

NO: R141 COUNCIL DATE: June 21, 2010

REGULAR COUNCIL

TO: Mayor & Council

DATE: June 15, 2010

FROM: General Manager, Engineering

FILE: 5600-42

SUBJECT: 2009 City of Surrey Water System Annual Report

RECOMMENDATION

The Engineering Department recommends that Council:

1. Receive this report as information; and
2. Authorize staff to forward a copy of this report to the Medical Health Officer as required by the *Drinking Water Protection Act*.

INTENT

This report represents the 2009 Annual Report of the City of Surrey Water System.

DISCUSSION

As a water system operator, the City monitors the ongoing quality of the water it delivers to its customers. Section 15(b) of the Drinking Water Protection Act (provincial regulation) also requires a water supplier to report the results of water quality monitoring (requirements of monitoring described in Section 11). This requirement is met through our annual written report available to water consumers (at City Hall) and the Medical Health Officer. The City, in cooperation with the Fraser Health Authority (FHA) and Metro Vancouver, has developed a water quality monitoring and reporting plan. A protocol document sets out monitoring parameters, reporting structure, and the response plans to emergency situations such as incidents of high bacteria counts or other types of contamination, should they occur.

A Summary of the 2009 Water System Annual Report is attached as Appendix I. The full report is available at the Engineering Department and will be forwarded to the Medical Health Officer following consideration and approval of the recommendations of this report by Council. The City of Surrey purchased all of its water in 2009 from Metro Vancouver. Metro Vancouver monitored all of the parameters of the City's source water within their system (from alpine reservoirs through their distribution system to the Surrey delivery points).

Within the City's pipe distribution system, the City monitors the water for such things as bacteria and turbidity (cloudiness) as well as chemical and physical parameters unique to distribution systems. Weekly monitoring 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 with temperature, turbidity, chlorine residual, and bacterial analysis carried out at the Metro Vancouver testing laboratory in Burnaby.

No bacterial contamination (e-coli coliforms) was found in any of the 2,748 water samples collected and analyzed in 2009 and none of the samples indicated a higher than acceptable total coliform count as stipulated in the Canadian and B.C. Drinking Water Standards. Audit samples taken by the Fraser Health Authority confirmed Metro Vancouver laboratory test results.

Chlorine Levels

As in previous years, portions of the distribution system have experienced lower than desirable chlorine residual values. The lower than desirable chlorine residual values will be reviewed with Metro Vancouver and the Fraser Health Authority to assess the impact of the results and to determine if any changes are necessary to operations and/or maintenance procedures.

Where weekly sampling test results revealed [through the use of heterotrophic plate counts (HPC)] the potential for bacterial growth beyond acceptable limits, the City's maintenance crews flushed the mains in the affected areas 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 elevated HPCs may re-occur and result in increased flushing frequency. Where practical, City staff is actively taking action to eliminate dead-end water mains by completing "loops" in the water main system.

All water samples met Metro Vancouver testing laboratory's detection limits for compliance with the Guidelines for Canadian Drinking Water Quality and the distribution of water to our customers complied with the British Columbia Drinking Water Protection Regulation.

CONCLUSION

The City of Surrey 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.

Vincent Lalonde, P.Eng.
General Manager, Engineering

VL/DJS/ajs/brb

Appendix 1: Summary 2009 Water System Quality Annual Report

Report Summary

In 2009, the City of Surrey, similar to other jurisdictions in the Lower Mainland, purchased all its water from Metro Vancouver. The City of Surrey's water distribution system begins at the discharge points of six (6) Metro Vancouver reservoirs and eleven (11) Metro Vancouver connection chambers located throughout the City.

The City's piped distribution system is approximately 1,800 km in length and includes ten (10) pump stations.

Surrey's geography and area has required that eight (8) different water pressure zones be employed within the system.

The City's scheduled maintenance program for its water system components includes a unidirectional water main flushing program. This program strives to flush all pipes at least once every three (3) years, ensuring that water from non-flushed mains does not flow into recently flushed mains. The combination of the City's maintenance program, ongoing pipe size upgrades, and water supply control by Metro Vancouver, has eliminated the need for any abrasive, mechanical cleaning of the City-owned distribution mains.

Key to monitoring the City's water quality are fifty-one (51) water-sampling sites located strategically across the City. Weekly samples are collected by both City and Metro Vancouver staff, with temperature, turbidity, chlorine residual, and bacterial analysis carried out at Metro Vancouver's testing laboratory in Burnaby.

Approximately 18% of the City's Water Operating & Maintenance Budget was spent on water quality related work in 2009. Two-thousand seven hundred and forty-eight (2,748) water samples were analyzed, with none of the samples indicating any presence of e-coli coliforms. All samples met Metro Vancouver's testing laboratory's detection limits for compliance with the B.C. Drinking Water Protection Regulation (BCDWPR) and the Guidelines for Canadian Drinking Water Quality (GCDWQ) for counts of total coliforms. Audit samples taken in 2009 by the Fraser Health Authority throughout the system confirmed Metro Vancouver laboratory test results. This is consistent with previous years' samples and results.

The City has established response procedures to deal with water quality issues and for line breaks. The procedures incorporate both agency notification and physical repair steps. Integral to the response procedures are well-defined communication links between the City, Metro Vancouver, and the Fraser Health Authority (FHA). 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, portions of the distribution system have experienced lower than desirable chlorine residual values. The lower than desirable chlorine residual values will be reviewed with Metro Vancouver and the Fraser Health Authority to assess the impact of the results and to establish if any changes are necessary to the City's operations and/or maintenance procedures.

Where weekly water sampling test results revealed (through the use of heterotrophic plate counts, HPC) bacterial growth within the mains, in excess of 500 colony forming units per milliliter, the City's maintenance crews flushed the mains in the affected areas and re-tested the chlorine residuals at the sampling station. Low chlorine residuals, low flow demands, and circulation restrictions at or near dead-ends in the system are indicative of site characteristics where elevated HPC's reoccur.

The City is investigating incidents of low chlorine residuals (<0.1 mg/L) and high HPC (>500 CFU/mls) to determine if there is any correlation between these results and Capital Works projects in the area. Other activities being reviewed as part of our investigation efforts include maintenance on underutilized (low flow)/dead-end water mains where the water quality results show both low chlorine residuals and above normal HPC.

Metro Vancouver's laboratory performs 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 representative sampling sites in accordance with a monitoring and reporting plan established between the City and Metro Vancouver. The annual average test results did not exceed the acceptable levels recommended in the GCDWQ.

Except for the occasional unauthorized opening of or accident affecting a fire hydrant, there were no incidents of vandalism in 2009. System security components include lighting, locks and alarms at the water pump stations, as well as check valves on service connections. All of these measures provide protection against vandalism.

The City monitors backflow controls on commercial/industrial businesses on an ongoing basis through a cross-connection control (CCC) program. In 2009, an additional 800 backflow prevention assemblies were registered with the City. This brings the number of registered backflow prevention devices to over 6,200. The City's CCC program requires that the building owner test the building backflow device annually and submit the results to the City. In 2009, the City realized a 90% compliance level. This is an increase over previous years and is the result of improved communication efforts such as direct contact or follow-up through phone calls and/or written notices.

The City of Surrey remains diligent in ensuring the water distribution system is maintained in a manner consistent with Best Management Practices (BMPs), which support the high standard of water quality that the City's 112,300 water customers and over 466,200 residents expect.