

Drinking Water Annual Report -2005

City of Quesnel Water System

WATER SYSTEM OVERVIEW

The City of Quesnel water system is currently comprised of 6 operating groundwater wells (Main System), 8 reservoirs, 5 booster pump stations, 2 main PRV stations and approximately 100 km of water main. In addition the City also maintains one independent well on Sword Road (Small System) in South Quesnel to provide water to the soccer fields. At present there is no treatment or disinfection provided to the water system.

Approximately 12,000 residents are serviced by the City water system.

WATER MONITORING

To ensure the delivery of safe drinking water, the City has a program to monitor water quality at the source.

Historically, drinking water quality within the City has been monitored in consultation with the Provincial Health Inspector. The challenge and responsibility to ensure safe drinking water has been assisted by the adoption, in May 2003, by the province of the "British Columbia Drinking Water Regulations". In accordance with these new regulations, the City has developed a drinking water quality monitoring program to enhance present practices.

In May 2004 the City commenced sending their water samples to Cantest Laboratory in Burnaby, for all sampling points. The City has direct contact with the lab on results and concerns. Our local Drinking Water Officer at Northern Health Authority also has access to these results. From the laboratory, the results are downloaded directly to Water Trax, the City's water quality database.

The sampling parameters used to monitor potability are listed in the Guidelines for Canadian Drinking Water Quality (GCDWQ) & the British Columbia Drinking Water Regulations (BCDWR). These sampling parameters are used as indicators for bacteriological, chemical and physical contaminants.

Sampling frequency is also important in obtaining an accurate overview of water quality within the distribution system.

As a minimum, the number of samples to be taken of the source and distribution system, as required by the new provincial regulations, are based on population. The minimum number of samples to be taken for the City of Quesnel's approximately 12,000 people is 12 per month. The City exceeds that number of monthly sampling. The City samples 14 individual sites bi-weekly, for total & fecal coliforms, heterotrophic plate count, turbidity and temperature. As well, all reservoirs and wells are tested on a monthly basis for bacterial contaminants. In addition to the bacteriological parameters, additional testing is done for chemical & physical contaminants.

WATER QUALITY

Samples are taken at the start, middle and end of the entire City water distribution system. Lab results are transmitted to the City via email, as well as to the Drinking Water Officer. Results are downloaded into the City's water quality database, Water Trax.

If it is observed during testing that certain parameters exceed the limits specified in the GCDWQ or BCDWR guidelines, a procedure is in place for retesting and notification of any results or conditions that render or could render the water unfit to drink.

The standard protocol when a water sample is found to contain the presence of coliforms, however minute, is to resample the water immediately at the same location and resubmit for testing. The provincial Drinking Water Officer will determine if any action by the City is necessary only after a second test also shows the presence of coliforms.

In accordance with the regulations of our operating permit, the City has a plan in effect to respond to emergencies to ensure the delivery of safe drinking water to all its residents.

In 2005 we had 1 exceedence in our total coliform readings. Of the 293 samples taken and sent to Cantest Labs, on our Main System, there was 1 instance reported to be over the maximum acceptable concentration. This sample was taken from the outside tap at 191 Sanderson Road. A re-sample taken was fine. Due to the unexpected nature of unchlorinated water we need to look at chlorination in the future. At present there is no treatment or disinfection provided to the water system.

CONCLUSION

This 2005 City of Quesnel Water System Report is presented to the public, by way of posting on the City of Quesnel website, as required by the British Columbia Drinking Water Protection Act and Regulations, as well as to meet the terms and conditions of the City's Water System Operating Permit issued by the BC Drinking Water Officer.

Attachment "A" contains:

- a list of the sampling point sites and the parameters tested by the City of Quesnel

Attachment "B" contains:

- 4 water sampling result reports for 2005 from Cantest Labs on the City's Main System, & on the City's Small System, (on Sword Road as explained in this report "overview").

LINKS:

The Health Canada website (www.hc-sc.gc.ca) contains "Summary of Guidelines for Canadian Drinking Water Quality", which Health Canada publishes on current guidelines and updates each spring on their website.

Attachment "A"

City of Quesnel Water Quality Monitoring Program		
	SITE LOCATION	PARAMETERS
BI-WEEKLY (Distribution System) (every other Tues between 10am and 2pm)		
	First Week	Parameters: Total coliforms, Fecal coliforms, HPC's, turbidity, temp
	Airport	
	1722 Mills Rd	
	Marsh Dr- West Park Mall	
	Graham Avenue -Carson School	
	W. Fraser St	
	191 Sanderson Rd	
	Standpipe at Carson Pit	
	Third Week	Parameters: Total coliforms, Fecal coliforms, HPC's, turbidity, temp
	Carradice Rd – Van Kam office	
	511 Dixon St	
	Front St – Hospital	
	1340 Nason St	
	N Star Rd – Booster Dragon Hill Feed	
	N Star Booster -S. Hill Feed	
	Chew Rd - 711	
MONTHLY (Reservoirs)		Parameters: Total coliforms, Fecal coliforms, Temp
	Hwy 97 – Shadow Heights	
	Pinecrest Rd	
	Baker Dr – Sugar Loaf	
	Abbott Dr (Abbott #1, Abbott #2)	
	Dragon Hill	
	Tatchell (Southills #1, Southills #2)	
MONTHLY (Wells)		Parameters: Total coliforms, Fecal coliforms, Temp
	Sword Rd – Soccer Field Well	
	Rolph St at Roddis Dr	
	Hillborn Rd	
	Rolph St at Robertson Ave	
	Off North Fraser Dr	
	Hillborn Rd	
	Carson Subdivision Flats	

