Customer Water Quality Report
b (January 1 to December 31, 2004)

Our Mission

Under the province's new Drinking-Water Systems Regulation (170/03), water works owners are required to publish a report to consumers on water quality. The Town of Markham provides quarterly reports and an annual report. (add website link) This report provides information on drinking water quality testing and distribution system maintenance carried out to ensure the highest quality water is provided to our customers.

Contact & Service Information

Have a Question, Concern or Suggestion?
Contact us by Phone, Fax or Email
Waterworks Department 905-477-7000 X4862 (8:30am – 4:30pm)
101 Town Centre Boulevard 905-477-7000 (after hours)
Markham, On L3R 9W3 Markham Website: www.markham.ca

Water Source & Supply

Markham's water comes from Lake Ontario. The City of Toronto's treatment facilities (left) filter, disinfect and pump processed water to reservoirs. The Region of York feeds the stored water to various municipalities through trunk watermains. The Town of Markham watermain system distributes this water to its residents.

In 2004, the Town's Waterworks Department supplied 30.5 million cubic meters of water to about 250,000 residents through 779 km. of local distribution watermains and 61,227 metered service connections.

R. C. Harris Water Treatment Plant

WATER DISTRIBUTION SYSTEM REGULATORY COMPLIANCE

Town of Markham Water Sampling Program
January 1 to December 31, 2004

To comply with the Ontario Drinking Water System Regulation, the Town of Markham collects and tests water samples at 89 locations throughout the water distribution system several times a week. These samples are sent to the Province approved York-Durham Regional Environmental Laboratory for analysis. Waterworks follows rigorous testing and compliance procedures including reporting to the York Region Medical Officer of Health and the Ministry of the Environment (MOE) any adverse sampling results including the corrective action taken. A summary of results from 2004 follows.

Sampling Program:
Total Number of Samples collected and tested in 2004 was 9405
Breakdown:
Testing for Presence of Bacteria = 3394 samples
Testing for Chemical Analysis:
Lead (Pb) Samples = 40
Chlorine Residual Samples @ microbiological sampling stations = 2622
Chlorine Residual Samples @ dead end watermains = 3189
Trihalomethanes (THM) samples = 160
Adverse Test Results:
Total Number of Adverse Water Quality Incidents (AWQI) = 34
Total Number of Re-samples sent to the (YDREL) Lab for Testing = 51
Breakdown:
Adverse due to Presence of Bacteria:
Total Coliform Exceedances (24 hours) = 1
Number of Background Colony Exceedances (24 hours) = 1
Heterotrophic Plate Count (HPC) Exceedances (48 hours) = 7
Total Number of Adverse Water Quality Incidents / Exceedances = 9
Adverse due to Deficient Chlorine Residual:

