Kitchener Utilities

Kitchener Utilities
City of Kitchener Drinking Water Distribution System

Drinking Water Quality Management Standard
Management Review – 2024

City of Kitchener Water Distribution

DWQMS Management Review

TABLE OF CONTENTS

City of Kitchener Water Distribution

DWQMS Management Review

PART A - INTRODUCTION

Purpose

The purpose of this report is to inform the decision-making authority about the status of the drinking water system. The Drinking Water Quality Management Standard (DWQMS) under the Ministry of Environment, Conservation and Parks (MECP) requires management to review and evaluate the continuing suitability, adequacy, and effectiveness of the Quality Management System at least once a calendar year and that the results of the management review, identified deficiencies, decisions and action items are provided to Council as the 'Owner' of the drinking water system.

Executive Summary

Highlights of the report are:

- The Summary Water Report-2024 (INS-2025-029) confirmed that the drinking water system was in compliance with regulatory water sampling requirements during 2024. The DWQMS Management Review confirms the continuing adequacy and effectiveness of the quality management system which includes compliance, customer feedback, operational performance, audit information etc. as outlined in this report.
- The Water Infrastructure Program (WIP) maintenance achievements (specific areas of improvement identified by WIP):
    - Cleaned approximately 135km of watermain in 2024.
    - Water quality complaints increased slightly in 2024. There were 140 complaints total with 28 discoloured water complaints for 2024; which has increased slightly from 2023. The majority of complaints are internal issues (e.g. low pressure from a water softener).
    - 20 broken valves and/or failing valves were either replaced or removed which allows for quicker isolation for water emergencies. This number does not include the majority of valve replacements through road reconstruction projects. Broken valves are tracked in real time and the majority are addressed within weeks (except for winter or if they are part of future reconstructions).
    - Approximately 1,877 valves were proactively operated (23%); the majority were within the watermain cleaning area and the 2024 reconstruction areas. Operating valves ensures that they will work when they are needed in an emergency or for construction activities.
    - Completed spring and fall maintenance of fire hydrants.
    - Underground utility locates – continued to meet regulatory requirements with a combination of in-house and contract staff (approximately 14,300 locates completed).
    - 2,295 services are protected by Backflow Prevention Devices (BFP) – the focus is on high-risk use. These devices prevent cross connections and potential contamination of

the distribution system. A dashboard was developed to track customer notification by grids and compliance.
    - Lead testing program was completed in spring and fall.
- Air relief valves in chambers inspections/chamber pump outs (approximately 1020) were not completed in 2024; however they have been started in 2025. There were 2 boulevard style air reliefs installed in 2024 to eliminate flooding risk within the chambers.
- There were 55 watermain breaks in 2024, which is lower than the 5-year average of 66. The 5-year average also dropped from 73 to 66/year.
- Approximately 1,115 aging/problem water meters were replaced. A new process was developed for metering large buildings under construction. The process to install new build meters was streamlined which resulted in faster billing for consumption.
- Approximately 350 hydrants were painted as part of the corrosion protection program, painting will continue in 2025. Hydrants are also stencilled with the watermain diameter for the Fire Department.
- Unaccounted for water was 4.5% which is significantly lower than the average. The unaccounted for water generally fluctuates around 10% (9-12%), with 10% being the approx. 10 year average). This significant drop is under further investigation.
- Pressure reducing valve maintenance was completed.
- Replaced watermains as outlined in the 2024 City of Kitchener Engineering & Water Utility Capital Forecast.
- The Drinking Water Licence was renewed.
- External audit determined that the management system is effectively implemented and maintained and recommended continued certification of accreditation for the municipal drinking water system.
- As a result of a locating process review, council approved the new positions of: Supervisor, Damage Prevention, four new Locators, Damage Prevention and one new Draftsperson. These positions allowed the corporation to respond in more timely manner in accordance with the new Ontario One Call Regulations. All positions except for the Draftsperson were filled.
- Watermain Break App was modified to include the most critical infrastructure information (water and gas) to staff via Smartphones or tablets.
- Developed a SharePoint site to manage watermain commissioning as well as emergency response.
- Commenced the water component of the Official Plan to identify any water upgrades required and /or potential limitations for future growth.

Continuing Areas of Focus are:

- Continue with the mapping QA/QC for the remainder of the City.

- Build upon the success of the hydrant spring mobile field inspections and develop a fall mobile field inspection.
- Proceed with new mapping solution to replace ArcReader infrastructure mapping.
- Various system upgrades including SAP and CityWorks (work management system).
- On-going work related to the Water Asset Management Plan including Levels of Service, Risk and Lifecycle Management.

Background

One of recommendations from Justice O'Connor's Part Two Report of the Walkerton Inquiry was "The Ministry of the Environment should require the owners of municipal water systems to obtain an owner's licence for the operation of their waterworks". Justice O'Connor also recommended that the Owners and Operating Authorities of these systems implement a quality management approach to operations and management. As a result of these recommendations a Drinking Water Quality Management Standard (DWQMS) under the *Safe Drinking Water Act, 2002* was released in October 2006.

The *Safe Drinking Water Act, 2002* and *Regulation 188/07*, requires the City of Kitchener to be licensed to operate and maintain Kitchener's Water Distribution System. Some of the licensing requirements include the development and management of a Quality Management System (QMS) and Operational Plan as well as communication to the Owner. The City of Kitchener became licensed in August 2009 with a Financial Plan originally submitted in July 2010. Renewals of the Licence and Financial Plan were complete and brought forward to Council every 4-5 years thereafter prior to each Drinking Water System License renewal. The Licence was renewed in 2024.

Section 19 of the *Safe Drinking Water Act, 2002* imposes a statutory standard of care on persons who oversee the municipal drinking water system: "…every person who, on behalf of the municipality, oversees the accredited operating authority of the system or exercises decision-making authority over the system." This standard of care includes Council since they have decision-making authority as the 'Owner" of the system. Part of the standard of care includes requiring system owners to undertake financial planning and implement a QMS.

The following link is a guide for municipal councillors to help understand their responsibilities under the *Safe Drinking Water Act, 2002* and provides information on how Ontario's drinking water is safeguarded: Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils | ontario.ca

Three things to remember as a municipal councillor (as outlined in the above Guide):

- It's your duty. There are legal consequences for not acting as required by the standard of care, including possible fines or imprisonment.

- Be informed. Your decisions can have an impact on public health. You don't have to be an expert in drinking water operations, but you do need to be informed about them.
- Be vigilant. It is critical you never take the drinking water safety for granted or assume all is well with the drinking water systems under your care and direction.

Other Related Water Quality Reports

The City of Kitchener Summary Water Report for 2024 is a regulatory report provided to Council, which provides a summary of drinking water including adverse water quality incidences and water volume.

The Kitchener Distribution System prepares an annual summary of the number of tests taken within the distribution system as well as the range of the results. A copy of this report is available on the Kitchener Utilities website.

The Kitchener Distribution System is part of an Integrated Urban System, meaning the Regional Municipality of Waterloo is responsible for water treatment and the development and operation of a trunk water network to distribute treated water to Kitchener, Cambridge, Waterloo, Woolwich, and Wilmot. There is a variety of groundwater supply wells (80%), treatment facilities as well as a Grand River (20%) source. The Region of Waterloo's water infrastructure system is complex, consisting of numerous supply sources, pressure zones, reservoirs, and pumping stations. Ensuring sufficient pressure and quantities to meet current and planned growth requires a long-term, co-ordinated strategy. The Region provides annual summaries for each supply and the information is available on their website with a link available at the Kitchener Utilities website.

A portion of Kitchener (River Ridge area) is supplied by the City of Waterloo. Kitchener supplies water to a small section of Waterloo (Ira Needles area) and water travels through the Kitchener distribution system to Breslau (Woolwich). The City of Waterloo's water quality report is available on their website.

City of Kitchener Water Distribution

DWQMS Management Review

Quality Management System Policy

Kitchener Utilities owns, maintains, and operates the City of Kitchener's Drinking Water Distribution System. At Kitchener Utilities, we are committed to supplying the City with safe drinking water. We work together as the City of Kitchener and the Region of Waterloo to keep water matters top of mind. We are committed to these principles:

1. Quality

Kitchener water is safely treated and regularly tested according to government legislation and regulations for the consistent delivery of safe, quality drinking water. We are committed to maintaining and continually improving the Quality Management System and complying with applicable legislation.

2. Trust

Trust us to look after your water needs by delivering quality water and reliable service.

3. Value

Tap water is the most economical choice.

4. Communication

We will communicate openly with the public concerning matters of drinking water quality.

PART B – MANAGEMENT REVIEW

System Description

The scope of the waterworks begins at the point where treated water enters the watermain from the treatment facilities and ends at the property lines of the consumers. There is no storage, chlorine boosting, secondary disinfection or pressure boosting within the control of the waterworks.