City of Quesnel Water Quality Monitoring Program

QUARTERLY (Wells) (first week of March, June, Sept, Dec)		Parameters: Chloride, Nitrate, Nitrite, Temperature
	Sword Rd - Soccer Field Well	
	Rolph St at Roddis Dr	
	Hillborn Rd	
	Rolph St at Robertson Ave	
	Off North Fraser Dr	
	Hillborn Rd	
	Carson Subdivision Flats	
SEMI - ANNUALLY (Distribution System) (first week Oct & April)		Parameters: Copper, Zinc, Lead, Iron, Vinyl chloride, Manganese, Temperature
	Mills Rd	
	Sanderson Rd	
ANNUALLY (Wells)		Parameters: Enhanced Potability, molybdenum, nickel, phosphorus, silver, Aggressive Index Number (Langelier saturation index) , Volatile Organic Compounds, Temperature
	Sword Rd – Soccer Field well	
	Rolph St at Roddis Dr.	
	Hillborn Rd	
	Rolph St at Robertson Ave	
	Off North Fraser Dr	
	Hillborn Rd	
	Carson Sub Flats	

Attachment "B"

4 Water sample result reports in pdf format :

- 2005 mainsystem coliform turbidity exceedences.pdf
- 2005 Quesnel Water Results Main System Summary.pdf
- 2005 Quesnel Water Sampling Sm System. Pdf
- 2005 small syst coliform turbidity exceedences.pdf

2005 Quesnel Main System Coliform Turbidity

City of Quesnel – Main System

Organization: City of Quesnel
Water System: City of Quesnel – Main System
01/01/2005 to 12/31/2005 (mm/dd/yyyy)
Exceedances Only

MICROORGANISMS

Fecal coliforms (counts)

Sampling
Point Name

samples: 293 min: <1.0000
detects: 0 max: <1.0000 counts/100mL
non-detects: 293 avg: n/a (based on 0 numerical results)
exceedances: 0

Total coliforms (counts)

Sampling
Point Name

* 07/20/2005 00:00 1 counts/100mL

1 - S-L 191
Sanderson Rd

samples: 293 min: <1.0000
detects: 1 max: 1 counts/100mL
non-detects: 292 avg: 1 counts/100mL (based on 1 numerical results)
exceedances: 1

PHYSICAL

Turbidity

Sampling
Point Name

* 08/10/2005 00:00 1.2 NTU

1 - S-L 191
Sanderson Rd

* 12/06/2005 00:00 3.6 NTU

1 - S-L 191
Sanderson Rd

# samples: 167	min: <0.1000
# detects: 139	max: 3.6 NTU
# non-detects: 28	avg: 0.20 NTU (based on 139 numerical results)
# exceedances: 2	95th Percentile: 0.36 NTU

Notes:

Result: P=present, A=absent, PR=presumptive, ND=not detected, OR=over range, OG=overgrown, NR=no result, NT=not tested

"<" = less than detection limit shown

">" = greater than upper range limit shown

"«" = less than number shown (Detected)

"»" = greater than number shown (Detected)

* Criteria Exceeded

2005 Quesnel Water Sampling Main System Summary

City of Quesnel – Main System

Organization: City of Quesnel
Water System: City of Quesnel – Main System
01/01/2005 to 12/31/2005 (mm/dd/yyyy)

INORGANIC

Aluminum (total)

# samples: 5	min: <0.0050
# detects: 4	max: 0.010 mg/L
# non-detects: 1	avg: 0.006 mg/L (based on 4 numerical results)
# exceedances: 0	

Antimony (total)

# samples: 5	min: <0.0010
# detects: 0	max: <0.0010 mg/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Arsenic (total)

# samples: 5	min: <0.0010
# detects: 3	max: 0.002 mg/L
# non-detects: 2	avg: 0.001 mg/L (based on 3 numerical results)
# exceedances: 0	

Barium (total)

# samples: 5	min: 0.024
# detects: 5	max: 0.13 mg/L
# non-detects: 0	avg: 0.064 mg/L (based on 5 numerical results)
# exceedances: 0	

City of Quesnel – Main System (Continued)

Bicarbonate (as HCO₃)

# samples: 5	min: 123
# detects: 5	max: 323 mg/L
# non-detects: 0	avg: 219 mg/L (based on 5 numerical results)
# exceedances: 0	95th Percentile: 323.00 mg/L

Boron (total)

# samples: 5	min: <0.0500
# detects: 0	max: <0.0500 mg/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Cadmium (total)

# samples: 5	min: <0.0002
# detects: 0	max: <0.0002 mg/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Calcium (dissolved)

