



# **Corporate** NO: R194

# **Report** COUNCIL DATE: October 7, 2002

## **REGULAR COUNCIL**

**TO: Mayor & Council**    **DATE: September 30, 2002**

**FROM: General Manager, Engineering**    **FILE: 5600-42**

**SUBJECT: Water System Quality - 2001 Annual Report**

## **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 2001 Water System Quality Annual Report.

## **DISCUSSION**

As a water system operator, the City must monitor the quality of the water it delivers to its customers. The City, with the South Fraser Health Board and 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 or chemical contamination.

A Report Summary of the 2001 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 by Council. Since the City purchases its water from the GVRD, most of the parameters are monitored by the GVRD at the source. The City monitors for such things as bacteria and turbidity (cloudiness) as well as chemical and physical parameters unique to distribution systems.

Of the over 2,300 samples analyzed in 2001, only one sample detected the presence of fecal coliforms. The cause of this positive sample was not able to be determined. This location was flushed and immediately re-sampled, and no further presence of fecal coliforms were found.

Portions of the distribution system have experienced lower than desirable residual chlorine volumes. This impact of this situation is being examined, and will be reviewed with the Fraser Health Authority.

Where weekly water sampling test results revealed (through the use of heterographic plate counts, HPC) the onset of bacterial growth within the main, the City's maintenance crews flushed the mains in the affected areas. Low chlorine residuals, low flow demands, and circulation restrictions at or near dead ends in the system, are indicative of characteristics where elevated HPC's reoccur.

Other than the above noted exceptions, the water samples fully met the Guidelines for Canadian Drinking Water Quality Standards.

Paul Ham, P.Eng.

General Manager, Engineering

PH/GMcK/brb

Attachment

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## REPORT SUMMARY

The City of Surrey's water distribution system begins at the discharge point of six (6) GVRD storage reservoirs located in the City. The City's distribution system is approximately 1,750 kilometers long and includes nine (9) pump stations and two hundred and fifteen (215) 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 annual pipe infrastructure growth rate of 4% has occurred since 1997 and is forecast to continue in 2002. Approximately one-third of the City's \$5.3 Million dollars 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 2001, with only one sample detecting the presence of fecal coliforms. The cause of the positive fecal coliform test was not determined, and further testing did not detect any presence of fecal coliforms. All samples met the Guidelines for Canadian Drinking Water Quality (GCDWQ) Standards for total coliform counts.

Portions of the distribution system have experienced lower than desirable chlorine residual values. The City is exploring ways to improve the chlorine residual values, and will be reviewing these with the Fraser Health Authority.

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mains, the City's maintenance crews flushed the mains in the affected areas. 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 utilized the GVRD Laboratory to do quarterly tests for ph and disinfection bi-products (HAA's and THM's). These were carried-out at seven of the sampling sites in accordance with a monitoring and reporting plan established between the City and the GVRD. The quarterly test results were within acceptable levels recommended in the GCDWQ.

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 emergencies is underway.

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 our water distribution system is maintained to the high standards expected by our 103,000 customers, and 360,000 residents.

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