At the end of 2024, the waterworks consists of approximately:

- 933.6 km of distribution watermain – 799.4 km Kitchener owned, 23.5 km Dual owned (joint ownership between Kitchener and Region) and 110.7 km Regional owned.
- 72,788 water meters in service.
- 4,797 hydrants (not including private hydrants).
- 8,276 valves (not including service valves or hydrant valves) – 7,683 Kitchener owned, 129 Dual and 464 Regional.

(See **Appendix** for a map at end of this document)

The waterworks system has the following permits and licences:

- Municipal Drinking Water Licence
- Drinking Water Works Permit
- Financial Plan
- Operational Plan

Water Infrastructure Program (WIP)

The 2024 WIP Summary and Rate Options Report (INS-2023-437) was brought forward to Council in 2023 to address capital and maintenance requirements and rates for 2024-2027.

The WIP was initiated in spring 2017. Maintenance targets were continued as part of the 2024-2027 WIP. The 2024 planned program of maintenance-related work was achieved and included:

- Watermain cleaning program - cleaned 168km of the City (this is the largest main cleaning area.
- Valve maintenance and replacement programs – operated approximately 1,877 valves and replaced 20 broken or failing valves.
- Hydrant operation and maintenance – completed as required.
- Underground utility locates – continued to meet regulatory requirements with a combination of in-house and contract staff (14,300 locates completed).
- Approximately 2,295 services are protected by Backflow Prevention Devices (BFP). These devices prevent cross connections and potential contamination of the distribution system. A dashboard was developed to track customer notification by grids and compliance numbers.

Additional funding was provided in the WIP to raising air relief valves/chambers in areas prone to flooding to reduce the risk of drinking water contamination. Two (2) air relief valves were replaced in 2024.

Funding was provided to commence water-only infrastructure replacement projects. The design of three (3) projects began in 2024: sections of Holborn Dr/Carnaby Cres, Prospect Dr and Forest Hill Dr.

Incidents of Regulatory Non Compliance

A Ministry of Environment, Conservation and Parks (MECP) completed an inspection on June 11-17, 2024, and covered June 9, 2023 to June 13, 2024. There were no notices of non-compliance.

Incidences of Adverse Drinking Water

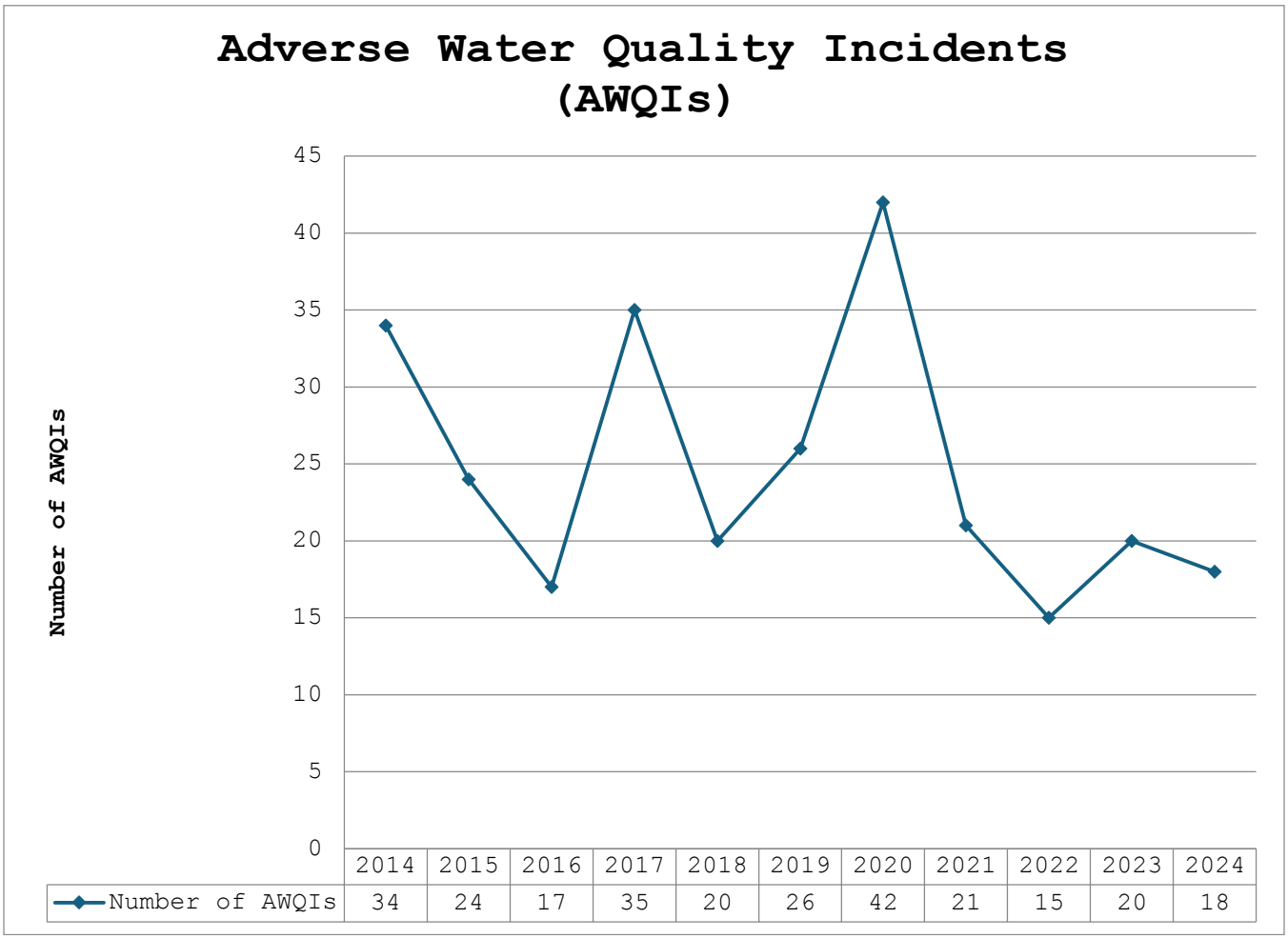
There were 18 Adverse Water Quality Incidences (AWQI) during the year. There were 4,232 chlorine residual samples taken and 2,191 bacteriological samples taken within the distribution system. There were no self-imposed Boil Water Advisories (BWA) initiated in 2024. The volume of AWQIs decreased slightly from 2023.

- Low chlorine AWQIs (9 total)
- Total coliform AWQIs (9 total)
    - Eight were at temporary main sampling locations.
    - One was at a distribution sampling location.

Although not AWQIs, there were Lead (3) plumbing exceedances, two of which were are the same location.

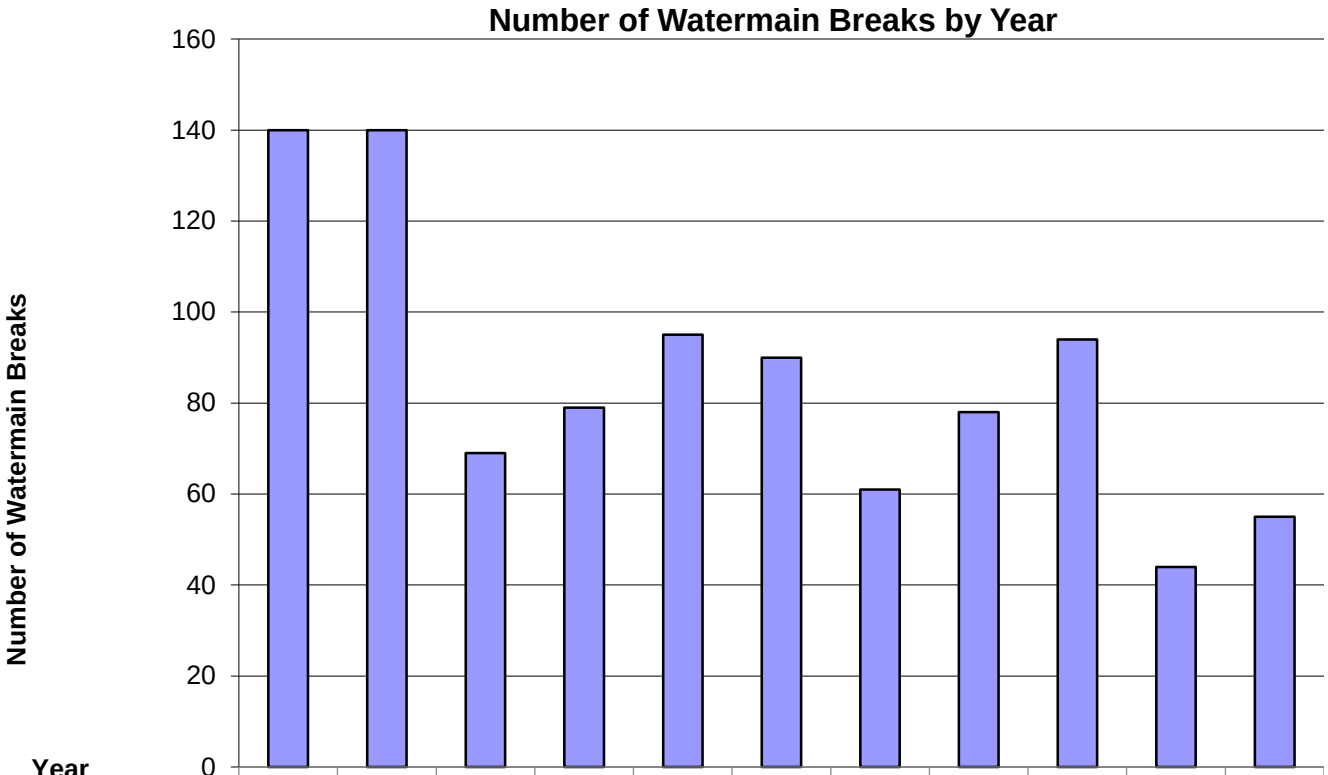
In general, corrective actions include reporting, flushing and resampling. The above AWQIs were all resolved. The Summary Water Report for 2024 discusses water quality compliance and corrective actions further.