# samples: 5	min: 28.4
# detects: 5	max: 77.8 mg/L
# non-detects: 0	avg: 48.9 mg/L (based on 5 numerical results)
# exceedances: 0	

Calcium (total)

samples: 5 min: 24.8
detects: 5 max: 75.7 mg/L
non-detects: 0 avg: 46.2 mg/L (based on 5 numerical results)
exceedances: 0

Carbonate (as CO3)

samples: 5 min: <0.5000
detects: 0 max: <0.5000 mg/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0 95th Percentile: 0.00 mg/L

Chloride

samples: 20 min: 0.27
detects: 20 max: 14.0 mg/L
non-detects: 0 avg: 6.38 mg/L (based on 20 numerical results)
exceedances: 0

Chromium (total)

samples: 5 min: <0.0010
detects: 0 max: <0.0010 mg/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

Copper (total)

samples: 7 min: <0.0010
detects: 4 max: 0.005 mg/L
non-detects: 3 avg: 0.003 mg/L (based on 4 numerical results)
exceedances: 0

City of Quesnel – Main System (Continued)

Fluoride

# samples: 5	min: <0.0500
# detects: 0	max: <0.0500 mg/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Hydroxide (as OH)

# samples: 5	min: <0.5000
# detects: 0	max: <0.5000 mg/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	95th Percentile: 0.00 mg/L

Iron (dissolved)

# samples: 5	min: <0.0500
# detects: 2	max: 0.07 mg/L
# non-detects: 3	avg: 0.07 mg/L (based on 2 numerical results)
# exceedances: 0	

Iron (total)

# samples: 7	min: <0.0500
# detects: 4	max: 0.08 mg/L
# non-detects: 3	avg: 0.07 mg/L (based on 4 numerical results)
# exceedances: 0	

Lead (total)

samples: 7 min: <0.0010
detects: 1 max: 0.003 mg/L
non-detects: 6 avg: 0.003 mg/L (based on 1 numerical results)
exceedances: 0

Magnesium (dissolved)

samples: 5 min: 7.57
detects: 5 max: 26.1 mg/L
non-detects: 0 avg: 14.86 mg/L (based on 5 numerical results)
exceedances: 0

Magnesium (total)

samples: 5 min: 7.70
detects: 5 max: 27.8 mg/L
non-detects: 0 avg: 15.93 mg/L (based on 5 numerical results)
exceedances: 0

Manganese (dissolved)

samples: 5 min: 0.013
detects: 5 max: 0.48 mg/L
non-detects: 0 avg: 0.171 mg/L (based on 5 numerical results)
exceedances: 4

Manganese (total)

samples: 7 min: 0.004
detects: 7 max: 0.52 mg/L
non-detects: 0 avg: 0.134 mg/L (based on 7 numerical results)
exceedances: 4

City of Quesnel – Main System (Continued)

Mercury (total)

# samples: 5	min: <0.00002
# detects: 0	max: <0.00002 mg/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Molybdenum (total)

# samples: 5	min: 0.0009
# detects: 5	max: 0.0016 mg/L
# non-detects: 0	avg: 0.0012 mg/L (based on 5 numerical results)
# exceedances: 0	

Nickel (total)

# samples: 5	min: <0.0010
# detects: 3	max: 0.004 mg/L
# non-detects: 2	avg: 0.002 mg/L (based on 3 numerical results)
# exceedances: 0	

Nitrate (as N)

# samples: 20	min: <0.0500
# detects: 8	max: 0.75 mg/L
# non-detects: 12	avg: 0.31 mg/L (based on 8 numerical results)
# exceedances: 0	

Nitrate + Nitrite (as N)

samples: 10 **min:** <0.0500
detects: 4 **max:** 0.75 mg/L
non-detects: 6 **avg:** 0.38 mg/L (based on 4 numerical results)
exceedances: 0

Nitrite (as N)

samples: 20 **min:** <0.0020
detects: 5 **max:** 0.007 mg/L
non-detects: 15 **avg:** 0.005 mg/L (based on 5 numerical results)
exceedances: 0

Phosphorus (total)

samples: 5 **min:** <0.1500
detects: 3 **max:** 0.2 mg/L
non-detects: 2 **avg:** 0.2 mg/L (based on 3 numerical results)
exceedances: 0 **95th Percentile:** 0.20 mg/L

Potassium (dissolved)

samples: 5 **min:** 0.8
detects: 5 **max:** 2.6 mg/L
non-detects: 0 **avg:** 1.5 mg/L (based on 5 numerical results)
exceedances: 0

Selenium (total)

samples: 5 **min:** <0.0010
detects: 2 **max:** 0.003 mg/L
non-detects: 3 **avg:** 0.003 mg/L (based on 2 numerical results)
exceedances: 0

City of Quesnel – Main System (Continued)

Silicon (dissolved, as SiO₂)

# samples: 5	min: 13.6
# detects: 5	max: 21.4 mg/L
# non-detects: 0	avg: 17.2 mg/L (based on 5 numerical results)
# exceedances: 0	95th Percentile: 21.40 mg/L

Silver (total)

