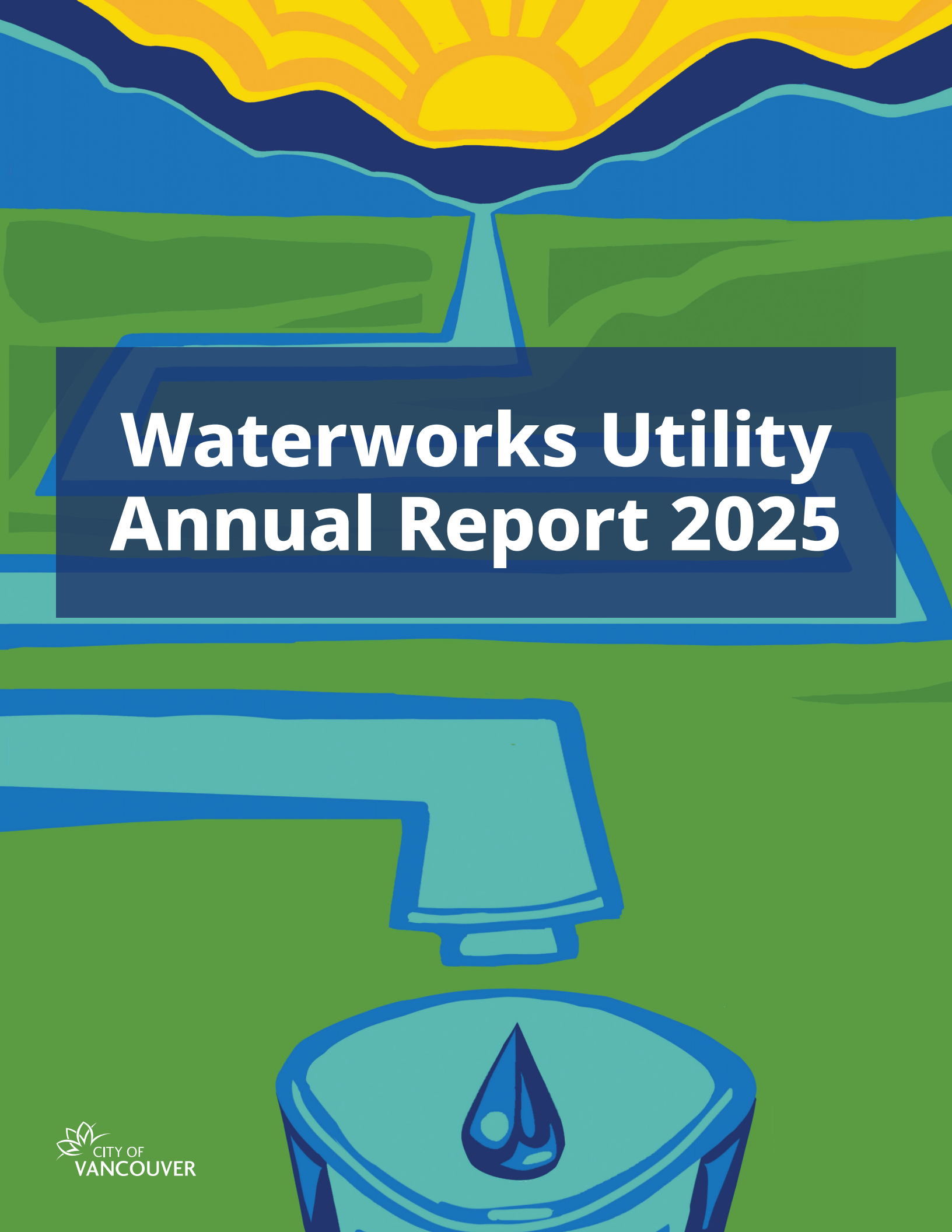


Waterworks Utility Annual Report 2025

CITY OF VANCOUVER

Waterworks Utility Annual Report 2025

The 2025 Waterworks Utility Annual Report cover pages were designed by Aiyana Watts, a Media Arts student at Sir Charles Tupper Secondary School.

Territorial Acknowledgement

The City of Vancouver acknowledges that it is situated on the traditional, ancestral and unceded territories of the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh (Squamish), and the Səl̓ilwətaʔɬ / Sel̓íl̓witulh (Tsleil-Waututh) Nations.