Action: No further action required – for information only



Deviations from Critical Control Points Limits and Response

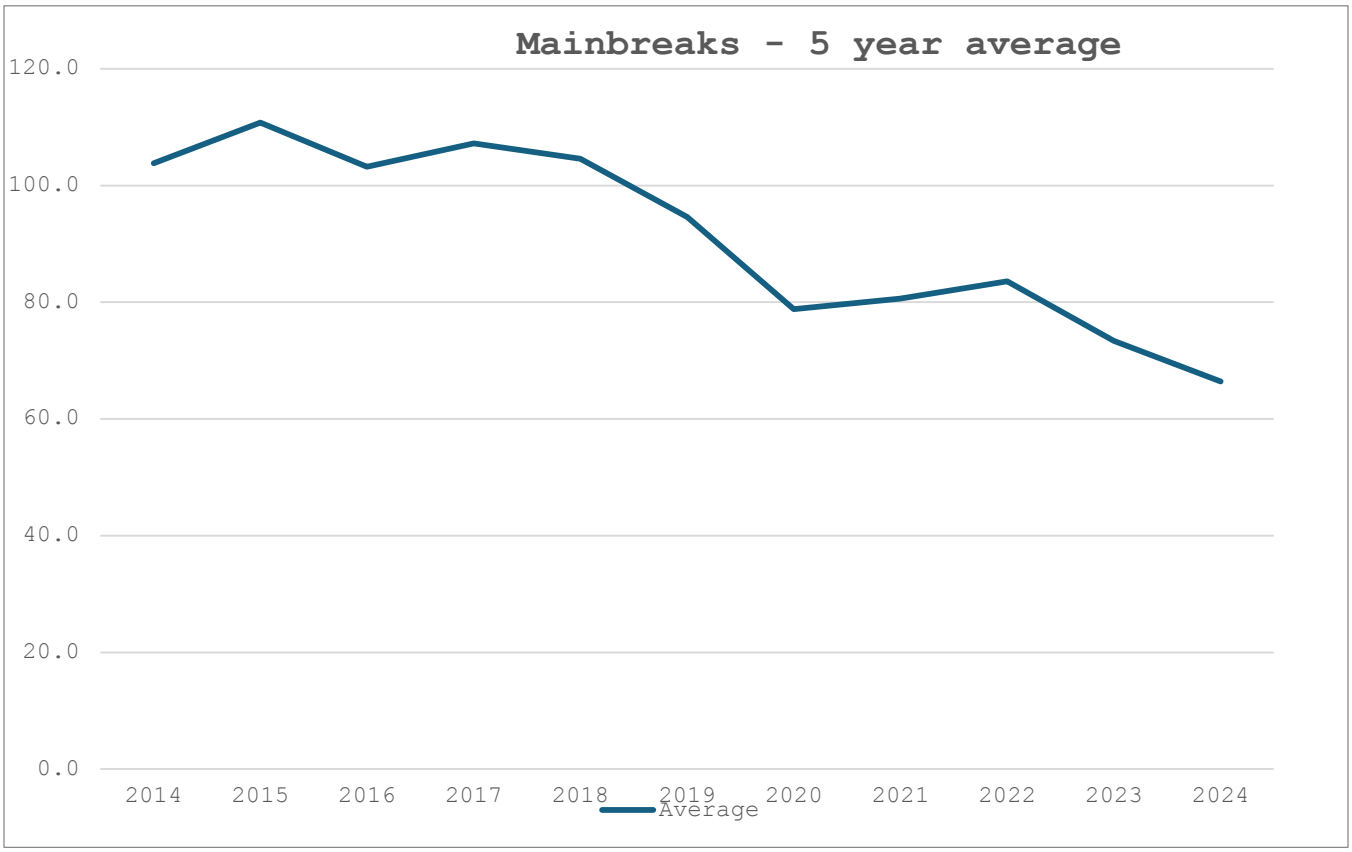
- There were 55 watermain breaks in 2024, which is lower than the 5-year average of 66 (the 5-year average also dropped). Of the 55, 12 were deemed to be Category 2. Category 2 watermain breaks require bacteriological sampling upon completion. Watermain breaks are influenced by the watermain age/condition, material type, and is also heavily weather dependent due to the frost movement with colder winters resulting in more breaks. Incident debriefs are completed for watermain breaks and break history is included as part of asset condition. This information helps to determine priorities for replacement due to condition.

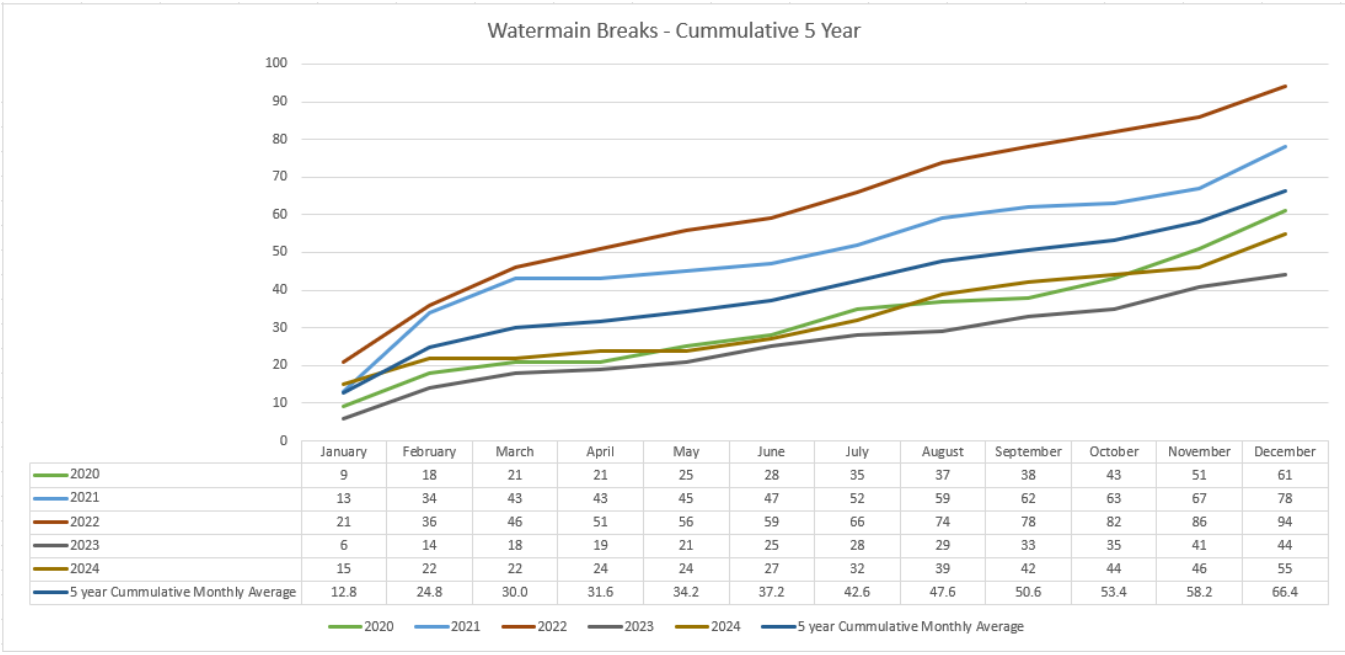


Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Number of Breaks	140	140	69	79	95	90	61	78	94	44	55

