



CITY OF LANGLEY

2007 WATER QUALITY ANNUAL REPORT

July, 2008

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CITY OF LANGLEY
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1.0 EXECUTIVE SUMMARY

The City of Langley (City) receives its water supply from the Coquitlam Lake reservoir. The water is supplied through the Greater Vancouver Water District (GVWD)'s trunk watermain which enters the City of Langley at 196th Street and Fraser Highway. There is a primary ozone disinfection station at the Coquitlam reservoir and a secondary disinfection station at Clayton hill area in the City of Surrey.

The City has one large water reservoir located at 200A Street and 47A Avenue to serve our present and future water demand. Should there be a disruption in the supply of water from the GVWD, there is adequate water capacity in the reservoir to serve our City for extended periods of time. The reservoir is equipped with an automatic shut off valve, which will close if flow is disrupted in any form, such as an earthquake. This will retain the water that is contained in the reservoir so that water will be available for domestic and fire fighting use. Because the reservoir was constructed in two separate cells, our crews can clean and maintain one cell at a time, and still have sufficient clean water for our residents.

The City is divided into two pressure zones. These zones split in the area of 53rd Avenue with the north half being supplied by gravity from the Clayton reservoir in Surrey at all times and the south being supplied directly from our reservoir. If the water is drawn off by other municipalities prior to arriving in the City, automatic control valves located along 53rd Avenue will open allowing water from our reservoir to supply the north sector in the interim. The reservoir is also supplied by the Clayton reservoir, located in Surrey, through pipes isolated from the rest of the system.

There is also a back up plan to obtain water from the Township of Langley's water wells and watermains if water from the GVWD is cut off for some reason. The water can be transferred by turning on valves that are located at the border on 200th Street & 44th Avenue, 201st Street & 62nd Avenue, 208th Street & 44th Avenue and 56th & the Langley Bypass to supply residents of the City of Langley with water in an emergency situation.

To ensure water quality remains at the highest health standard for domestic use, the water is tested weekly (12 locations at various elevation levels) in the reservoir and 11 remote testing stations throughout the City. The City of Langley schedules flushing and cleaning every City water main every 2 years in order to ensure a healthy and safe water supply. The City has completed flushing in the GVRD pressure zone in the spring of 2007. The Reservoir pressure zone will not be flushed until after blow off assemblies on dead ends are replaced. Replacement of blow off assemblies are scheduled for 2007 and 2008.

The City will implement a uni-directional flushing program in 2009 after water valves in the City has been located and accurately recorded. Locating water valves are scheduled in 2008.

As mentioned previously, samples of the water are gathered and sent to the GVRD water laboratory in Burnaby. The results from these lab tests are then forwarded to the City. The City tries to

maintain a chlorine residual of 0.2 mg/l throughout our distribution system. The GVWD also collects data by testing for bacterial regrowth using heterotrophic counts (HPCs) and total coliform counts. The public works department will take immediate action to correct any problems reported to us by the GVWD, such as flushing the area if any high readings are noticed.

Because our water is supplied by the GVWD, the City's role is to distribute and ensure the water system is maintained and acceptable to our citizens as well as the public health unit of the South Fraser Health Region.

The role of the GVWD is to disinfect the water with ozone and chlorine, transmit and distribute the treated water and test the water at their laboratories through sampling stations at each member municipality. The GVWD also samples metals and disinfection byproducts.

This partnership recognizes that the water we drink has to be supplied in a safe and efficient manner. This cooperative effort between the City and the GVWD is working effectively and the continuing maintenance and upgrades to this system will keep our water safe to drink for all of the people within the GVWD and the City of Langley.

2.0 DESCRIPTION OF WATERWORKS SYSTEMS

Source:

The City receives all of our water supply from GVWD from the Coquitlam Lake reservoir. The Coquitlam Lake watershed is protected and the source is treated with ozone and chlorine as it passes through the pipes. There are seasonal variations, mostly in the winter after heavy rains, which produce high runoff that can cause slides and stream scouring in the watersheds. As a result, this will cause turbidity in the water on an occasional basis. The GVWD will notify us when the turbidity exceeds their limits and the City staff would be made aware of any of these advisories, so they can give advice to any of our concerned citizens.

Reservoir:

The GVWD has one reservoir called the Clayton Reservoir located in the City of Surrey. Please contact GVWD staff for detailed information on this reservoir.