Executive Summary

This report summarizes the City of Vancouver Waterworks Utility activities and program outcomes for the year 2025. It includes a financial summary for the year, and provides in-depth information on Waterworks performance in programs for:

- Drinking Water Quality
- Water Conservation and Demand Management
- Capital Asset Management
- Asset Operations and Maintenance

This report is posted on the City's website to provide transparency regarding the quality of Vancouver's drinking water and to highlight the programs and activities supporting continuous delivery of clean, safe drinking water to Vancouver residents and visitors.

In accordance with provincial regulations governing water suppliers in British Columbia, the City of Vancouver is required to conduct routine testing of the drinking water quality and to make these results publicly available within 6 months of year-end. This report fulfills those requirements.

If you have any questions about this report, please contact us at 3-1-1 or make a request online through the Van311 App.

Contents

1.0 Introduction

Our Mission Statement

We are dedicated to the enhancement and protection of public health and safety
by providing a reliable, accessible and sustainable supply of high-quality drinking water,
through a system well-managed and maintained
by a team of dedicated and committed staff.

The City of Vancouver Waterworks Utility (Waterworks) purchases treated drinking water from Metro Vancouver and operates a City-wide network of 1,464 km of transmission and distribution water mains to deliver this water to customers. In 2025, Waterworks delivered 104.5 billion litres of drinking water throughout Vancouver.

Waterworks consists of the Design Branch, which plans, designs and administers the utility, and the Operations Branch, which builds, operates, and maintains the distribution system.

The City of Vancouver Waterworks By-Law provides the legal framework for managing and protecting the City's water system. It establishes the rules that protect the water system and ensure safe, reliable, and equitable service for all customers.

Waterworks operates on a self-funded basis, with revenues from water customers supplemented by the water stabilization reserve as needed to cover the costs of water procurement, capital and operating expenses, and debt charges.

Total actual expenditures amounted to $165 million dollars (M) in 2025, with $103M allocated to purchasing bulk water from Metro Vancouver and $62M dedicated to system operations, maintenance, and renewal, including debt servicing costs for capital borrowing.

2.0 Source Water

All drinking water in Vancouver is purchased from Metro Vancouver. Our water supply originates from three local watersheds: Capilano, Seymour and Coquitlam. The watersheds contain large collection lakes called reservoirs, which collect and store rainfall and snowmelt from the mountains. To protect drinking water quality, Metro Vancouver keeps the watersheds closed to public access. No recreational, agricultural or industrial activities that may contaminate the water are permitted inside watershed boundaries.

Metro Vancouver also owns and operates the Seymour-Capilano Filtration Plant and the Coquitlam Water Treatment Plant, where the source waters undergo treatment and disinfection before distribution to the municipality.

To ensure the water remains safe and of the highest quality, Metro Vancouver conducts regular monitoring and testing of both untreated and treated water. The results are publicly available on their website at metrovancouver.org.