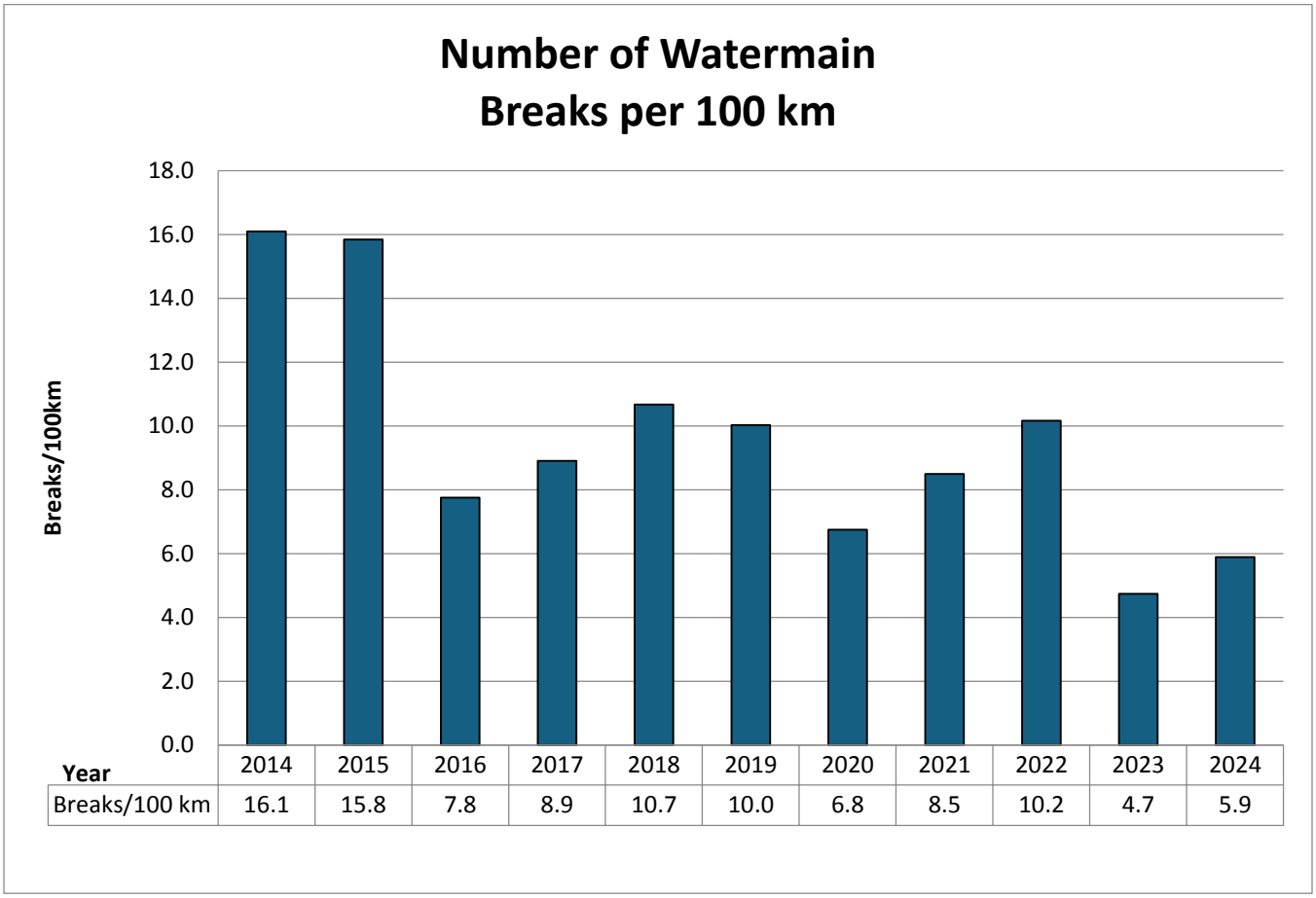
City of Kitchener Water Distribution

DWQMS Management Review



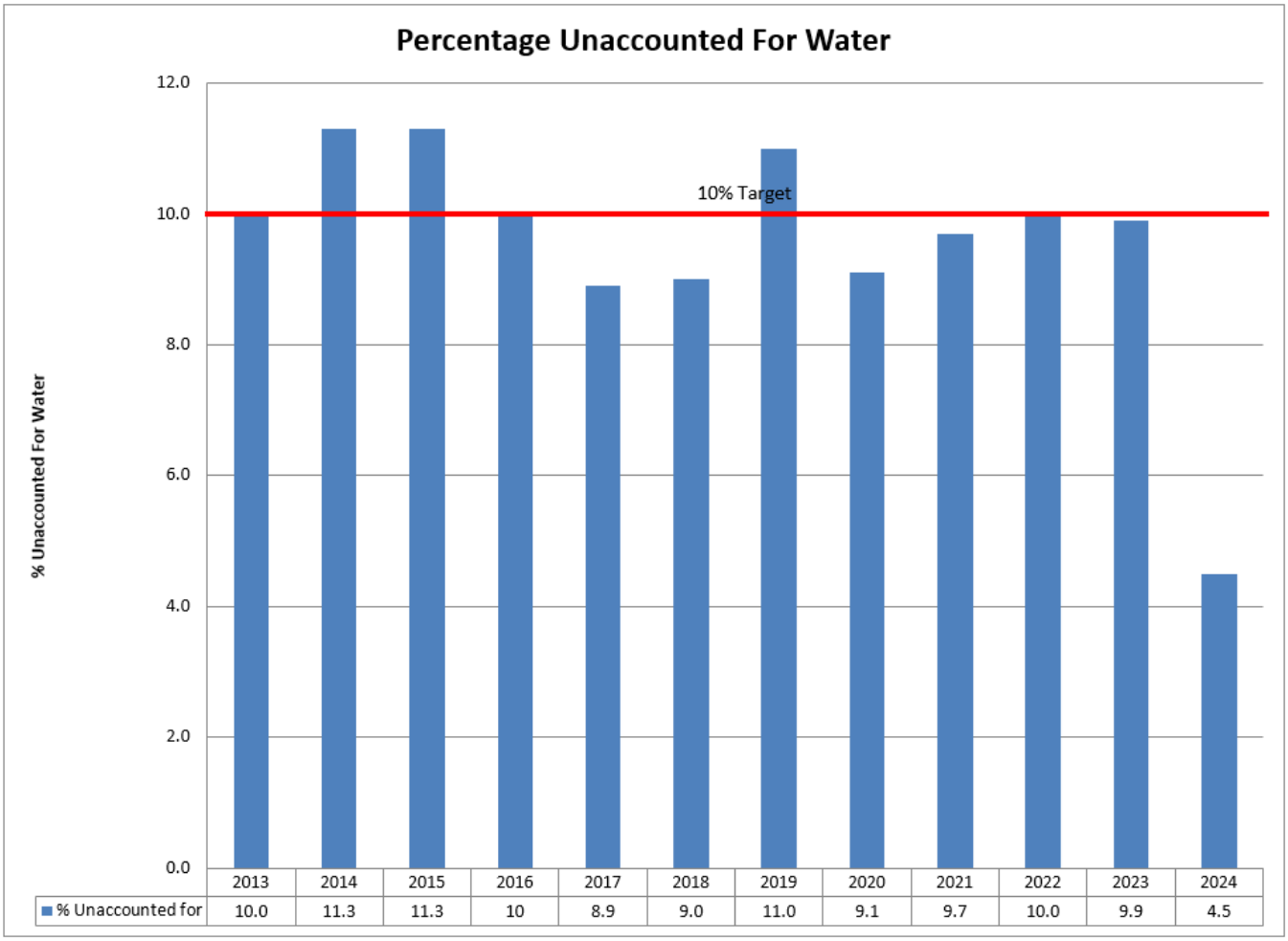


	January	February	March	April	May	June	July	August	September	October	November	December
2020	9	18	21	21	25	28	35	37	38	43	51	61
2021	13	34	43	43	45	47	52	59	62	63	67	78
2022	21	36	46	51	56	59	66	74	78	82	86	94
2023	6	14	18	19	21	25	28	29	33	35	41	44
2024	15	22	22	24	24	27	32	39	42	44	46	55
5 year Cummulative Monthly Average	12.8	24.8	30.0	31.6	34.2	37.2	42.6	47.6	50.6	53.4	58.2	66.4



Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Breaks/100 km	16.1	15.8	7.8	8.9	10.7	10.0	6.8	8.5	10.2	4.7	5.9