# samples: 5	min: <0.0003
# detects: 0	max: <0.0003 mg/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Sodium (dissolved)

# samples: 5	min: 3.19
# detects: 5	max: 6.17 mg/L
# non-detects: 0	avg: 4.64 mg/L (based on 5 numerical results)
# exceedances: 0	

Sulphate

# samples: 5	min: 15.1
# detects: 5	max: 76.4 mg/L
# non-detects: 0	avg: 31.1 mg/L (based on 5 numerical results)
# exceedances: 0	

Uranium (total)

samples: 5 min: <0.0005
detects: 4 max: 0.0027 mg/L
non-detects: 1 avg: 0.0013 mg/L (based on 4 numerical results)
exceedances: 0

Zinc (total)

samples: 7 min: <0.0050
detects: 0 max: <0.0050 mg/L
non-detects: 7 avg: n/a (based on 0 numerical results)
exceedances: 0

MICROORGANISMS**Background Bacteria**

samples: 1 min: 242
detects: 1 max: 242 CFU/100mL
non-detects: 0 avg: 242 CFU/100mL (based on 1 numerical results)
exceedances: 1

Escherichia coli / E. coli (counts)

samples: 7 min: <1.0000
detects: 0 max: <1.0000 CFU/100mL
non-detects: 7 avg: n/a (based on 0 numerical results)
exceedances: 0

Fecal coliforms (counts)

samples: 293 **min:** <1.0000
detects: 0 **max:** <1.0000 counts/100mL
non-detects: 293 **avg:** n/a (based on 0 numerical results)
exceedances: 0

Heterotrophic Plate Count / HPC

samples: 167 **min:** <1.0000
detects: 11 **max:** 4 CFU/mL
non-detects: 156 **avg:** 1 CFU/mL (based on 11 numerical results)
exceedances: 0

Total coliforms (counts)

samples: 293 **min:** <1.0000
detects: 1 **max:** 1 counts/100mL
non-detects: 292 **avg:** 1 counts/100mL (based on 1 numerical results)
exceedances: 1

ORGANIC**Benzene**

samples: 5 **min:** <0.0001
detects: 0 **max:** <0.0001 mg/L
non-detects: 5 **avg:** n/a (based on 0 numerical results)
exceedances: 0

Bromodichloromethane

samples: 5 min: <0.0001
detects: 0 max: <0.0001 mg/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

Bromoform

samples: 5 min: <0.0002
detects: 0 max: <0.0002 mg/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

Carbon tetrachloride

samples: 5 min: <0.0001
detects: 0 max: <0.0001 mg/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

Chloroethane

samples: 5 min: <0.4000
detects: 0 max: <0.4000 micro g/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

Chloroform

samples: 5 min: <0.0003
detects: 0 max: <0.0003 mg/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

City of Quesnel – Main System (Continued)

Chloromethane

# samples: 5	min: <0.4000
# detects: 0	max: <0.4000 micro g/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Chlorodibromomethane

# samples: 5	min: <0.0001
# detects: 0	max: <0.0001 mg/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Dibromomethane

# samples: 5	min: <0.2000
# detects: 0	max: <0.2000 micro g/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

1,2-Dichlorobenzene

# samples: 5	min: <0.0001
# detects: 0	max: <0.0001 mg/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

1,3-Dichlorobenzene

samples: 5 min: <0.1000
detects: 0 max: <0.1000 micro g/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

1,4-Dichlorobenzene

samples: 5 min: <0.0001
detects: 0 max: <0.0001 mg/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

Dichlorodifluoromethane

samples: 5 min: <0.2000
detects: 0 max: <0.2000 micro g/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

1,1-Dichloroethane

samples: 5 min: <0.1000
detects: 0 max: <0.1000 micro g/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

1,2-Dichloroethane

samples: 5 min: <0.0004
detects: 0 max: <0.0004 mg/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

City of Quesnel – Main System (Continued)

1,1-Dichloroethylene

# samples: 5	min: <0.0001
# detects: 0	max: <0.0001 mg/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

cis-1,2-Dichloroethylene

# samples: 5	min: <0.1000
# detects: 0	max: <0.1000 micro g/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

trans-1,2-Dichloroethylene

# samples: 5	min: <0.1000
# detects: 0	max: <0.1000 micro g/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Dichloromethane

# samples: 5	min: <0.006
# detects: 0	max: <0.006 mg/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

1,2-Dichloropropane

samples: 5 min: <0.1000
detects: 0 max: <0.1000 micro g/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

cis-1,3-Dichloropropene

samples: 5 min: <0.1000
detects: 0 max: <0.1000 micro g/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

trans-1,3-Dichloropropene

samples: 5 min: <0.1000
detects: 0 max: <0.1000 micro g/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

Ethylbenzene

samples: 5 min: <0.0001
detects: 0 max: <0.0001 mg/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

Ethylene dibromide

samples: 5 min: <0.1000
detects: 0 max: <0.1000 micro g/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

City of Quesnel – Main System (Continued)

2-Hexanone

# samples: 5	min: <5.0000
# detects: 0	max: <5.0000 micro g/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	95th Percentile: 0.00 micro g/L

