

NO: R114

COUNCIL DATE: July 13, 2020

REGULAR COUNCIL

TO: **Mayor & Council**

DATE: **July 9, 2020**

FROM: **General Manager, Engineering**

FILE: **5600-43**

SUBJECT: **City of Surrey Water System Annual Report for 2019**

RECOMMENDATION

The Engineering Department recommends that Council:

1. Receive this report for information; and
2. Authorize staff to forward a copy of this report and the related report titled “City of Surrey Water System Annual Report for 2019”, a summary of which is attached to this report as Appendix “I”, to the Medical Health Officer in accordance with the requirements of the Drinking Water Protection Act.

INTENT

This report represents the Annual Report for 2019 of the City of Surrey Water System, which has been prepared in accordance with the requirements of the British Columbia Drinking Water Protection Act.

DISCUSSION

The British Columbia Drinking Water Protection Act (the “Act”) requires municipalities, and all other water suppliers, to report the results of water quality monitoring in accordance with the requirements described in Section 11 of the Act. The City, in cooperation with the Fraser Health Authority and Metro Vancouver, has developed a water quality monitoring and reporting plan for the City’s water distribution system. The protocol document sets out monitoring parameters, the reporting structure, and response plans to emergency situations, such as incidents of high bacteria counts or other types of contamination, should they occur. Accordingly, the City satisfies this requirement through the preparation of an annual written report that is made available to water consumers and is forwarded to the Medical Health Officer (“MHO”) as information.

A summary of the City of Surrey Water System Annual Report for 2019 is attached to this report as Appendix “I”. The full report will be available for viewing on the City’s website and will be forwarded to the MHO, subject to approval by Council of the recommendations contained in this report.

The City of Surrey purchased all of its water in 2019 from Metro Vancouver. Metro Vancouver monitors all of the parameters of the City's source water within the Metro Vancouver system from the reservoirs of the North Shore Mountains through the Metro Vancouver distribution system to the delivery points in Surrey.

Within the City distribution system, samples are taken on a regular basis and tests are conducted on those samples which include bacteria, turbidity (cloudiness), as well as chemical and physical parameters unique to distribution systems. At a minimum, weekly samples are obtained at each of the 51 water sampling sites located strategically and geographically across the City's water distribution system. These samples are collected and analyzed by Metro Vancouver.

In 2019, 3,403 water samples were analyzed for E. Coliform and Total Coliform and all of the samples were found to be in compliance with Schedule A of the BC Drinking Water Protection Regulation and the Guidelines for Canadian Drinking Water Quality. These bacteria occur naturally in water, soil and vegetation. When total coliform bacteria are present in a water sample, it may indicate a change in water quality or a sampling error.

Chlorine Levels

The City monitors chlorine residuals through sampling site results obtained from Metro Vancouver, and overall chlorine residuals exceed the standards specified in the BC Drinking Water Protection Regulation and the Guidelines for Canadian Drinking Water Quality. At times, portions of the City's distribution system have experienced lower than desirable chlorine residual, to which the City's response is to flush the area until chlorine residuals are greater than 0.2mg/L.

The lower than desirable chlorine residual values may be attributed to mainline segments which are "dead-ended"; that is, they are not looped or interconnected with other segments of mainlines. The City, where possible, is requiring looping of existing dead-ended mains either as new development occurs or through capital projects. Where it is not possible to loop, blow-offs are installed at the end of non-looped water mains to give the City the ability to flush the water main. Further, the City institutes a flushing and maintenance program to improve water quality in affected areas. Implementation of these measures has successfully increased minimum chlorine residual levels throughout the City.

Cross Connection Control Program

The City administers a comprehensive Cross Connection Control program to minimize the risk of contaminants originating from private properties entering into the City's water network and private properties' plumbing systems. The program includes enforcement of annual testing of backflow preventers, installation of backflow preventers for all new construction (plumbing permit requirement) and existing industrial, commercial and institutional properties by a cross connection survey requirement.

