filter Results
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	WF#	Site Location	Sampling Date	Month	Detection	No. of	No. of Oocysts	Volume of	2011 Monthly	- 2015 Average
					Limit (per 100L)	Cysts per 100L	per 100L	Water Filtered (L)	No. of Cysts per 100L	No. of Oocysts per 100L
1	7787	COQUITLAM Reservoir	03-Jan-16	Jan	<2.0	0.0	0.0	50.0	2.6	0.0
2	7792	COQUITLAM Reservoir	03-Feb-16	Feb	<2.0	0.0	0.0	50.0	2.6	0.0
3	7798	COQUITLAM Reservoir	06-Mar-16	Mar	<2.0	0.0	0.0	50.0	3.7	0.2
4	7803	COQUITLAM Reservoir	03-Apr-16	Apr	<2.0	0.0	0.0	50.0	2.2	0.0
5	7808	COQUITLAM Reservoir	01-May-16	Мау	<2.0	0.0	0.0	50.0	1.8	0.0
6	7813	COQUITLAM Reservoir	05-Jun-16	Jun	<2.0	0.0	0.0	50.0	0.2	0.0
7	7818	COQUITLAM Reservoir	03-Jul-16	Jul	<2.0	2.0	0.0	50.0	1.0	0.0
8	7823	COQUITLAM Reservoir	07-Aug-16	Aug	<2.0	0.0	0.0	50.0	0.6	0.0
9	7828	COQUITLAM Reservoir	05-Sep-16	Sep	<2.0	0.0	0.0	50.0	0.0	0.0
10	7833	COQUITLAM Reservoir	02-Oct-16	Oct	<2.0	0.0	0.0	50.0	0.9	0.5
11	7838	COQUITLAM Reservoir	06-Nov-16	Nov	<2.0	0.0	0.0	50.0	1.7	0.0
12	7845	COQUITLAM Reservoir	08-Dec-16	Dec	<2.0	2.0	0.0	50.0	0.0	0.5
			Av	verages	<2.0	0.3	0.0	50.0		

Table A2: 2016 Metro Vancouver Coquitlam Reservoir Monthly Filter Results

Public Health Microbiology & Reference Laboratory

	WF#	Site Location	Sampling Date	Month	Detection	No. of	No. of Oocysts	Volume of	2011 Monthly	- 2015 Average
					Limit (per 100L)	Cysts per 100L	per 100L	Water Filtered (L)	No. of Cysts per 100L	No. of Oocysts per 100L
1	7789	SCFP-Recycled Clarified Water	05-Jan-16	Jan	<0.5	0.0	0.0	221.7	0.0	0.0
2	7794	SCFP-Recycled Clarified Water	10-Feb-16	Feb	<0.3	0.3	0.0	296.0	0.1	0.0
3	7799	SCFP-Recycled Clarified Water	08-Mar-16	Mar	<0.4	0.0	0.0	274.7	0.1	0.0
4	7804	SCFP-Recycled Clarified Water	05-Apr-16	Apr	<0.3	0.0	0.0	322.3	0.0	0.0
5	7809	SCFP-Recycled Clarified Water	03-May-16	Мау	<0.5	0.0	0.0	213.2	0.0	0.0
6	7814	SCFP-Recycled Clarified Water	08-Jun-16	Jun	<0.5	0.0	0.0	197.5	0.0	0.0
7	7819	SCFP-Recycled Clarified Water	05-Jul-16	Jul	<0.7	0.0	0.0	136.1	0.0	0.0
8	7824	SCFP-Recycled Clarified Water	09-Aug-16	Aug	<0.3	0.0	0.0	323.4	0.0	0.0
9	7829	SCFP-Recycled Clarified Water	07-Sep-16	Sep	<0.3	0.0	0.0	313.2	0.1	0.0
10	7834	SCFP-Recycled Clarified Water	04-Oct-16	Oct	<0.2	0.0	0.0	401.3	0.0	0.0
11	7841	SCFP-Recycled Clarified Water	08-Nov-16	Nov	<0.7	0.7	0.0	138.4	0.2	0.0
12	7846	SCFP-Recycled Clarified Water	06-Dec-16	Dec	<0.2	0.0	0.0	460.1	0.2	0.0
			Av	verages	<0.4	0.1	0.0	274.8		

Table A3: 2016 Metro Vancouver Seymour Capilano Filtration Plant – Recycled Clarified Water (SCFP-RCW) Monthly Filter Results