Total Combined Chlorine Residual Deficiency (<0.25 mg/L) = 25
No sustained water quality problems were found in the Markham water distribution system. The adverse chlorine residual results are located mainly in watermains located at dead ends. Chlorine residual level dissipates over time therefore water must be kept fresh (moving) to ensure good quality. At locations where water may stagnate for extended periods, Markham has implemented a dead-end flushing program and has initiated a program to install automatic flushing stations.
Text Box: Hydrant Flushing
Infrastructure Renewal & Replacement
Waterworks has a strategically planned approach to renewal or replacement of the waterworks system infrastructure. Through the capital program, Waterworks invests $ 4.7 million annually into water system upgrades such as:
.. Watermain Replacement – This renewal program replaces inadequate watermains at the end of their service life. Annually, about 2-3 km of watermains are replaced.
.. Watermain Cement Relining – this program improves water quality, flow capacity and extends pipe life expectancy by removing internal corrosion. In 2004, 7.1 km. of watermain was relined. To date 51.5 km of watermain has been relined under this program.
.. Cathodic Protection of Watermain (External Corrosion Protection) This program reduces watermain breaks, emergency shutdowns and extends pipe operating life. The success of this program is demonstrated in the dramatic reduction in watermain breaks over the years (34 breaks in 2004 reduced from 163 breaks in 1986). A total of 15.3 km. was completed in 2004. To date, 144 km. of watermains has been cathodically protected.
.. System Flushing Stations – Flushing stations provide automated and efficient watermain flushing to assure fresh potable water and regulatory compliance. These are being installed, as needed, at dead ends to improve water quality.
.. Water Sampling Stations – 89 water sampling stations were installed in 2004. These stations are the “Green Pedestal Boxes” located on the boulevard. They allow 24/7 testing and reduce false adverse samples.
Information Management
The Town uses state-of-the art infrastructure management software (IMS) to track all the waterworks asset infrastructure including hydrants, valves, meters, watermains, service lines etc. The system also tracks complaints and work performed on these assets. Coupled with this application is a geographic information system that enables our operators to generate maps of the asset locations.
• Water Distribution Infrastructure Inventory Records – 6379 hydrants, 5833 water mains, 61227 meters, 6141 valve chambers, 7676 valves and associated information are kept up-to-date through the IMS.
• Preventative Maintenance (PM) History and Schedules – water distribution system assets are maintained to ensure optimum performance. Information relating to maintenance history, schedules, operator time, contractor services, and materials usage are kept for planning, auditing, and establishing performance standards. There were 8899 PM work orders completed in 2004.
• Customer Service – calls for inspection, repair and assistance are monitored from the time of the call and notification until appropriate action is complete. There were 3,861 service

requests completed in
2004. Water quality queries represented 1.4 % (58) of these customer service requests.
Text Box: System
Flushing
Station
Text Box: Cathodic ProtectionText Box: AfterText Box: Before
Text Box: Cement Relining
Quality Assurance
Waterworks is actively undertaking preventative maintenance activities in the water distribution system to
ensure that water quality is maintained and that the distribution system functions as planned and designed.
Our key maintenance and water quality assurance programs include:
• 9,405 water samples were collected in 2004 throughout Markham at pedestal sampling stations to
monitor water quality in all parts of the distribution system.
• Water was flushed from 200 “dead-ends” (cul-de-sacs) to ensure that disinfectant levels were
maintained. This program is being expanded to include installation of special flushing stations operated at
selected locations. A dead end may need to be flushed and sampled many times throughout the year.
• 1562 Valves and 6316 Hydrant inspections were carried out through scheduled maintenance
programs in 2004. In this way, water supply is maintained and controlled to meet customer needs,
including fire fighting.
• Watermain breaks continue to be reduced each year through infrastructure rehabilitation programs.
• Property-line valve (curb box) repairs and replacements were handled through scheduled
maintenance.
Testing of new watermains (new subdivisions) is conducted by
Waterworks prior to placing the new main in service. Testing requirements
and procedures in Markham are based on standardized limits adapted by all
municipalities in the Region of York, Durham and Toronto.
Waterworks maintains a workforce of highly trained and licensed water
operators. These operators are licensed by the Ministry of Environment
(MOE). Only licensed personnel are permitted to operate, control or test
any part of the water system. Waterworks has a program in place to ensure
that Operators obtain the on-the-job and professional class room training
necessary to maintain and upgrade their Operators Licenses.
Future Waterworks Directions & Activities
Markham Council supports the review of new technologies and the move of Waterworks to the leading
edge of technology. Waterworks is undertaking several initiatives to implement new technologies. These
include paperless processing of service requests, works orders, thematic GIS mapping, hydraulic
modeling and the creation of pilot district metered areas for monitoring of water balance in the
distribution system.
In 2005 and beyond, Waterworks will address:
• Implementation of the requirements of Bill 175 Sustainable Water and Sewer Systems Act. This
legislation mandates that each water purveyor has a plan and proper funding for the operation,
replacement and rehabilitation of the water system.
• MOE has directed that each Waterworks operation must have a Quality Management System which is
similar to an ISO Quality Management and Assurance System.
This legislation when it is fully implemented will further enhance water quality

for Markham residents, as
well as those throughout Ontario.
Text Box: Water Quality Sampling
at Pedestal Type Station