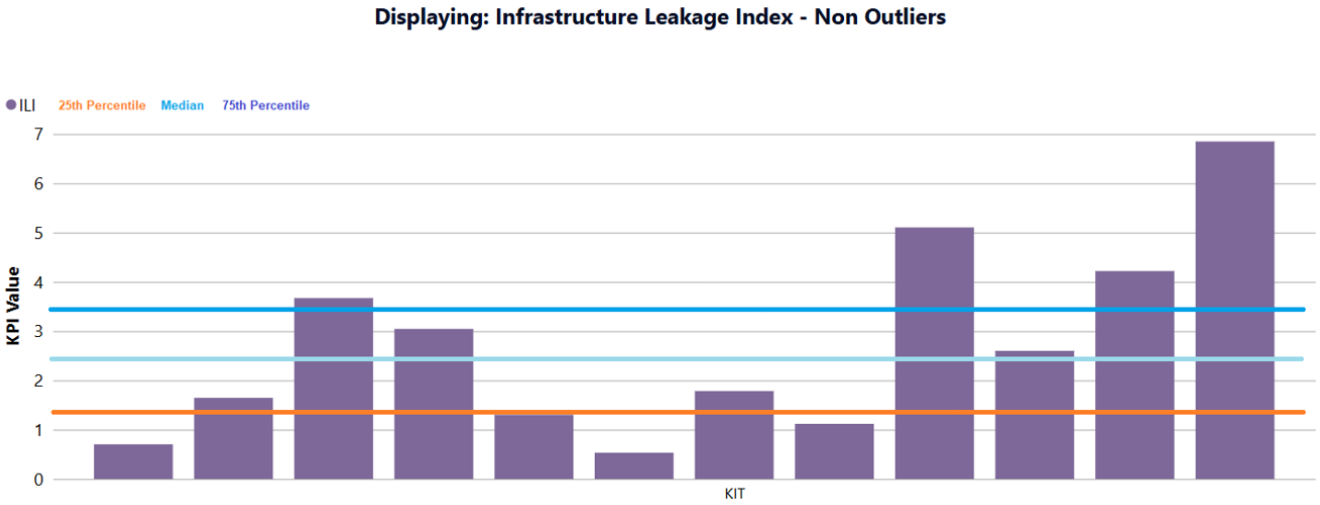
- Unaccounted for water for was 4.5.%; the MECP target is 10%. Water loss includes water used for construction watermain commissioning (e.g., new mains and replacement mains), water for temporary main supply during reconstruction, and water use for reactive flushing). The 10-year average for Kitchener is typically around 10%, although the percentage fluctuates. Investigation is ongoing to determine the reason(s) for the significant drop. There have been some billing improvements, however the impact does not solely explain the drop. Improvements include:
    - A new process was developed for metering large buildings under construction.
    - Streamlining the process to install new-build meters which resulted in faster billing for consumption.



- Infrastructure Leak Index (ILI) is a performance indicator which is the ratio of the level of Current Annual Real Losses (CARL) to the Unavoidable Annual Real Losses (UARL). The UARL considers the total length of watermain in the distribution system, number of hydrants, average pressures, number of service connections, length of service and hydrant connections. The UARL is the theoretical low limit of leakage that could be achieved if all the current best leakage management could be implemented. The UARL is specific to each water system. For example, the UARL for a large system with high pressure will be higher than a small system with low pressure. Leakage in any water system can never be totally eliminated. One caveat is that the calculation is made based on an average pressure. Kitchener has several pressure zones with a great deal of variation across the city. As part of the National Water and Wastewater Benchmarking Initiative (Benchmarking), Kitchener recently began reporting ILI and trending will be established as more data is generating. Benchmarking is completed on the previous year's data. The 2023 ILI value was 1.78 meaning the current level of real losses

is 1.78 times greater than the theoretical low level losses. The ILI graph below is a comparison to other Cities participating in 2023 benchmarking (Kitchener is below the median of 2.3).

ILI for cities participating in 2023 Benchmarking



Action: No further action required – for information only

<u>Effectiveness of the Risk Assessment Process</u>

- A risk assessment was completed on November 12, 2024. The purpose of the risk assessment is to brainstorm potential risks and identify counter measures, where appropriate. The following is a summary for the 2024 risk assessment:
  - Reviewed all risks to ensure all information and assumptions are current and valid.
  - Discussed and added the following new potential risks as well as potential counter control measures:
    - Failures and/or repairs on Regional transmission mains (critical infrastructure)
    - Large outages resulting from construction - no backfeed
    - Emergency Phone line - backup
    - Parts Supplies received are not as advertised - e.g. says NSF but may not meet the criteria
  - Preventive / Control measures and risk scores were updated for several existing risks and added for the new risks above.
  - One previously identified risk was removed from the risk table.
  - One previously identified critical control point was downgraded – valves left accidentally closed after watermain cleaning due to the App where staff track open and close valves in real time

City of Kitchener Water Distribution

DWQMS Management Review

Action: For Information Only

Results of External and Internal Audits

The DWQMS Standard is divided into Plan, Do, Check, and Improve sections. Audits are completed to analyze processes to confirm that what is stated in the procedures and work instructions is what is being done. External Audits are completed by a third party while Internal Audits are completed by accredited City staff.

External:

- In August 2024, a 12 Month Surveillance audit was conducted and completed by a certified external auditor (SAI Global) recommending continued accreditation for the City of Kitchener.
    - No non-conformances were found. No opportunities for improvement were identified.

Internal:

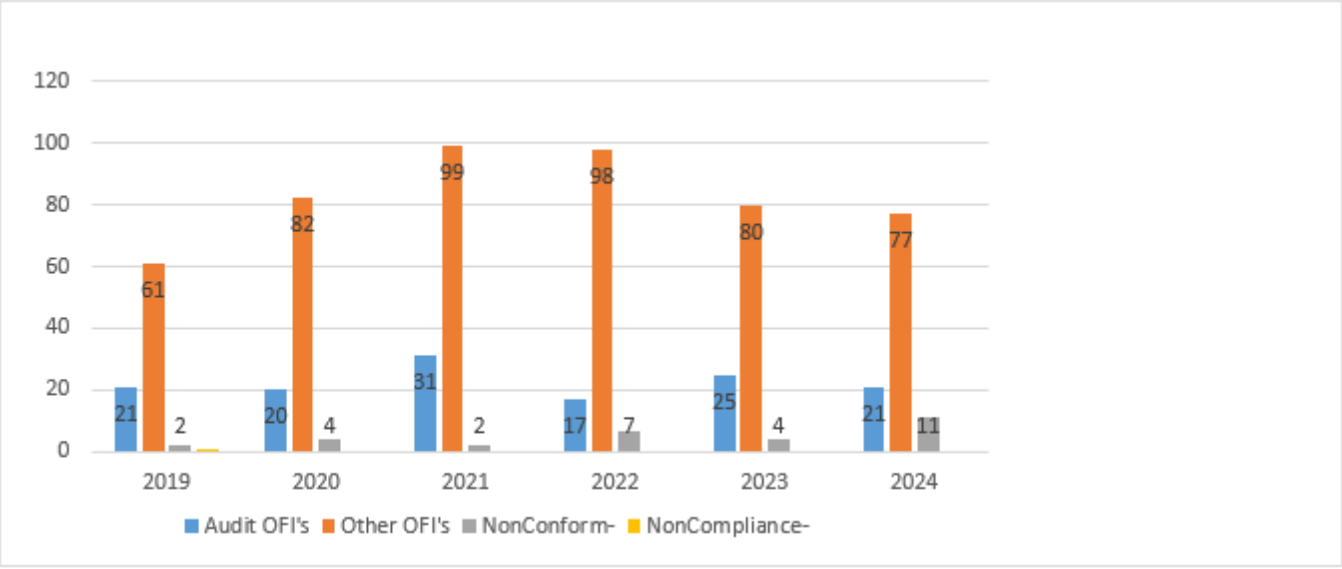
- 5 Field/Process audits were conducted in 2024:
    - Mobile Hydrant Operating Checks
    - Curb Stop Replacement
    - Final Watermain Connections
    - Tracer Wire – Final Watermain Connections – Lawrence Ave
    - Tracer Wire – New Subdivision – Ottawa-Trussler
- 11 Element audits were conducted in 2024.
- There were 21 opportunities for improvement identified from internal audits:
    - 5 (24%) of these opportunities have been acted upon and implemented;
    - 8 (38%) of these opportunities could not be implemented; and
    - 8 (38%) of these opportunities are still being investigated
- Zero nonconformances and zero non-compliances were found during the internal audits.
- 11 nonconformances were found outside of the internal audits. Ten of the eleven nonconformances have been resolved with one still open (involves the phone system).

Continuous Improvement

Continual Improvement is a key element of all quality management systems and we are regulated to have a process to identify and implement preventative actions to eliminate the occurrences of potential non-conformities. Opportunities for improvement can come from many sources, such as external audits, staff suggestions, public concerns, management reviews, debriefs, or the risk assessment meeting. Opportunities which have either been acted upon and implemented or are not implemented are communicated back to staff as part of regular meetings. In total for 2024, excluding the results from internal audits, there were:

- 77 opportunities for improvement were identified outside of internal audits. These opportunities for improvement can come from other avenues as well, such as external audits, staff suggestions, public concerns, management reviews, or the risk assessment meeting:
    - 39 (51%) of these opportunities have been acted upon and implemented;
    - 5 (6%) of these opportunities could not be implemented; and
    - 33 (43%) of these opportunities are still being investigated.

OFI's, Non-Conformances, Non-Compliances by Year



Action: The Continual Improvement Log is updated monthly to discuss new items, track process and circle back to determine the effectiveness of implementation. The log is be reviewed annually with Top Management as part of the Management Review.

Results of the Emergency Response Training/Testing

- New On-Call Management Staff continue to take the IMS-100 Introduction to the Incident Management System (IMS) for Ontario training.
- Water Emergency – new training for Managers was developed in 2024 and continues into 2025. This training is scenario based.
- Debriefs are also completed for selected events. For example, debriefs after Boil Water and Drinking Water Advisories are completed to improve our processes.