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					Size	DAPI –	DA	기 +		D.I.C.	
Lab No.	Site Sampled	Date	Object located by FA	Shape (oval or round)	L x W	Light blue internal staining, no distinct nuclei, green rim	Intense blue internal staining	Number of nuclei stained sky blue	Empty oocysts	Oocysts with amorphous structure	Oocysts with internal structure Number of sporozoites
7786	Capilano Reservoir	1/3/2016	1	round	5.6x5.6			3		Present	
7791	Capilano Reservoir	2/8/2016	0								
7707		3/6/2016	0								
1191	Capitano Reservoir	3/0/2010	0								
7802	Capilano Reservoir	4/3/2016	0								
7807	Capilano Reservoir	5/1/2016	0								
7812	Capilano Reservoir	6/5/2016	0								
7817	Capilano Reservoir	7/3/2016	0								
7822	Capilano Reservoir	8/7/2016	0								
7827	Capilano Reservoir	9/5/2016	0								
		10/0/22 17									
7832	Capilano Reservoir	10/2/2016	0								
7837	Capilano Reservoir	11/6/2016	1	round	4.8x4.8			3		Present	

Table A4: 2016 Metro Vancouver Capilano Reservoir Slide Examination Cryptosporidium Results

Public Health Microbiology & Reference Laboratory

					Size	DAPI –	DA	PI +		D.I.C	).
Lab No.	Site Sampled	Date	Object located by FA	Shape (oval or round)	L x W (µm)	Light blue internal staining, no distinct nuclei, green rim	Intense blue internal staining	Number of nuclei stained sky blue	Empty oocysts	Oocysts with amorphous structure	Oocysts with internal structure Number of sporozoites
7787	Coquitlam Reservoir	03-Jan-16	0								
7792	Coquitlam Reservoir	08-Feb-16	0								
7798	Coquitlam Reservoir	06-Mar-16	0								
7803	Coquitlam Reservoir	03-Apr-16	0								
7808	Coquitlam Reservoir	01-May-16	0								
7813	Coquitlam Reservoir	05-Jun-16	0								
7818	Coquitlam Reservoir	03-Jul-16	0								
7823	Coquitlam Reservoir	07-Aug-16	0								
7828	Coquitlam Reservoir	05-Sep-16	0								
7833	Coquitlam Reservoir	02-Oct-16	0								
7838	Coquitlam Reservoir	06-Nov-16	0								
7845	Coquitlam Reservoir	04-Dec-16	0								

Table A5: 2016 Metro Vancouver Coquitlam Reservoir Slide Examination Cryptosporidium Results

Public Health Microbiology & Reference Laboratory

					Size	DAPI –	DAI	PI +		D.I.C	
Lab No.	Site Sampled	Date	Object located by FA	Shape (oval or round)	L x W (µm)	Light blue internal staining, no distinct nuclei, green rim	Intense blue internal staining	Number of nuclei stained sky blue	Empty oocysts	Oocysts with amorphous structure	Oocysts with internal structure Number of sporozoites
7789	SCFP - Recycled Clarified Water	05-Jan-16	0								
7794	SCFP - Recycled Clarified Water	10-Feb-16	0								
7799	SCFP - Recycled Clarified Water	08-Mar-16	0								
7804	SCFP - Recycled Clarified Water	05-Apr-16	0								
7809	SCFP - Recycled Clarified Water	03-May-16	0								
7819	SCFP - Recycled Clarified Water	05-Jul-16	0								
7824	SCFP - Recycled Clarified Water	09-Aug-16	0								
7829	SCFP - Recycled Clarified Water	07-Sep-16	0								
7834	SCFP - Recycled Clarified Water	04-Oct-16	0								
7841	SCFP - Recycled Clarified Water	08-Nov-16	0								
7846	SCFP - Recycled Clarified Water	06-Dec-16	0								

 Table A6: 2016
 Metro Vancouver Seymour Capilano Filtration Plant – Recycled Clarified Water Slide Examination