Methyl bromide

# samples: 5	min: <0.8000
# detects: 0	max: <0.8000 micro g/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Methyl ethyl ketone

# samples: 5	min: <5.0000
# detects: 0	max: <5.0000 micro g/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	95th Percentile: 0.00 micro g/L

Methyl isobutyl ketone

# samples: 5	min: <2.0000
# detects: 0	max: <2.0000 micro g/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Monochlorobenzene

samples: 5 min: <0.0001
detects: 0 max: <0.0001 mg/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

Styrene

samples: 5 min: <0.1000
detects: 0 max: <0.1000 micro g/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

1,1,2,2-Tetrachloroethane

samples: 5 min: <0.2000
detects: 0 max: <0.2000 micro g/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

Tetrachloroethylene

samples: 5 min: <0.0001
detects: 0 max: <0.0001 mg/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

Toluene

samples: 5 min: <0.0001
detects: 1 max: 0.0009 mg/L
non-detects: 4 avg: 0.0009 mg/L (based on 1 numerical results)
exceedances: 0

City of Quesnel – Main System (Continued)

1,1,1-Trichloroethane

# samples: 5	min: <0.1000
# detects: 0	max: <0.1000 micro g/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

1,1,2-Trichloroethane

# samples: 5	min: <0.1000
# detects: 0	max: <0.1000 micro g/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Trichloroethylene

# samples: 5	min: <0.0001
# detects: 0	max: <0.0001 mg/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Trichlorofluoromethane

# samples: 5	min: <0.2000
# detects: 0	max: <0.2000 micro g/L
# non-detects: 5	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Vinyl chloride

samples: 7 min: <0.0002
detects: 0 max: <0.0002 mg/L
non-detects: 7 avg: n/a (based on 0 numerical results)
exceedances: 0

Total Xylenes

samples: 5 min: <0.0001
detects: 0 max: <0.0001 mg/L
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

PHYSICAL**Alkalinity (total, as CaCO₃)**

samples: 5 min: 101
detects: 5 max: 265 mg/L
non-detects: 0 avg: 180 mg/L (based on 5 numerical results)
exceedances: 0

Colour

samples: 5 min: <5.0000
detects: 0 max: <5.0000 TCU
non-detects: 5 avg: n/a (based on 0 numerical results)
exceedances: 0

Conductivity

samples: 5 min: 218
detects: 5 max: 623 microS/cm
non-detects: 0 avg: 395 microS/cm (based on 5 numerical results)
exceedances: 0

Hardness (total, as CaCO₃)

samples: 5 min: 102
detects: 5 max: 302 mg/L
non-detects: 0 avg: 183 mg/L (based on 5 numerical results)
exceedances: 0

Langelier Index (@ 4 C)

samples: 5 min: -0.54
detects: 5 max: 0.25
non-detects: 0 avg: -0.16 (based on 5 numerical results)
exceedances: 0 95th Percentile: 0.25

Langelier Index (@ 60 C)

samples: 5 min: 0.50
detects: 5 max: 1.29
non-detects: 0 avg: 0.88 (based on 5 numerical results)
exceedances: 0 95th Percentile: 1.29

pH

samples: 5 min: 7.76
detects: 5 max: 8.09
non-detects: 0 avg: 7.91 (based on 5 numerical results)
exceedances: 0

City of Quesnel – Main System (Continued)

Temperature

# samples: 245	min: 5
# detects: 245	max: 16 degrees C
# non-detects: 0	avg: 9.3 degrees C (based on 245 numerical results)
# exceedances: 0	

Total dissolved solids / TDS

# samples: 5	min: 140
# detects: 5	max: 434 mg/L
# non-detects: 0	avg: 250 mg/L (based on 5 numerical results)
# exceedances: 0	

Turbidity

# samples: 167	min: <0.1000
# detects: 139	max: 3.6 NTU
# non-detects: 28	avg: 0.20 NTU (based on 139 numerical results)
# exceedances: 2	95th Percentile: 0.36 NTU

Notes:

Result: P=present, A=absent, PR=presumptive, ND=not detected, OR=over range, OG=overgrown, NR=no result, NT=not tested

"<" = less than detection limit shown

">" = greater than upper range limit shown

"«" = less than number shown (Detected)

"»" = greater than number shown (Detected)

* Criteria Exceeded

2005 Quesnel Water Sampling Small System Summary

City of Quesnel – Small System

Organization: City of Quesnel
Water System: City of Quesnel – Small System
01/01/2005 to 12/31/2005 (mm/dd/yyyy)

INORGANIC

Aluminum (total)

# samples: 1	min: 0.009
# detects: 1	max: 0.009 mg/L
# non-detects: 0	avg: 0.009 mg/L (based on 1 numerical results)
# exceedances: 0	

Antimony (total)

# samples: 1	min: <0.0010
# detects: 0	max: <0.0010 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Arsenic (total)

# samples: 1	min: 0.001
# detects: 1	max: 0.001 mg/L
# non-detects: 0	avg: 0.001 mg/L (based on 1 numerical results)
# exceedances: 0	

Barium (total)

