



# Corporate Report

NO: R180

COUNCIL DATE: July 19, 2004

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## REGULAR COUNCIL

TO: Mayor & Council                      DATE: July 14, 2004  
FROM: General Manager,  
Engineering                                  FILE: 5600-42  
SUBJECT: Water System Quality - 2003 Annual Report

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## RECOMMENDATIONS

1. That this report be received for information.
2. That a copy of this report be forwarded to the Medical Health Officer.

## INTENT

To inform Council of the results of the 2003 Water System Quality Annual Report.

## DISCUSSION

As a water distribution system operator, the City must monitor the quality of the water it delivers to its customers. The City, with the Fraser Health Authority (FHA) and the GVRD, has developed a water quality monitoring and reporting plan. A protocol document was developed that sets out monitoring parameters, reporting structure, and the response plans to emergency situations such as incidences of high bacteria counts or other types of contamination.

A Summary of the 2003 Water System Quality Annual Report is attached. The full report is available at the Engineering Department and will be forwarded to the Medical Health Officer following receipt of this report by Council. Since the City obtains most of its water from the GVRD, most of the parameters are monitored by the GVRD at the source. The water supplied by the City's well at Sunnyside has been approved by the FHA as acceptable for potable use. The City chlorinates the well water prior to blending it in with the GVRD supplied water.

Within the City's pipe distribution system, the city monitors for such things as bacteria and turbidity (cloudiness) as well as for chemical and physical parameters unique to distribution systems.

None of the over 2,300 water samples analysed in 2003 detected the presence of bacterial contamination (fecal coliforms), and only a single sample indicated a higher than acceptable total coliform count. Resampling and testing could not replicate the high count and in accordance with established health protocols further precautionary action was not necessary.

Portions of the City's distribution system continue to occasionally experience lower than desirable residual chlorine levels. However, the extent of this condition has improved over the past year and the City is exploring ways of improving, yet further, the chlorine residual levels. The impact of this situation is reviewed with the GVRD and the Fraser Health Authority on an ongoing basis.

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. 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 HPC's reoccur.

Other than the above noted exceptions, the water samples fully met the Guidelines for Canadian Drinking Water Quality Standards, and complies with the British Columbia Drinking Water Protection Regulation.

Paul Ham, P.Eng.  
General Manager, Engineering

PH/RAC: rdd

Attachment

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## **SUMMARY of the 2003 Water System Quality Annual Report**

The City of Surrey, similar to other jurisdictions in the Lower Mainland, purchases most of the water from the GVRD. The City, however, also draws a minimal amount from the Sunnyside Well No. 2 located in South Surrey. The City of Surrey's water distribution system begins at the discharge points of 6 GVRD reservoirs and 11 GVRD connection chambers located throughout the City, and from the City's Sunnyside Well No. 2.

After approximately 10 years of non-use, the City's Sunnyside Well No. 2 was again put into service in April 2003. The well water is chlorinated prior to blending with the GVRD water, and then distributed to the City's customers. In addition to augmenting the GVRD supply, the City's well provides South Surrey with an emergency source of water. The well provides an approximate flow of 50 l/second to the distribution system.

The City's piped distribution system is approximately 1750 km long and includes 11 pump stations and 239 pressure reducing stations.

Surrey's geography and size has required eight (8) different water pressure zones to be established spanning forty-four (44) separate management areas.

An average annual water system growth rate of 3% has occurred since 1997 and is forecast to continue in 2004. Approximately one-third of the City's Water Operating & Maintenance Budget is spent on water quality related work.

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

Key to monitoring the City's water quality are forty-nine (49) water-sampling sites located strategically across the City. Weekly samples are collected by both City and GVRD staff, with temperature, turbidity, chlorine residual, and bacterial analysis carried-out at the GVRD Testing Laboratory in Burnaby.

Over 2,300 water samples were analyzed in 2003. None of the samples detected the presence of fecal coliforms, and

only one sample did not meet the B.C. Drinking Water Protection Regulation (BCDWPR) and the Guidelines for Canadian Drinking Water Quality (GCDWQ) Standards for total coliform counts. Subsequent resampling and testing however did not indicate an elevated total coliform count and further precautionary action was not necessary.

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, the GVRD, and the Fraser Health Authority (FHA). Development of a response plan for major water emergencies is underway.

In previous years, portions of the distribution system have experienced lower than desirable chlorine residual values. However, the extent of this condition has improved over the past year. The City is continuing to explore ways to improve the chlorine residual values, and will be reviewing these with the Fraser Health Authority.

Where weekly water sampling test results revealed (through the use of heterotrophic plate counts, HPC) the onset of bacterial growth within the mains, the City's maintenance crews flushed the mains in the affected areas and remonitored 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 also utilizes the GVRD Laboratory to do quarterly tests for pH and disinfection bi-products (HAA's and THM's), and semi annual tests for metal concentrations. These were carried out at representative sampling sites in accordance with a monitoring and reporting plan established between the City and the GVRD. The test results were within acceptable levels recommended in the GCDWQ.

System security components incorporating lighting, locks and alarms at the water pump stations, as well as check valves on service connections, help provide protection against vandalism.

The City of Surrey remains diligent in ensuring that the water distribution system is maintained to the high standards expected by its 110,000 customers, and 370,000 residents.