 Cryptosporidium Results
 Comparison

Public Health Microbiology & Reference Laboratory

						DAPI –	DAI	PI +		D.I.C.			
Lab No.	Site Sampled	Date	Object located	Shape (oval or round)	Size L x W (um)	Light blue internal	Intense	Number of			Cysts	with internal	structure
			5,111		(1)	nuclei, green rim	blue internal staining	stained sky blue	Empty cysts	Cysts with amorphous structure	Number of nuclei	Median Body	Axoneme
7786	Capilano Reservoir	Jan 03, 16	1	oval	9.6x6.4	Present				Present			
7791	Capilano Reservoir	Feb 08, 16	1	oval	12 8 20 6	Present				Present			
7791	Capilano Reservoir	Feb 08, 16	1	ovai	12.0.0.0	Present				Present			
7797	Capilano Reservoir	Mar 06, 16	2	oval	12.000.0			4			2		
7802	Capilano Reservoir	Apr 03, 16	0	ovai	12.000								
7807	Capilano Reservoir	May 01, 16	1	oval	12.8x8.8			3			3		
7812	Capilano Reservoir	Jun 05, 16	0										
7817	Capilano Reservoir	Jul 03, 16	0										
7822	Capilano Reservoir	Aug 07, 16	0										
7827	Capilano Reservoir	Sep 05, 16	0										
7832	Capilano Reservoir	Oct 02, 16	0										
7837	Capilano Reservoir	Nov 06, 16	1	round	8.8x8	Present				Present			
7837	Capilano Reservoir	Nov 06, 16	2	oval	12x9.6	Present				Present			
7837	Capilano Reservoir	Dec 08, 16	1	oval	10x10	Present				Present			
7844	Capilano Reservoir	Dec 08, 16	2	oval	9x6			1		Present			

Table A7: 2016 Metro Vancouver Capilano Reservoir Slide Examination Giardia Results

Public Health Microbiology & Reference Laboratory

						DAPI –	DAI	PI +			D.I.C.		
Lab No.	Site Sampled	Date	Object located by FA	Shape (oval or round)	Size L x W (µm)	Light blue internal	Intense blue	Number of nuclei	Empty	Cysts with	Cysts w	vith internal	structure
						nuclei, green rim	staining	sky blue	cysts	structure	Number of nuclei	Median Body	Axoneme
7787	Coquitlam Reservoir	Jan 03, 16	0										
7792	Coquitlam Reservoir	Feb 08, 16	0										
7798	Coquitlam Reservoir	Mar 06, 16	0										
7803	Coquitlam Reservoir	Apr 03, 16	0										
7808	Coquitlam Reservoir	May 01, 16	0										
7813	Coquitlam Reservoir	Jun 05, 16	0										
7818	Coquitlam Reservoir	Jul 03, 16	1	oval	14.4x11.2	Present				Present			
7823	Coquitlam Reservoir	Aug 07, 16	0										
7828	Coquitlam Reservoir	Sep 05, 16	0										
7833	Coquitlam Reservoir	Oct 02, 16	0										
7838	Coquitlam Reservoir	Nov 06, 16	0										
7845	Coquitlam Reservoir	Dec 04, 16	1	oval	9*7.5			1		Present			

Table A8: 2016 Metro Vancouver Coquitlam Reservoir Slide Examination Giardia Results

Public Health Microbiology & Reference Laboratory

						DAPI –	DAF	키 +			D.I.C.		
Lab No.	Site Sampled	Date	Object located	Shape (oval or	Size L x W	Light blue internal	Intense	Number of			Cysts v	vith internal	structure
			by FA	round)	(µm)	staining, no distinct nuclei, green rim	blue internal staining	nuclei stained sky blue	Empty cysts	Cysts with amorphous structure	Number of nuclei	Median Body	Axoneme
7789	SCFP - Recycled Clarified Water	Jan 05, 16	0										
7794	SCFP - Recycled Clarified Water	Feb 10, 16	1	oval	11.2x7.2			2			1		
7799	SCFP - Recycled Clarified Water	Mar 08, 16	0										
7804	SCFP - Recycled Clarified Water	Apr 05, 16	0										
7809	SCFP - Recycled Clarified Water	May 03, 16	0										
7819	SCFP - Recycled Clarified Water	Jul 05, 16	0										
7824	SCFP - Recycled Clarified Water	Aug 09, 16	0										
7829	SCFP - Recycled Clarified Water	Sep 07, 16	0										
7834	SCFP - Recycled Clarified Water	Oct 04, 16	0										
7841	SCFP - Recycled Clarified Water	Nov 08, 16	1	oval	9.6x7.2	Present				Present			
7846	SCFP - Recycled Clarified Water	Dec 06, 16	0										

Table A9: 2016 Metro Vancouver Seymour Capilano Filtration Plant – Recycled Clarified Water Slide Examination *Giardia* Results