In 2019, the number of testable backflow preventers registered with the City increased by 966 (7.3%) for a total of 14,137 devices. These assemblies were installed through development, renovations or the cross connection control survey requirement. Annual testing of backflow preventers is required by the City, and the City has consistently achieved 96% compliance since 2016.

SUSTAINABILITY CONSIDERATIONS

The City of Surrey Water System Annual Report for 2019 supports the objectives of the City's Sustainability Charter 2.0. This annual report relates to the Sustainability Charter 2.0 themes of Ecosystems and Infrastructure. Specifically, this annual report supports the following Strategic Direction ("SD") and Desired Outcome ("DO"):

- Water, Air and Soil SD6: Develop and encourage stronger policies and strategies that support clean water, soil, and air; and
- Water DO16: Surrey's water is clean, abundant, and safe for drinking.

CONCLUSION

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

Based on the above discussion, it is recommended that Council authorize staff to forward a copy of this report and the related report titled "City of Surrey Water System Annual Report for 2019", a summary of which is attached to this report as Appendix "I".to the MHO, in accordance with the requirements of the Drinking Water Protection Act.

Scott Neuman, P.Eng.
General Manager, Engineering

RK/cc

Appendix "I" - Summary of the City of Surrey Water System Annual Report for 2019

Summary of the City of Surrey Water System Annual Report for 2019

In 2019, the City of Surrey purchased all the water that it supplied to its residents from Metro Vancouver (i.e., the Greater Vancouver Water District).

The City’s water distribution mains are approximately 1,823 km in length, making it the longest distribution network in British Columbia. Within the distribution network there are 38 pressure zones and nine pump stations.

The City’s Water Operations Section uses a unidirectional flushing program to flush all mains on a five-year cycle. This is to ensure water quality is maintained throughout the distribution system. The City monitors water quality at 51 strategically located sampling stations. Weekly samples are collected and tested by Metro Vancouver. Tests include bacteriological analysis, chlorine residuals, pH, temperature, and turbidity.

There was no presence of E-coli bacteria detected in the 3,403 water samples analyzed in 2019. Eight samples tested positive for total coliform bacteria and are explained in the body of the report.

The City has procedures dealing with water quality or infrastructure failures, such as water main breaks. These procedures incorporate steps for repairs and communication between the City, Metro Vancouver, and the Fraser Health Authority.

Chlorine residuals are monitored throughout the distribution system. In 2019, 86% of the 3,403 samples taken were greater than 0.2 mg/L. Where there are increased heterotrophic plate counts (“HPC”), as the result of low chlorine residual and circulation issues, staff flush the affected section to refresh the water in the mains and increase the chlorine residuals. HPC is not mandatory under the 2019 Guidelines for Canadian Drinking Water Quality; however, the City of Surrey continues to use this methodology to ensure the quality of the water is maintained. The City continues to improve these low flow areas through connecting dead end mains, known as looping, and increasing water usage through service connections to new residences and businesses in these areas.

The Metro Vancouver Water Laboratory performs tests quarterly on water within the City’s system for disinfection by-products (haloacetic acids and trihalomethanes), and semi-annually for pH and select metal concentrations. Sampling sites for these tests were selected in accordance with a monitoring and reporting plan established between the City and Metro Vancouver staff. The results of these tests meet or exceed the 2019 Guidelines for Canadian Drinking Water Quality.

There were no reported incidences of tampering or vandalism with the City’s water system in 2019. System security includes lighting, locks, and alarms at pump stations, as well as back flow prevention check valves on service connections. The City also guards against contaminants entering the system due to faulty connections through a cross connection control program.

In 2019, the number of testable backflow preventers registered with the City increased by 966 (7.3%), for a total of 14,137 assemblies. These assemblies were installed through development, renovations and the cross connection control (“CCC”) survey requirement. Through the CCC survey, the City ensures institutional, commercial, and industrial operations remain in compliance with the *Surrey Waterworks Cross Connection Control By-law, 2013, No. 17988*.

The City of Surrey remains diligent in maintaining its water distribution system to high quality standards and in ensuring the delivery of high-quality water to the City's residents and businesses.