Action: No further action required – for information only

Operational Performance

- Ongoing work with the Region for the Pressure Zone 2 and 4 Optimization – this will improve water pressures and supply in the southeastern end of the city. The majority of the work is Regional; however, there is coordination work with the City. The section between Strasburg Road and Robert Ferrie Drive is awaiting the completion of the Environmental Assessment for the Robert Ferrie Drive extension.
- Ongoing work to support the Region's East Side Lands pressure zone changes, which includes the on-going installation of Regional watermain.

Action: No further action required – for information only

Raw Water Supply and Drinking Water Quality Trends

There are known seasonal issues with the water supply:

- Fall - Grand River temperature changes may cause odour challenges in the source water, which may increase flushing requirements.
- Winter – temperature extremes may cause more watermain breaks in the system.

Region of Waterloo commenced the Water Supply Strategy Update to ensure a safe, secure, sustainable water supply through to 2051.

Action: No further action required – for information only

Follow-up on Action Items from Previous Management Reviews

Action items were completed as part of the revised report and associated council report.

Action: No further action required – for information only

Status of Management Action Items Identified Between Reviews

There were no items identified between the management reviews.

Action: No further action required – for information only

Changes That Could Affect the Quality Management System

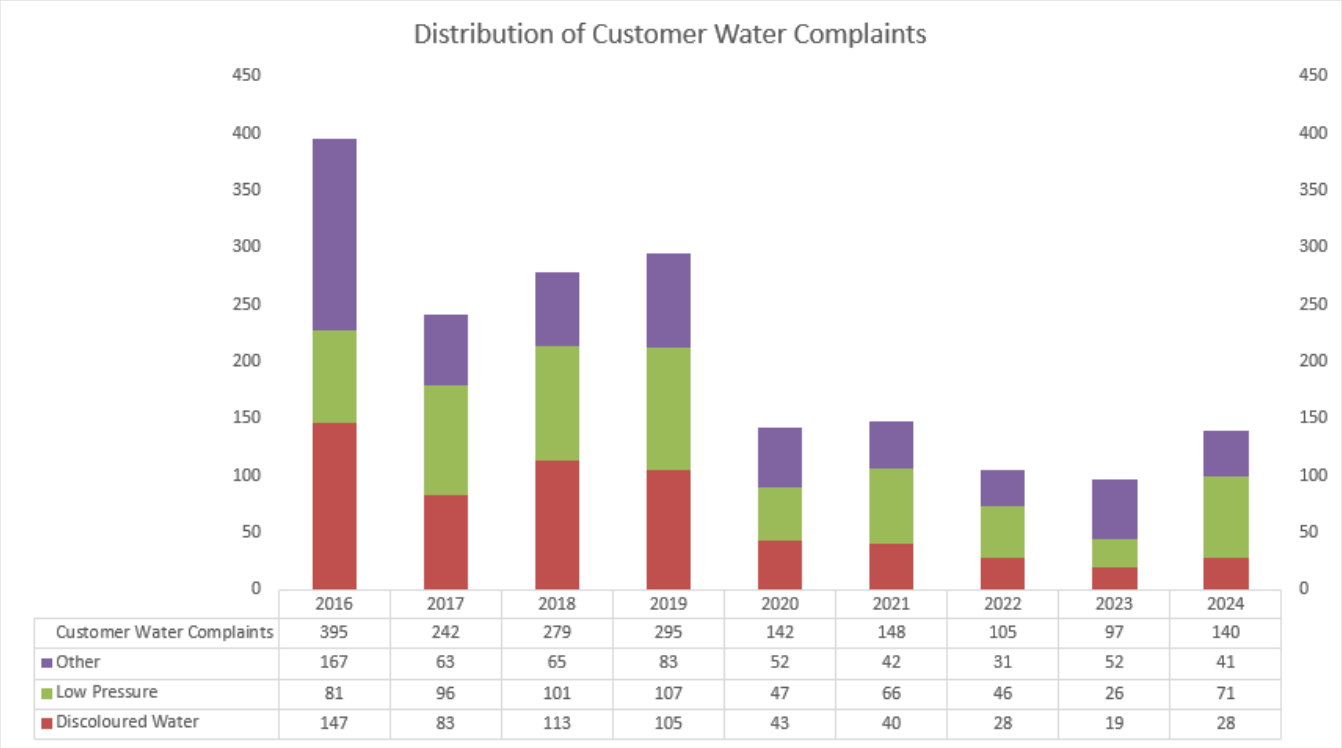
- The Federal government has a manganese limit, however the current provincial regulations, which Kitchener is required to follow only has an aesthetic limit. It is anticipated that the Province will follow the federal guidelines and implement a maximum allowable concentration. The Strange Street upgrades were completed in anticipation of this regulatory change.

- There are indications that the lead maximum allowable concentration will be reduced, which will likely increase the number of lead tests that exceed the regulatory limits. Customers are not required to complete any corrective actions when elevated lead exists. The City is required to flush and resample if there is a lead adverse in the distribution system. The City tracks streets with lead or suspected lead and includes them as part of the considerations for replacement. It is most cost effective to replace a number of lead services as part of a road reconstruction project, rather than individual services.
- The City commenced an Official Plan update in 2024; which included a water component to identify undersized watermain in infill areas and/or potential areas for concerns.
- Continue to support the City's development approval goals with respect to water with ongoing design/construction support throughout the process.
- The Canada Post Strike at the end of 2024 impacted customer communications and compliance in the Cross Connection Control Group and the Water Meter Shop. The strike also increased the number of customer phones calls both incoming and outgoing for Dispatch and Revenue.
- The telephone system was upgraded across the City which impacted and continues to impact the Dispatch emergency and back-door lines. Issues are being logged and reported to the project team as they arise.

Action: No further action required – for information only

Consumer Feedback

- The number of customer water complaints slightly increased in 2024. Dispatch staff guide customers through a number of questions to determine whether the problem is suspected to be internal (plumbing) or external (distribution system).
- The problem, cause, and remedy are tracked for each complaint.
- Discoloured water complaints are often the result of changes in flow in the system. This can be due to reconstruction, watermain cleaning, watermain breaks, valve replacement and other construction.
- Low pressure complaints are largely internal issues (softeners, internal plumbing).
- Other complaints include water hardness, no water, odour/taste, air in lines (white water), customer sample requests. We are seeing more residents moving into Kitchener who may not be familiar with water hardness and education is a component of resolving the concerns.
- In general, a number of customer complaints can be resolved by educating the customer (water hardness), flushing/sampling (discoloured water) or confirming private side issue (water softener, pressure reducing valve, drain issues).
- An On-boarding process and manual was created for Dispatch staff to respond to customers and dispatch staff (85 procedures).



	2016	2017	2018	2019	2020	2021	2022	2023	2024
Customer Water Complaints	395	242	279	295	142	148	105	97	140
Other	167	63	65	83	52	42	31	52	41
Low Pressure	81	96	101	107	47	66	46	26	71
Discoloured Water	147	83	113	105	43	40	28	19	28

Action: Continue with proposed watermain cleaning area in 2025.

Resources Needed to Maintain the Quality Management System

- The WIP report identified a shared resource to improve data management and risk prioritization; however this is not planned for 2026.

Action: No further action required – for information only

Results of the Infrastructure Review

- The WIP Review was completed which 2024-2027, which included water-only projects.
- Individual project selection is based on a number of factors including condition (watermain break history), material, criticality, watermain size, presence of lead services, shallow mains, and other infrastructure needs (storm, sanitary, road). Design commenced for 3 projects
- 2024 reconstruction projects were largely completed as per the 2024 Engineering/Storm/Sanitary/Water Capital Forecast
- The Region replaces some Kitchener infrastructure as part of their projects (Kitchener funded and some may be water-only projects).

