



Tel: 250 392 3351
TF: 1 800 665 1636
Fax: 250 392 2812
Suite D 180 North Third Avenue
Williams Lake, BC V2G 2A4
www.cariboord.bc.ca

108 Waterworks Annual Report

In accordance with Interior Health Permit No. 14-124-00001 for 108 Waterworks, the following is an annual report on the status of the 108 Waterworks for the period of June 2008 to June 2009.

The report contains:

- An overview of maintenance for the system
- Average daily water flows
- Results of bacteriological and chemical water testing
- Well Head Protection Plan

Please forward questions or concerns to the Cariboo Regional District Environmental Services Department at (250) 392-3351 or 1-800-665-1636.

Electoral Areas

A – Red Bluff-Quesnel South • B – Quesnel West-Bouchie Lake-Ten Mile • C – Barlow-Bowron • D – Wildwood-McLeese Lake
E – Esler-Dog Creek • F – Horsefly-Likely-150 Mile House • G – Lac La Hache-108 Mile House • H – Canim Lake-Forest Grove
I – Narcosli-Nazko • J – West Chilcotin • K – East Chilcotin • L – Lone Butte-Interlakes

Municipalities

Quesnel • Wells • Williams Lake • 100 Mile House



108 Waterworks Maintenance Schedule

Inspect the total supply area for signs of leaks or abuse of the water system – weekly

Check pump houses to ensure proper operation of the pumps and automatic pump-up system – twice per week.

Service pumps including testing of any standby pumps, and any minor maintenance and cleanup – monthly.

Obtain water samples and deliver to Interior Health – monthly for bacteriological and yearly for chemical.

Clean inside of buildings, paint pipes as required and clear weeds around building annually or as required.

Check heating system in the pump houses during the winter months.

Twice per year, service all fire hydrants and standpipes and ensure clear access. Paint hydrants, standpipes and valve boxes as required.

Flush distribution pipelines 2 times per year and exercise all isolating gate valves.

Reservoirs are cleaned once per year in the spring.

Inspect storage tanks during winter months for any signs of freezing or icing problems. Clean, flush and disinfect annually.

As requested, test and inspect all new water connections, and attend to water service turn-off and turn-on.

Attend to unscheduled inspections, emergency calls and repairs as appropriate.

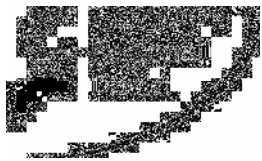




108 Water System Average Daily Water Flows

<u>Month</u>	<u>Cubic Meters</u>	<u>Imperial Gallons</u>
June	1401	308,220
July	2160	475,200
August	1660	365,200
September	925	203,500
October	794	174,680
November	705	155,100
December	740	162,800
January	741	163,020
February	769	169,180
March	752	165,440
April	1376	302,720
May	1778	391,160
June	2222	488,840





108 Waterworks
Microbiological Monthly Monitoring – June 2008 to June 2009

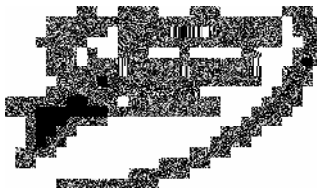
Month	Sampling Point	Total Coliforms Results	E. coli
June 2008	Kylo Road	< 1	< 1
	Easzee Drive	< 1	< 1
	Kitwanga Place	< 1	< 1
	Telqua	< 1	< 1
July 2008	Kylo Road	< 1	< 1
	Easzee Drive	< 1	< 1
	Kitwanga Place	< 1	< 1
	Telqua Drive	< 1	< 1
August 2008	Telqua Drive	1 re-sampled < 1	< 1
	Kitwanga Place	1 re-sampled < 1	< 1
	Kylo Road	6 re-sampled < 1	< 1
	Easzee Drive	4 re-sampled < 1	< 1
	Sepa Well	< 1	< 1
September 2008	Easzee Drive	< 1	< 1
	Kitwanga Place	< 1	< 1
	Kylo Road	< 1	< 1
	Telqua	< 1	< 1
	Sepa Well	< 1	< 1
October 2008	Kylo Road	< 1	< 1
	Easzee Drive	< 1	< 1
	Kitwanga Drive	< 1	< 1
	Telqua	< 1	< 1
	Sepa Well	< 1	< 1
November 2008	Kitwanga Drive	< 1	< 1
	Easzee Drive	< 1	< 1
	Kylo Road	< 1	< 1
	Telqua	< 1	< 1
	Sepa Well	< 1	< 1
December 2008	Kylo Road	< 1	< 1
	Kitwanga Drive	< 1	< 1
	Easzee Drive	< 1	< 1
	Telqua	< 1	< 1
	Sepa Well	< 1	< 1
January 2009	Easzee Drive	< 1	< 1
	Kitwanga Place	< 1	< 1
	Kylo Road	< 1	< 1
	Telqua	< 1	< 1
	Sepa Well	< 1	< 1