# samples: 1	min: 0.041
# detects: 1	max: 0.041 mg/L
# non-detects: 0	avg: 0.041 mg/L (based on 1 numerical results)
# exceedances: 0	

City of Quesnel – Small System (Continued)

Bicarbonate (as HCO₃)

# samples: 1	min: 131
# detects: 1	max: 131 mg/L
# non-detects: 0	avg: 131 mg/L (based on 1 numerical results)
# exceedances: 0	95th Percentile: 131.00 mg/L

Boron (total)

# samples: 1	min: <0.0500
# detects: 0	max: <0.0500 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Cadmium (total)

# samples: 1	min: <0.0002
# detects: 0	max: <0.0002 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Calcium (dissolved)

# samples: 1	min: 26.2
# detects: 1	max: 26.2 mg/L
# non-detects: 0	avg: 26.2 mg/L (based on 1 numerical results)
# exceedances: 0	

Calcium (total)

samples: 1 min: 25.9
detects: 1 max: 25.9 mg/L
non-detects: 0 avg: 25.9 mg/L (based on 1 numerical results)
exceedances: 0

Carbonate (as CO3)

samples: 1 min: <0.5000
detects: 0 max: <0.5000 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0 95th Percentile: 0.00 mg/L

Chloride

samples: 4 min: <0.2000
detects: 3 max: 0.36 mg/L
non-detects: 1 avg: 0.30 mg/L (based on 3 numerical results)
exceedances: 0

Chromium (total)

samples: 1 min: <0.0010
detects: 0 max: <0.0010 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

Copper (total)

samples: 1 min: <0.0010
detects: 0 max: <0.0010 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

City of Quesnel – Small System (Continued)

Fluoride

# samples: 1	min: <0.0500
# detects: 0	max: <0.0500 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Hydroxide (as OH)

# samples: 1	min: <0.5000
# detects: 0	max: <0.5000 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	95th Percentile: 0.00 mg/L

Iron (dissolved)

# samples: 1	min: <0.0500
# detects: 0	max: <0.0500 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Iron (total)

# samples: 1	min: <0.0500
# detects: 0	max: <0.0500 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Lead (total)

samples: 1 min: <0.0010
detects: 0 max: <0.0010 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

Magnesium (dissolved)

samples: 1 min: 8.56
detects: 1 max: 8.56 mg/L
non-detects: 0 avg: 8.56 mg/L (based on 1 numerical results)
exceedances: 0

Magnesium (total)

samples: 1 min: 9.19
detects: 1 max: 9.19 mg/L
non-detects: 0 avg: 9.19 mg/L (based on 1 numerical results)
exceedances: 0

Manganese (dissolved)

samples: 1 min: <0.0010
detects: 0 max: <0.0010 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

Manganese (total)

samples: 1 min: <0.0010
detects: 0 max: <0.0010 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

City of Quesnel – Small System (Continued)

Mercury (total)

# samples: 1	min: <0.00002
# detects: 0	max: <0.00002 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Molybdenum (total)

# samples: 1	min: 0.0016
# detects: 1	max: 0.0016 mg/L
# non-detects: 0	avg: 0.0016 mg/L (based on 1 numerical results)
# exceedances: 0	

Nickel (total)

# samples: 1	min: 0.002
# detects: 1	max: 0.002 mg/L
# non-detects: 0	avg: 0.002 mg/L (based on 1 numerical results)
# exceedances: 0	

Nitrate (as N)

# samples: 4	min: 0.09
# detects: 4	max: 0.11 mg/L
# non-detects: 0	avg: 0.11 mg/L (based on 4 numerical results)
# exceedances: 0	

Nitrate + Nitrite (as N)

samples: 2 min: 0.11
detects: 2 max: 0.11 mg/L
non-detects: 0 avg: 0.11 mg/L (based on 2 numerical results)
exceedances: 0

Nitrite (as N)

samples: 4 min: <0.0020
detects: 1 max: 0.002 mg/L
non-detects: 3 avg: 0.002 mg/L (based on 1 numerical results)
exceedances: 0

Phosphorus (total)

samples: 1 min: <0.1500
detects: 0 max: <0.1500 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0 95th Percentile: 0.00 mg/L

Potassium (dissolved)

samples: 1 min: 0.5
detects: 1 max: 0.5 mg/L
non-detects: 0 avg: 0.5 mg/L (based on 1 numerical results)
exceedances: 0

Selenium (total)

samples: 1 min: <0.0010
detects: 0 max: <0.0010 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

City of Quesnel – Small System (Continued)

Silicon (dissolved, as SiO₂)

# samples: 1	min: 9.1
# detects: 1	max: 9.1 mg/L
# non-detects: 0	avg: 9.1 mg/L (based on 1 numerical results)
# exceedances: 0	95th Percentile: 9.10 mg/L

Silver (total)

# samples: 1	min: <0.0003
# detects: 0	max: <0.0003 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Sodium (dissolved)

# samples: 1	min: 2.66
# detects: 1	max: 2.66 mg/L
# non-detects: 0	avg: 2.66 mg/L (based on 1 numerical results)
# exceedances: 0	

