

Within the City distribution system, tests are conducted on samples on a regular basis for such things as bacteria and turbidity (cloudiness) as well as chemical and physical parameters unique to distribution systems. Weekly sampling takes place at 51 water sampling sites located strategically across the City's water distribution system. These samples are collected by both City and Metro Vancouver staff and are forwarded to the Metro Vancouver testing laboratory in Burnaby where the samples are subjected to tests for such things as temperature, turbidity, chlorine residual, and bacteria.

No bacterial contamination (e-coli coli forms) was found in any of the 3,109 water samples collected and analyzed in 2010 and none of the samples indicated a higher than acceptable total coli form count as specified in the Canadian and B.C. Drinking Water Standards. Audit samples taken by the Fraser Health Authority during the course of the year confirmed the Metro Vancouver laboratory test results.

Chlorine Levels

As in previous years, portions of the City's distribution system have experienced from time to time lower than desirable chlorine residual values. The lower than desirable chlorine residual values are being reviewed with Metro Vancouver staff and representatives from the Fraser Health Authority with a view to determining if any changes are necessary to operational and/or maintenance procedures in the affected areas of the City.

Where weekly sampling test results revealed the potential for bacterial growth beyond acceptable limits, the Engineering Department's maintenance crews flushed the related distribution pipes so as to decrease the potential for such growth. Low chlorine residuals, low flow demands, and the absence of circulation at or near dead-ends in the system are characteristics of areas where bacterial growth may occur and result in the need for more frequent flushing than in the remainder of the system. Where practical, Engineering staff includes as part of the Capital program and land development projects the construction of extensions to dead-end water mains to complete "loops" so as to eliminate the "dead ends".

All 2010 water samples from the City of Surrey water distribution network complied with the Guidelines for Canadian Drinking Water Quality and the British Columbia Drinking Water Protection Regulation.

CONCLUSION

The City remains diligent and proactive in monitoring, maintaining and operating the City's water distribution system to ensure that the City's water customers continue to receive safe and clean drinking water.

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Appendix 1: Summary of the City of Surrey Water System Annual Report for 2010

APPENDIX I

Summary of the City of Surrey Water System Annual Report for 2010

In 2010, the City of Surrey purchased all the water that it supplied to City of Surrey residents from Metro Vancouver. The City of Surrey's water distribution system is connected to the Metro Vancouver distribution system at the discharge points at each of six (6) Metro Vancouver water reservoirs and eleven (11) Metro Vancouver connection chambers located throughout the City.

The City's piped water distribution system includes pipes with a total length of over 1,800 km and includes ten (10) pump stations.

Surrey's geography and development pattern is serviced with eight (8) different water pressure zones.

The City's regular maintenance program for its water system components includes a regular program of unidirectional water main flushing of every pipe in the system at least once every four (4) years. This unidirectional approach to flushing ensures that water from non-flushed mains does not flow into recently flushed mains. The City's maintenance program combined with an ongoing program of pipe size upgrades and water supply controls by Metro Vancouver has eliminated the need for any abrasive, mechanical cleaning of the City's water mains.

Monitoring of the quality of the water within the City's water system is undertaken at fifty-one (51) water-sampling sites located strategically across the City. Weekly samples are collected by both City and Metro Vancouver staff. These samples are tested at Metro Vancouver's testing laboratory in Burnaby for such things as temperature, turbidity, chlorine residual, and bacteria.

In 2010 approximately 19% of the City's water operating and maintenance budget was spent on water quality-related work. Three thousand one hundred and nine (3,109) water samples were analyzed with none of the samples indicating any presence of e-coli coli forms and all samples meeting the standards contained in the B.C. Drinking Water Protection Regulation (BCDWPR) and the Guidelines for Canadian Drinking Water Quality (GCDWQ). Audit samples taken in 2010 by the Fraser Health Authority throughout the system confirmed Metro Vancouver laboratory test results. This is consistent with previous years' results in relation water samples taken from the City's water system.

The City has established response procedures to deal with water quality issues and for pipe breaks. The procedures incorporate both agency notification and steps for physical repair. Integral to the response procedures are well-defined communication links between the City staff, Metro Vancouver staff and the Fraser Health Authority (FHA) staff. The City has developed a response plan for major water emergencies, which has been successfully tested in concert with other Metro Vancouver member municipalities.

As in previous years, water in sections of the distribution system has from time to time exhibited lower than desirable chlorine residual values. This circumstance will be reviewed with Metro Vancouver staff and representatives of the Fraser Health Authority with a view to determining if any changes are necessary to the operational and/or maintenance procedures followed by the City or if capital improvements should be undertaken.

Where water sample test results revealed (through the use of heterotrophic plate counts, HPC) bacterial growth beyond acceptable limits staff took action to flush the related sections of water main to address the problem. These areas typically exhibit low chlorine residuals, low water demand and/or circulation restrictions in the system.

Metro Vancouver's laboratory technicians perform quarterly tests on the City's water system for disinfection by-products (Haloacetic Acids and Trihalomethanes), and semi-annual tests for pH and select metal concentrations. These were carried out at sampling sites in accordance with a monitoring and reporting plan established between the City staff and Metro Vancouver staff. The results of these tests demonstrated that water quality remained within acceptable levels as recommended in the Guidelines for Canadian Drinking Water Quality.

Except for a few circumstances where fire hydrants were opened without authorization or were damaged by accidents, there were no incidents of tampering or vandalism with the City's water system in 2010. System security includes lighting, locks and alarms at pump stations as well as check valves on service connections. The City also has a cross-connection program to guard against contaminants entering the system due to faulty connections. This is addressed in more detail in the following paragraph. All of these measures provide protection against tampering or vandalism.

The City monitors water service connections to commercial/industrial businesses on an on-going basis through a cross-connection control (CCC) program that includes a database of backflow prevention devices. In 2010, the number of backflow prevention assemblies registered with the City increased by 15%. This brings the number of registered backflow prevention devices to over 6,700. The City's CCC program requires that the owner test the device annually to confirm that it is working properly. In 2010, the City achieved over 95% compliance with this requirement, an increase of 5% in comparison to the previous year.

The City of Surrey is remaining diligent in ensuring the City's water distribution system is maintained to high quality standards, which will ensure the delivery of high quality water to the City's residents and businesses.