The City has one reservoir located at 200A Street and 47A Avenue. It was commissioned in May 2000. The new reservoir, which replaced the old water tower in the 4500 block of 208th Street, has a capacity of 22,700,000 litres of water. The current population of the City is approximately 25,000 and the reservoir will adequately supply water for 55,000 people over 3 days.



INTERIOR OF RESERVOIR



EXTERIOR OF RESERVOIR



EXTERIOR OF RESERVOIR

Distribution System:

The City's water distribution system consists of 520 fire hydrants, 83 kilometers of watermains and 2 pressure zones. The type of water pipes that were used in the past was predominately Asbestos Cement (AC). Since 1980, all replacement water pipe has been PVC and recently the City is also using Ductile Iron (DI) pipe when we are replacing old AC pipe, depending on the soil conditions.

Maintenance:

The City schedules flushing and cleaning all water mains every 2 years. The GVRD pressure zone was last flushed in the spring of 2007 and the Reservoir pressure zone will be flushed after blow off assemblies on dead end mains have been replaced.

The City's water reservoir is scheduled to be cleaned every 5 years. The reservoir floor was cleaned this year, April 2008.

There are 92 dead ends in the City's water distribution system, most of them in cul-de-sacs and all of them have blow-off valves. The City schedules flushing of dead end mains annually or more often as necessary. However, the deteriorated condition of the existing blow off assembly at the dead ends is preventing the City from continuing with the flushing program. New blow off assemblies are scheduled to be installed in 2007 and 2008. Each dead end will be flushed immediately after the new blow off assembly installation.

If the City receives a complaint with the quality of the water (i.e. dirty water), the City will investigate and resolve the situation as quickly as possible. Normally, the problem can be resolved by advising the user to run their tap water until the water clears up. If the problem persists, the City will then flush the water main and in extreme cases, we will have the water tested by an independent laboratory.

As bacterial regrowth is more susceptible in Asbestos Cement (AC) pipe, the City has a long-range plan of replacing all AC pipe with Ductile Iron or PVC pipe in the City. The schedule for AC water pipe replacement is based on the scheduled road pavement rehabilitation program. Whenever a street is improved or the pavement rehabilitated, AC water pipes are replaced if the budget permits. All of these improvements will increase the quality of our water in the City's distribution system.

Alternative Water Source:

The City of Langley has an agreement with the Township of Langley that will allow us to open a valve, which are located on 200th, 201st, 208th Streets and 56th Avenue, when our main source is down with a watermain break or earthquake. This source is from various areas of the Township and there is enough water to last until repairs are done to ours or the GVWD's mains.

3.0 WATER SAMPLING AND TESTING PROGRAM

Water sampling is being done every Tuesday of the week, 52 times a year. The City has installed new testing stations at the same locations using a different design. We have installed the Eclipse #88 with a WTS -858P cover (Drawings attached) to enhance the samples. The reservoir has 12 sampling stations for testing temperature, chlorine residual and turbidity of the water contained in the cell. The other 11 sampling stations, that are located throughout the City, are used for taking water samples for the GVWD (see attached map). The City gathers all the water samples from each station and the GVWD picks up these samples the same day for testing at their laboratory. The test results are sent back to the City for review.

There should be 24 samples taken every month based upon the population formula of 40% of the areas to be low flow, 40% medium, 10% high and 10% from the source. The City has 52 samples tested every month, almost twice as many samples as is required under the Canadian Guidelines for Drinking Water Quality. Five testing stations are at low flow mains, one at the source supply (because there is only one source), four at medium and one at high flow mains.

The testing of metals and disinfection byproducts at three testing sites are also being done by the GVWD.

4.0 SOURCE, TRANSMISSION AND DISTRIBUTION SYSTEM WATER QUALITY

The City receives an annual report of the water quality and types of testing that is being done at the GVWD laboratories and the results for the year 2007 are attached.