Sulphate

# samples: 1	min: 14.7
# detects: 1	max: 14.7 mg/L
# non-detects: 0	avg: 14.7 mg/L (based on 1 numerical results)
# exceedances: 0	

Uranium (total)

samples: 1 min: <0.0005
detects: 0 max: <0.0005 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

Zinc (total)

samples: 1 min: <0.0050
detects: 0 max: <0.0050 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

MICROORGANISMS**Fecal coliforms (counts)**

samples: 28 min: <1.0000
detects: 0 max: <1.0000 counts/100mL
non-detects: 28 avg: n/a (based on 0 numerical results)
exceedances: 0

Heterotrophic Plate Count / HPC

samples: 14 min: <1.0000
detects: 5 max: 12 CFU/mL
non-detects: 9 avg: 3 CFU/mL (based on 5 numerical results)
exceedances: 0

Total coliforms (counts)

samples: 28 min: <1.0000
detects: 0 max: <1.0000 counts/100mL
non-detects: 28 avg: n/a (based on 0 numerical results)
exceedances: 0

ORGANIC**Benzene**

samples: 1 min: <0.0001
detects: 0 max: <0.0001 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

Bromodichloromethane

samples: 1 min: <0.0001
detects: 0 max: <0.0001 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

Bromoform

samples: 1 min: <0.0002
detects: 0 max: <0.0002 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

Carbon tetrachloride

samples: 1 min: <0.0001
detects: 0 max: <0.0001 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

Chloroethane

samples: 1 min: <0.4000
detects: 0 max: <0.4000 micro g/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

Chloroform

samples: 1 min: <0.0003
detects: 0 max: <0.0003 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

Chloromethane

samples: 1 min: <0.4000
detects: 0 max: <0.4000 micro g/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

Chlorodibromomethane

samples: 1 min: <0.0001
detects: 0 max: <0.0001 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

City of Quesnel – Small System (Continued)

Dibromomethane

# samples: 1	min: <0.2000
# detects: 0	max: <0.2000 micro g/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

1,2-Dichlorobenzene

# samples: 1	min: <0.0001
# detects: 0	max: <0.0001 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

1,3-Dichlorobenzene

# samples: 1	min: <0.1000
# detects: 0	max: <0.1000 micro g/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

1,4-Dichlorobenzene

# samples: 1	min: <0.0001
# detects: 0	max: <0.0001 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Dichlorodifluoromethane

samples: 1 min: <0.2000
detects: 0 max: <0.2000 micro g/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

1,1-Dichloroethane

samples: 1 min: <0.1000
detects: 0 max: <0.1000 micro g/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

1,2-Dichloroethane

samples: 1 min: <0.0004
detects: 0 max: <0.0004 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

1,1-Dichloroethylene

samples: 1 min: <0.0001
detects: 0 max: <0.0001 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

cis-1,2-Dichloroethylene

samples: 1 min: <0.1000
detects: 0 max: <0.1000 micro g/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

City of Quesnel – Small System (Continued)

trans-1,2-Dichloroethylene

# samples: 1	min: <0.1000
# detects: 0	max: <0.1000 micro g/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Dichloromethane

# samples: 1	min: <0.006
# detects: 0	max: <0.006 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

1,2-Dichloropropane

# samples: 1	min: <0.1000
# detects: 0	max: <0.1000 micro g/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

cis-1,3-Dichloropropene

# samples: 1	min: <0.1000
# detects: 0	max: <0.1000 micro g/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

trans-1,3-Dichloropropene

samples: 1 min: <0.1000
detects: 0 max: <0.1000 micro g/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

Ethylbenzene

samples: 1 min: <0.0001
detects: 0 max: <0.0001 mg/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

Ethylene dibromide

samples: 1 min: <0.1000
detects: 0 max: <0.1000 micro g/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

2-Hexanone

samples: 1 min: <5.0000
detects: 0 max: <5.0000 micro g/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0 95th Percentile: 0.00 micro g/L

Methyl bromide

samples: 1 min: <0.8000
detects: 0 max: <0.8000 micro g/L
non-detects: 1 avg: n/a (based on 0 numerical results)
exceedances: 0

City of Quesnel – Small System (Continued)

Methyl ethyl ketone

# samples: 1	min: <5.0000
# detects: 0	max: <5.0000 micro g/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	95th Percentile: 0.00 micro g/L

Methyl isobutyl ketone

# samples: 1	min: <2.0000
# detects: 0	max: <2.0000 micro g/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Monochlorobenzene

# samples: 1	min: <0.0001
# detects: 0	max: <0.0001 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Styrene

# samples: 1	min: <0.1000
# detects: 0	max: <0.1000 micro g/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

1,1,2,2-Tetrachloroethane

samples: 1 **min:** <0.2000
detects: 0 **max:** <0.2000 micro g/L
non-detects: 1 **avg:** n/a (based on 0 numerical results)
exceedances: 0

Tetrachloroethylene

samples: 1 **min:** <0.0001
detects: 0 **max:** <0.0001 mg/L
non-detects: 1 **avg:** n/a (based on 0 numerical results)
exceedances: 0