February 2009	Easzee Drive	< 1	< 1
	Kitwanga Place	< 1	< 1
	Kylo Road	< 1	< 1
	Telqua	< 1	< 1
	Sepa Well	< 1	< 1
March 2009	Kylo Road	< 1	< 1
	Kitwanga Place	< 1	< 1
	Easzee Drive	< 1	< 1
	Telqua	< 1	< 1
	Sepa Well	< 1	< 1
April 2009	Easzee Drive	< 1	< 1
	Kylo Road	< 1	< 1
	Kitwanga Place	< 1	< 1
	Telqua	< 1	< 1
	Sepa Well	< 1	< 1
May 2009	Kitwanga Place	< 1	< 1
	Kylo Road	< 1	< 1
	Easzee Drive	< 1	< 1
	Telqua	< 1	< 1
	Sepa Well	< 1	< 1
June 2009	Telqua	< 1	< 1
	Easzee Drive	< 1	< 1
	Kylo Road	< 1	< 1
	Kitwanga Place	< 1	< 1
	Sepa Well	< 1	< 1

Bacteriological tests are performed routinely for total coliforms and E. coli. The water is considered safe when no sample contains more than 10 total coliform organisms per 100 ml and no E.coli are present.





**WATER QUALITY MONITORING
108 WATERWORKS
CHEMICAL ANALYSIS**

Parameters	Sampling Point Sepa Well #2 Readings	Maximum Acceptable Concentration (MAC) – limit	Aesthetic Objective (AO) - limit
Conventional Parameters			
PH, Laboratory	8.09 PH units		6.5-8.5 PH units
True Color	< 5 CU		15 CU
Turbidity	0.10 NTU	1 NTU	≤ 5 NTU
Total Dissolved Solids	699 mg/L		500 mg/L
Dissolved Chloride	56.3 mg/L		250 mg/L
Dissolved Sulphate	72.4 mg/L		500 mg/L
Hardness	500 mg/L		500 mg/L
Dissolved Fluoride	0.65 mg/L	1.5 mg/L	
Nitrate and Nitrite	0.25 mg/L	45 mg/L	
Dissolved Nitrate	0.24 mg/L	45 mg/L	
Nitrite	0.011 mg/L	3.2 mg/L	
Total Metals Analysis			
Mercury	< 0.02 ug/L	1 ug/L	
Arsenic	0.0015 mg/L	0.010 mg/L	
Barium	0.012 mg/L	1 mg/L	
Boron	0.07 mg/L	5 mg/L	
Cadmium	<0.00004	0.005 mg/L	
Chromium	0.0003 mg/L	0.05 mg/L	
Lead	< 0.0002 mg/L	0.01 mg/L	
Selenium	< 0.0002 mg/L	0.01 mg/L	
Uranium	0.0039 mg/L	0.2 mg/L	
Copper	0.0015 mg/L		≤ 1 mg/L
Iron	0.01 mg/L		0.3 mg/L
Manganese	0.353 mg/L		0.05 mg/L
Zinc	<0.001 mg/L		5 mg/L

CU = color units

mg/L = milligrams per liter

≤ Less than or equal to detection limit

NTU = nephelometric turbidity units

< = less than detection limit

ug/L = micrograms per liter

MAC – This standard sets the maximum acceptable concentration for various substances in the water. Concentration of a given substance above the MAC could be hazardous to health.

AO – This standard determines acceptable appearance (cloudiness), smell or taste of the water being tested.





108 Waterworks Well Head Protection Plan

The 108 waterworks obtains its water from two large groundwater wells and water quality is considered to be excellent from a health perspective. However, some staining of clothes and plumbing fixtures can occur from higher levels of manganese contained in the water. Protection of the ground water is needed to ensure that future generations can continue to utilize a safe water source.

Experience from elsewhere in Canada, the U.S. and Europe shows that preventing water quality degradation by implementing a well protection plan is the best way to protect a community well water supply. A well protection plan contains realistic protective measures to manage activities in the capture zone (or recharge area) to reduce the risk of contaminating the well supply.

The Ministry of Health in conjunction with the Ministry of Environment and the Ministry of Municipal Affairs have developed procedures and guidelines for the development and implementation of a well head protection plan. The various steps in the planning process include:

- 1) Form a planning team;
- 2) Define the capture zone (recharge area) of the community well;
- 3) Map potential sources of pollution in the capture zone;
- 4) Develop and implement protection measures to prevent pollution;
- 5) Develop a contingency plan against any accidents; and
- 6) Monitor, evaluate, and report on the plan annually.

The Cariboo Regional District, with grant funds that it has received from the Federal Government under the Community Works Fund, has retained the services of an environmental consultant to complete the various steps as listed above. The Cariboo Regional District will be conducting meetings in 2009/10 to consult with the public regarding the consultant's findings.

Information gained from the development of the plan will help to determine if additional water treatment such as chlorination will be necessary in the future.