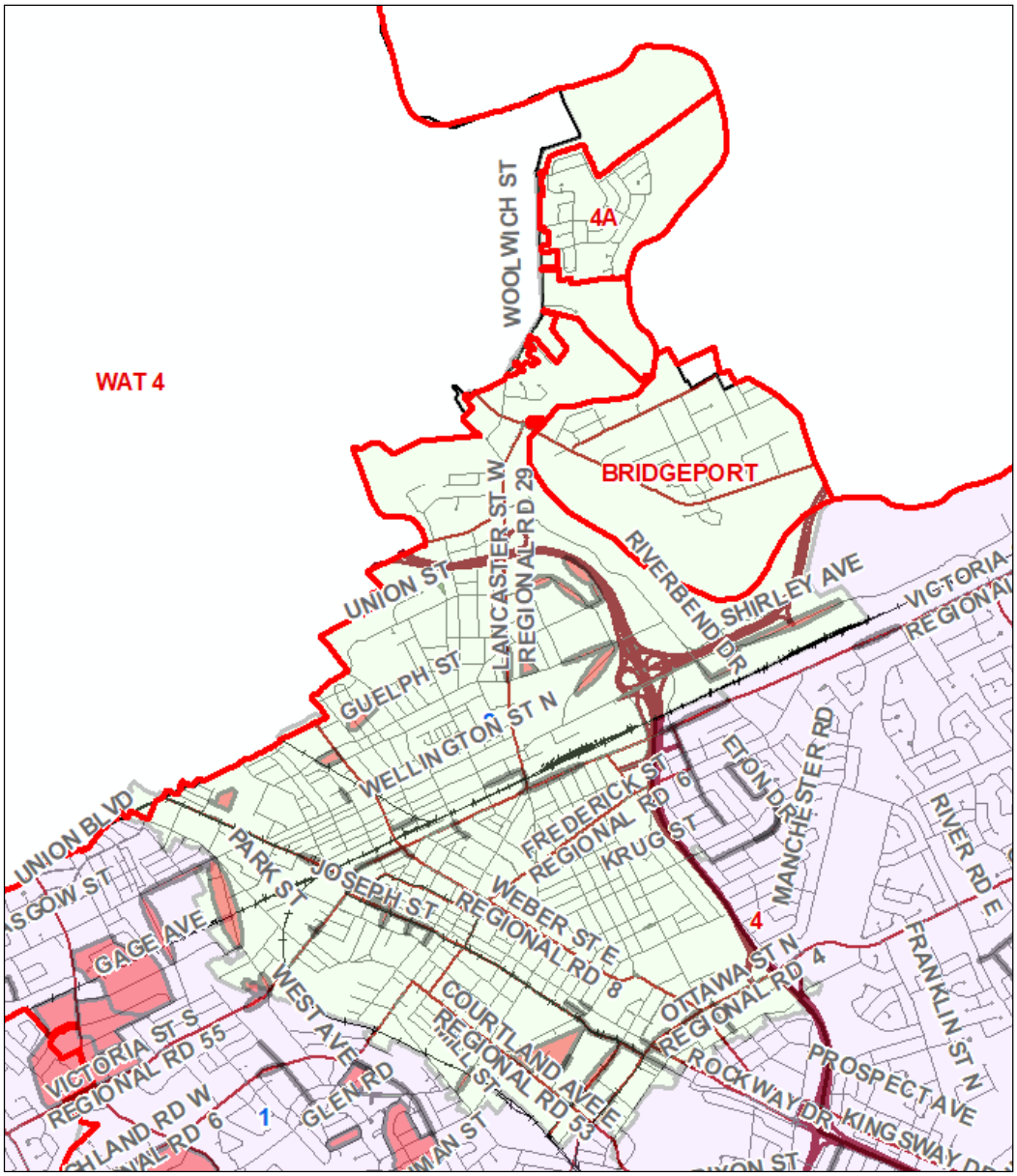
- 2025 projects were finalized; however, it should be noted that there were a number of Regional projects moved out to future years in the Regional capital program.
- Meetings were held with Asset Management and Engineering staff at both the City and the Region to determine future project needs.
- Issue papers are brought forward as part of the budget process, additional funding requests related to maintenance and water-only capital projects. The majority of water-only projects are included as part of Regional roadwork to minimize disruptions to citizens and be cost effective.

Action: No further action required – for information only

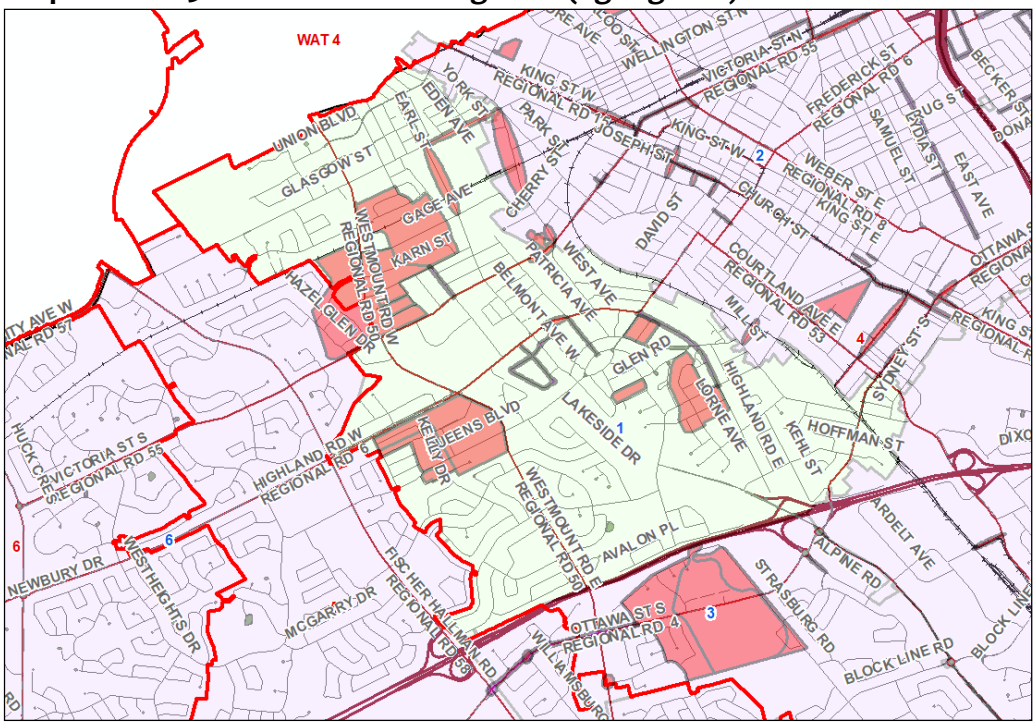
Summary of Maintenance

- Watermain cleaning – Approximately 135kms of watermain was cleaned in 2024. The 2024 watermain cleaning area map is shown below. The next map shows the proposed 2025 area in pink/red. The 2024 area is the largest main cleaning area. The purpose of watermain cleaning is to remove iron and manganese build up in the watermains. The iron and manganese cause discolouration in the water. Although iron and manganese are naturally occurring and not health related, discoloured water causes a public perception of issues with the drinking water. Provincial health related regulations are anticipated for iron and manganese.

Completed 2024 Watermain Cleaning Area (light green)



Proposed 2025 Watermain Cleaning Area (light green)



- Hydrant maintenance – spring maintenance was completed on all hydrants and all hydrants were dipped in the fall.
- Hydrants are flushed to maintain chlorine residuals was completed in spring and fall.
- New development areas are flushed monthly until the subdivision is built-up.
- A valve turning/exercising program was completed for 1,877 valves – the majority of valves were operated in the watermain cleaning area with additional valve operation in areas of reconstruction. Critical valves along the LRT were also operated. Operating valves ensures that they will work when they are needed in an emergency or for construction activities.
- There were 20 broken valves and/or failing valves were either replaced or removed which allows for quicker isolation for water emergencies. Broken valves are tracked in real time and the majority are addressed within weeks (except for winter). At the end of 2024 there were 11 broken valves remaining, 7 of which will be replaced as part of future reconstruction work.
- 352 hydrants were painted.
- Leak detection survey – a third of city completed each year. Follow-up is completed on potential leaks. Approximately 330km of mains were surveyed resulting in one detected water service leak and four possible hydrant leaks – the hydrants were not found to be leaking upon further investigation.

- Staff continue to inspect new connections and cut and caps for reconstruction and new development. Staff complete all new service tappings for development as well as witness old service abandonment. This work requires 48 hours to schedule and is driven by new development and watermain replacement work.
- Anodes are installed on existing watermains whenever they are exposed (e.g., watermain breaks, valve repairs, hydrant repairs).
- Pressure Reducing Valves (PRVs) were inspected.
- Chamber inspections/pump outs for chambers containing air relief valves were not completed in 2024; however they started in early 2025 (approximately 120). Air reliefs are a potential risk to the system if they become submerged and there is a watermain break or incident in the distribution system. Two boulevard style air reliefs were installed in 2024 to replace existing air reliefs in chambers.
- Staff continue to use the watermain break app for reporting breaks and water service leaks, which improves customer communication for breaks. Additional functionality to the watermain break app has been added.
- Approximately 25% of the city's water mapping has been QA/QC'd resulting in dozens of missing water valves being added as well as corrections to services and chambers. Once added to the maps, the assets can be maintained. This work will continue over the next few years until the entire city has been reviewed.

Action: No further action required – for information only

Effectiveness of Maintenance

Completion of numerous maintenance programs associated with the water and the infrastructure are essential for the delivery of safe drinking water. This report does not summarize every maintenance program: for example hydrants are operated annually to comply with Fire-.related regulations but that activity has minimal impact on the drinking water and does not have an associated key factor. Other maintenance programs may impact more than one key factor – for example proactive dead end main flushing may decrease water quality complaints and Adverse Water Quality Incidents. The effectiveness of the maintenance program is determined by the following key factors:

- Number of Adverse Water Quality Incidents (AWQI)
- Water loss/unaccounted for water
- Water quality complaints
- Number of watermain breaks

The system performance has demonstrated effectiveness by achieving:

- There were 18 AWQIs (an indication of water quality). Less than 1% of samples taken are AWQIs. See the Summary Water Report for further details.
- Water loss/unaccounted for water was 4.5% (below the target of 10%).
- The number of quality complaints was at 140, 20% of which were related to discoloured water and 51% pressure (largely internal issues). The remainder included complaints relating to hard water (new residents are not always familiar with hard water), and general safety concerns. The watermain cleaning program has decreased the number of complaints.
- There were 55 watermain breaks in 2024, which is a lower than the 5-year average of 66 breaks/year.