Toluene

samples: 1 **min:** 0.0033
detects: 1 **max:** 0.0033 mg/L
non-detects: 0 **avg:** 0.0033 mg/L (based on 1 numerical results)
exceedances: 0

1,1,1-Trichloroethane

samples: 1 **min:** <0.1000
detects: 0 **max:** <0.1000 micro g/L
non-detects: 1 **avg:** n/a (based on 0 numerical results)
exceedances: 0

1,1,2-Trichloroethane

samples: 1 **min:** <0.1000
detects: 0 **max:** <0.1000 micro g/L
non-detects: 1 **avg:** n/a (based on 0 numerical results)
exceedances: 0

City of Quesnel – Small System (Continued)

Trichloroethylene

# samples: 1	min: <0.0001
# detects: 0	max: <0.0001 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Trichlorofluoromethane

# samples: 1	min: <0.2000
# detects: 0	max: <0.2000 micro g/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Vinyl chloride

# samples: 1	min: <0.0002
# detects: 0	max: <0.0002 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Total Xylenes

# samples: 1	min: <0.0001
# detects: 0	max: <0.0001 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

PHYSICAL

City of Quesnel – Small System (Continued)

Alkalinity (total, as CaCO₃)

# samples: 1	min: 107
# detects: 1	max: 107 mg/L
# non-detects: 0	avg: 107 mg/L (based on 1 numerical results)
# exceedances: 0	

Colour

# samples: 1	min: <5.0000
# detects: 0	max: <5.0000 TCU
# non-detects: 1	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Conductivity

# samples: 1	min: 223
# detects: 1	max: 223 microS/cm
# non-detects: 0	avg: 223 microS/cm (based on 1 numerical results)
# exceedances: 0	

Hardness (total, as CaCO₃)

# samples: 1	min: 101
# detects: 1	max: 101 mg/L
# non-detects: 0	avg: 101 mg/L (based on 1 numerical results)
# exceedances: 0	

Langelier Index (@ 4 C)

samples: 1 min: -0.37
detects: 1 max: -0.37
non-detects: 0 avg: -0.37 (based on 1 numerical results)
exceedances: 0 95th Percentile: -0.37

Langelier Index (@ 60 C)

samples: 1 min: 0.67
detects: 1 max: 0.67
non-detects: 0 avg: 0.67 (based on 1 numerical results)
exceedances: 0 95th Percentile: 0.67

pH

samples: 1 min: 8.10
detects: 1 max: 8.10
non-detects: 0 avg: 8.10 (based on 1 numerical results)
exceedances: 0

Temperature

samples: 24 min: 5
detects: 24 max: 15 degrees C
non-detects: 0 avg: 9.8 degrees C (based on 24 numerical results)
exceedances: 0

Total dissolved solids / TDS

samples: 1 min: 127
detects: 1 max: 127 mg/L
non-detects: 0 avg: 127 mg/L (based on 1 numerical results)
exceedances: 0

City of Quesnel – Small System (Continued)

Turbidity

# samples: 14	min: 0.17
# detects: 14	max: 25 NTU
# non-detects: 0	avg: 2.56 NTU (based on 14 numerical results)
# exceedances: 3	95th Percentile: 25.00 NTU

Notes:

Result: P=present, A=absent, PR=presumptive, ND=not detected, OR=over range, OG=overgrown, NR=no result, NT=not tested

"<" = less than detection limit shown

">" = greater than upper range limit shown

"«" = less than number shown (Detected)

"»" = greater than number shown (Detected)

** Criteria Exceeded*

2005 Quesnel Small System Coliform Turbidity

City of Quesnel – Small System

Organization: City of Quesnel
Water System: City of Quesnel – Small System
01/01/2005 to 12/31/2005 (mm/dd/yyyy)
Exceedances Only

MICROORGANISMS

Fecal coliforms (counts)

Sampling
Point Name

# samples: 28	min: <1.0000
# detects: 0	max: <1.0000 counts/100mL
# non-detects: 28	avg: n/a (based on 0 numerical results)
# exceedances: 0	

Total coliforms (counts)

Sampling
Point Name

# samples: 28	min: <1.0000
# detects: 0	max: <1.0000 counts/100mL
# non-detects: 28	avg: n/a (based on 0 numerical results)
# exceedances: 0	

PHYSICAL

Turbidity

Sampling
Point Name

* 01/04/2005 00:00	25 NTU
* 02/01/2005 00:00	4.4 NTU
* 04/26/2005 00:00	2.1 NTU

S-N Standpipe
Carson Pit

S-N Standpipe
Carson Pit

S-N Standpipe
Carson Pit

# samples: 14	min: 0.17
# detects: 14	max: 25 NTU
# non-detects: 0	avg: 2.56 NTU (based on 14 numerical results)
# exceedances: 3	95th Percentile: 25.00 NTU

Notes:

Result: P=present, A=absent, PR=presumptive, ND=not detected, OR=over range, OG=overgrown, NR=no result, NT=not tested

"<" = less than detection limit shown

">" = greater than upper range limit shown

"«" = less than number shown (Detected)

"»" = greater than number shown (Detected)

* Criteria Exceeded