The City replaced approximately 2,220 metres of asbestos cement (AC) watermain in 2006 and 2007. AC pipe was replaced at the following locations:

- Fraser Highway – 206 Street to 208 Street
- 55A Avenue – Brydon Crescent to 200 Street
- Brydon Crescent – 54 Avenue – 55A Avenue
- 54 Avenue – Brydon Crescent – 200 Street
- 199A Street – 54 Avenue to Cul de Sac
- 203 Street – 53 Avenue to 54 Avenue
- 53 Avenue – 203 Street to 204 Street
- Duncan Way – Logan Avenue to 204 Street

When the City is notified of a watermain break, the Operations crews will be dispatched to investigate and repair the watermain break as quickly as possible. The crews will shut down the water supply to the areas that are affected by the watermain break. After the broken watermain is located and exposed, an assessment will be done to determine whether the watermain will need to be replaced or repaired. All new pipe and fittings used to repair the watermain break will be disinfected. The new watermain will then be flushed and chlorinated.

5.0 EMERGENCY RESPONSE PLAN

The City has an emergency response plan in case our water supply is interrupted for any reason. There are procedures that our Public Works crews follow whether it is a major or minor problem. Please refer to Appendix D for a list of people to contact in case our water is interrupted. The following is a list of instructions that we adhere to:

1. Interruption of our Major Source

- a) Valve in the reservoir will close automatically, to maintain a volume of about 75% of full reservoir capacity of 22,700,000 litres of water (the reservoir is maintained at 75% capacity to increase water turnover and maintain high water quality). Issue a notice that will restrict water for drinking only. Shut down water if necessary and distribute water to residents in bottles at the reservoir. Upon notification to the Township of Langley, the City can open valves at 200th, 201st, 208th Street, and 56th Avenue to receive water from them. The City can also supply water to the Township in case of an emergency in their jurisdiction.
- b) If necessary, the City could bring in tanker trucks or bottled water from independent suppliers to distribute to local residents.
- c) Repair as soon as possible all affected mains in the City and/or provide help to other jurisdictions that also use the main supply line.

2. Broken Watermain within the City Limits

- a) Immediately advise Public Works or standby person to isolate the area affected by turning off the closest shut-off valves.
- b) Dig & expose the watermain. Replace section of broken pipe, disinfect and backfill. Slowly turn the valves on to flush the system.

Our Emergency Plan involves activating four distinct stages:

STAGE I – ALERT situation.

STAGE II – EMERGENCY RESPONSE to save as much water as possible & regulate water supply.

STAGE III – RECOVERY/RESTORATION to reinstate our water supply.

STAGE IV – POST EMERGENCY DEBRIEFING would take place when recovery operations are underway.

6.0 WATER QUALITY INQUIRES AND COMPLAINTS

The City will respond quickly to problems involving turbidity issues, leaking services or mains, and loss of water pressure. The City has a standby person on call at nights and weekends and during normal working hours we have a maintenance crew that will respond immediately to any water complaints. We received 4 calls in 2007 relating to low water pressure. These problems usually occur during the summer months when people sprinkle their lawns and the water usage is greater than normal. The City received 4 calls relating to dirty water when there was high turbidity levels. The Operations crews handled all calls the

same day as it was reported. At anytime of the day, the City has somebody to handle any emergency that may occur.

In November, 2007, the GVWD lake reservoirs experienced high turbidity and was directed by the Medical Health Officers to issue a press release advising the public of “deteriorating water quality” due to the turbidity stating that “Tap Water is acceptable for uses other than drinking, brushing teeth or washing fruits and vegetables”.

Problems/complaints from the public regarding issues such as chlorine levels, blue-green staining, ozone & secondary disinfection, or source turbidity, are asked to phone the GVWD Water Quality department for further information.

APPENDIX A

LIST OF TABLES

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Table 2 – Disinfection By-Products Summary

Table 3 – Metals Summary

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LIST OF GRAPHS

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| Graph 2 | Number of samples per month in 2007 |
| Graph 3 | Monthly HPC Counts in 2007 |

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LIST OF MAPS

Map 1	Pressure Zone Map
Map 2	Water Sampling Sites
Map 3	Water Schematic Map

APPENDIX D

WATER EMERGENCY CONTACT

Emergency – Surrey Dispatch

phone: 604-534-3496

Francis Cheung, P.Eng.
Chief Administrative Officer

phone: 604-514-2805
cell: 778-227-7135

Pete Jokisch
Manager of Engineering Operations

phone: 604-514-2911
cell: 778-549-0113

Ginger Sherlock, Emergency Coordinator

phone: 604-514-2810
cell: 604-808-5803