Action: No further action required – for information only

Operational Plan Currency, Content and Updates

- The Operational Plan is updated annually.

Action: No further action required – for information only

Staff Suggestions

Staff suggestions are included under the new Continual Improvement section of the report.

Water Conservation

Water conservation programs are developed and delivered through the Region of Waterloo in effort to mitigate high water consumption usage. These programs are part of the Water Efficiency Master Plan through the Region.

Kitchener Utilities supports communication and promotion of the Region of Waterloo's water conservation programs such as the water by-law and the WET program – in-home water audit program. Kitchener Utilities supports and partners on bill inserts semi-annually to Kitchener residents and promotes the programs on the Kitchener Utilities website.

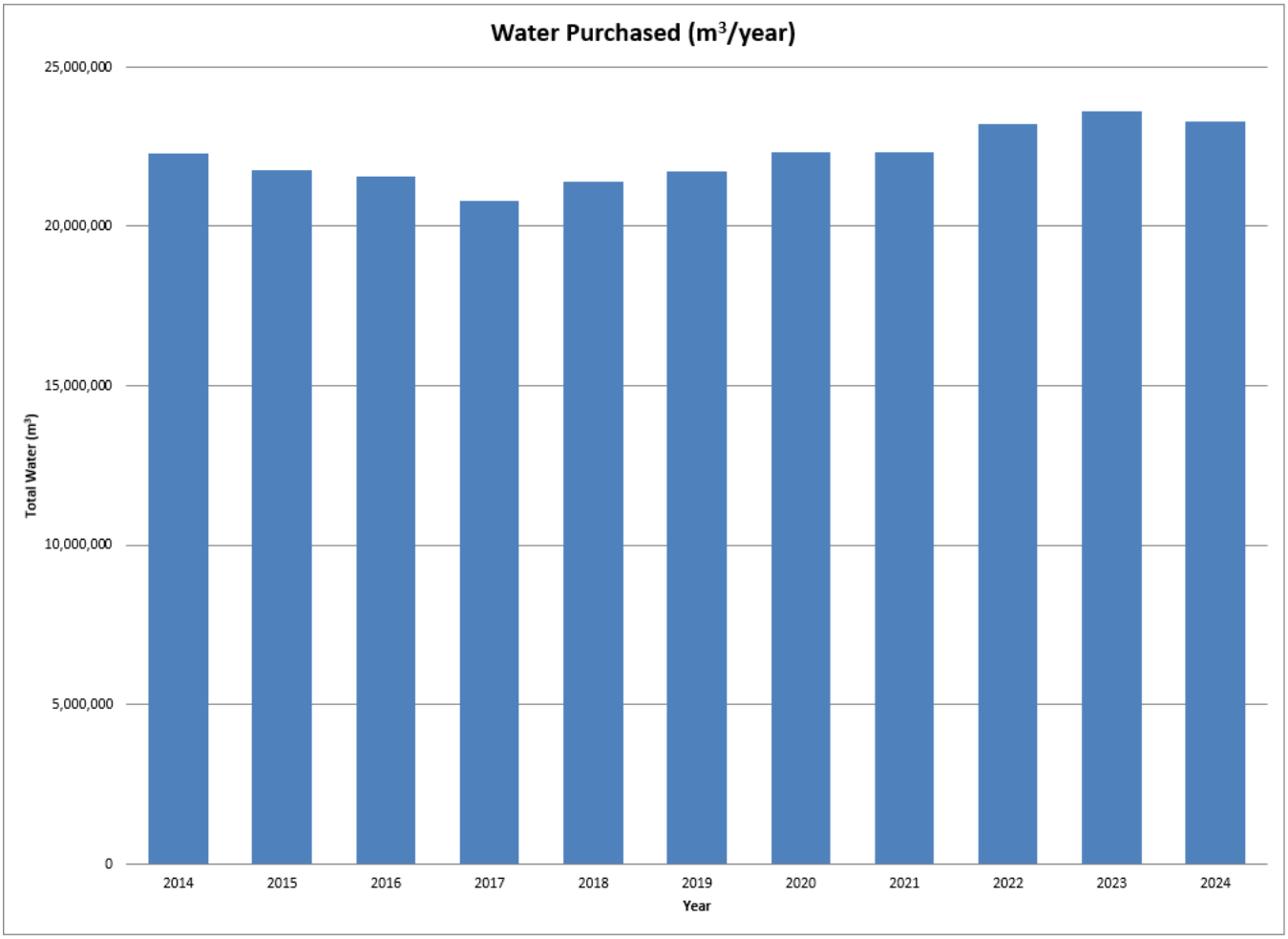
Other

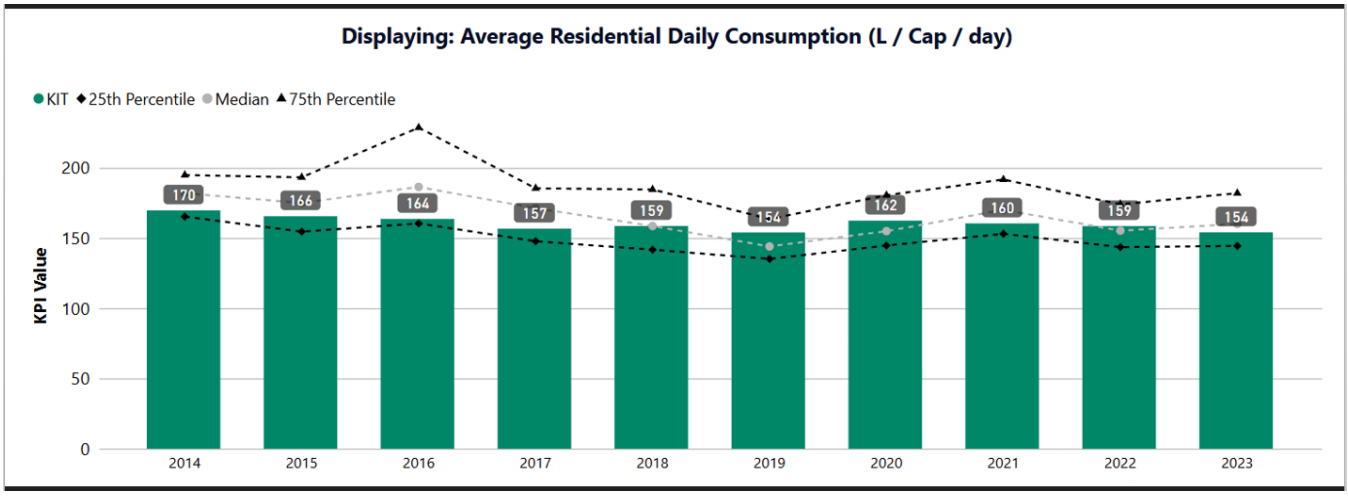
- Water Meter Replacement – 1,114 aging/problem water meters were replaced. Approximately 1,864 service orders generated (e.g. remotes not working, potential stopped meters, new large meter inspections, removals, leaking meters, etc.). There are 72,788 meters in the system.

- On-going work related to the Water Asset Management Plan including Levels of Service, Risk and Lifecycle Management.
- Water Consumption Trends – water consumption has increased since 2018 as population growth demands increase. Average residential daily consumption values were decreasing prior to the pandemic but increased in 2020. The 2021- 2023 values decreased slightly; however 2024 benchmarking values are not yet available. Kitchener average residential daily consumption levels are lower than many comparison municipalities (around the 25th percentile). Water purchases are slightly down from 2024.
- Development of additional dashboards including water valve replacement costs and a Cross Connection Control Dashboard.
- Developed a SharePoint site to manage watermain commissioning as well as emergency response.

The Region of Waterloo is progressing on an update to their Water Supply Strategy, to look at current water supply sources, assessing future water demands and investigating possible new water sources. The Strategy will develop and evaluate recommendations to meet future water supply needs in Waterloo Region to 2051. The Water Supply Strategy will build on previous master plans, and will look at:

- Current sustainable water supply sources and water demands.
- Population growth and how it impacts future water demands.
- The gap between today's water supply and tomorrow's needs and resourcing that gap in a sustainable, efficient way.
- The effect of climate change on our water supply resources.


Water Purchased (m³/year)
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Total Water (m³)
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Year


Displaying: Average Residential Daily Consumption (L / Cap / day)
KIT
25th Percentile
Median
75th Percentile
200
150
100
50
0
KPI Value
170
166
164
157
159
154
162
160
159
154
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023

- Locates - Kitchener Utilities and their Locate Service Provider physically locate gas and water infrastructure for contractors prior to construction and excavation work. Approximately 14,300 locates completed. Locate volumes are driven by customer requests and construction.

Action: No further action required – for information only

Appendix

Water Distribution System Map