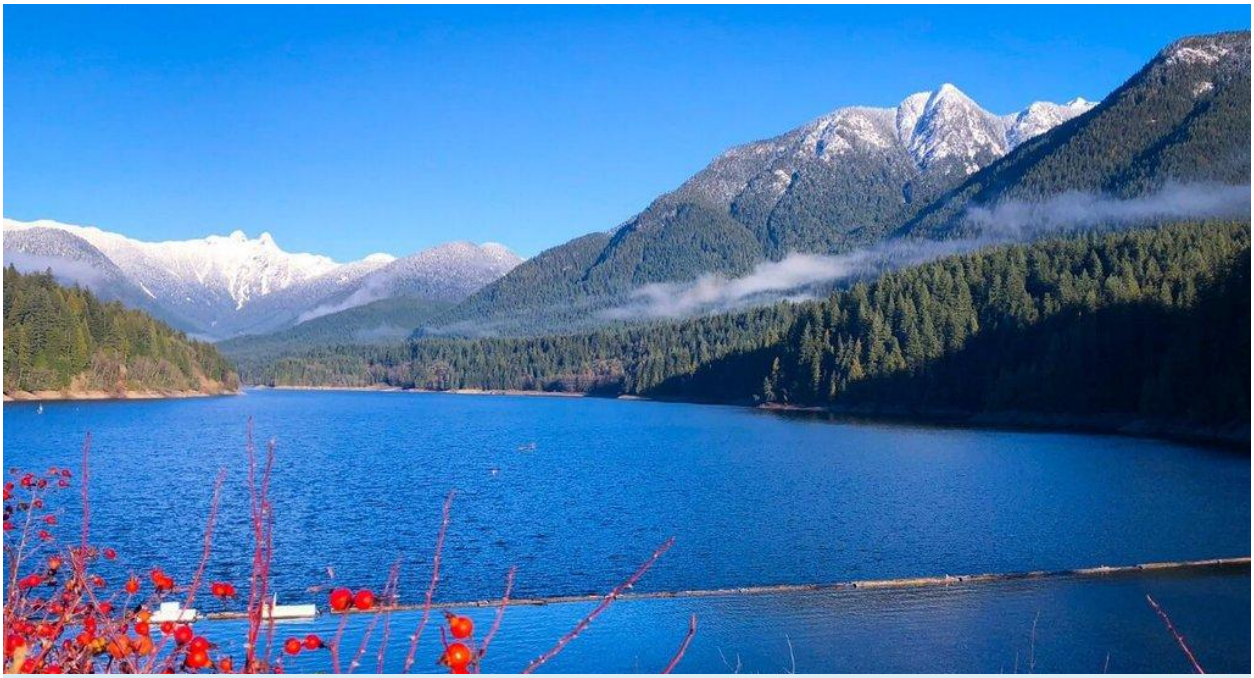


Figure 1. The Capilano Reservoir is managed by Metro Vancouver, who offers educational opportunities through guided tours. For information on watershed field trips and upcoming events, please contact Metro Vancouver at ☎ 604-432-6200 or visit their website. *Image courtesy of Metro Vancouver.*

3.0 Drinking Water Quality Monitoring Program

The British Columbia Drinking Water Protection Act (BCDWPA) and British Columbia Drinking Water Protection Regulation (BCDWPR) govern water suppliers in the province. Each municipal water purveyor, including the City of Vancouver, is mandated to hold an annual operating permit issued by the region's Drinking Water Officer.

To ensure compliance with provincial legislation, the Water Quality Monitoring and Reporting Plan for Metro Vancouver and Member Municipalities (WQMRP) was jointly developed by regional Medical Health Officers, Metro Vancouver, and local government members, including the City of Vancouver.

The City's drinking water quality monitoring program operates under the protocols outlined in the WQMRP. Water samples are routinely collected weekly from over 50 sampling stations located throughout the City's distribution system (Appendix A), and analyzed for compliance with the BCDWPR, the WQMRP, and Health Canada's Guidelines for Canadian Drinking Water Quality (GCDWQ). Sampling parameters and reference frequencies are shown in Table 1.

In 2025, Waterworks collected 2,378 water samples for analysis of:

- Bacteria – *Escherichia coli* (*E. coli),* total coliforms, heterotrophic plate count (HPC)
- Chemical and physical parameters – free and total chlorine, pH, temperature, turbidity

Sampling results are publicly accessible on the City's website, underscoring the City's commitment to communication and transparency.

In the event of deviation from drinking water quality standards and guidelines, an investigation is conducted immediately to identify and correct possible causes. The City will inform the public immediately of potential health risks through various communications channels, including radio, newspapers, television, and social media platforms. A summary of the City's Emergency Response and Contingency Plan can be found in Section 6 of this report.

Table 1. Water Quality Parameters and Testing Frequency

Category	Parameter	Sample Station Sites	Frequency
Bacteriological	*E. coli*	All[1]	Weekly
	Total coliforms		
	HPC		
Chemical	Chlorine – free	All[1]	Weekly
	Chlorine – total		
	pH		
Physical	Temperature	All[1]	Weekly
	Turbidity		
Disinfection By-products	Haloacetic Acids (HAA)	Representative sites	Quarterly
	Trihalomethanes (THM)		
Metals	Copper	Representative sites	Semi-annually
	Iron		
	Lead		
	Zinc		
	Other[2]		
Aesthetic	Odour & Taste	Any Site	Complaint Basis

1. "All" refers to all Vancouver's drinking water sampling stations.
2. The methodology for metals analysis produces additional results (Appendix C).

3.1 Drinking Water Quality Data

3.1.1 Sampling Frequency

BCDWPR Schedule B
Frequency of Monitoring Samples for Prescribed Water Supply Systems

Population Served by the Prescribed Water Supply System	Number of Samples Per Month
less than 5 000	4
5 000 to 90 000	1 per 1 000 of population
more than 90 000	90 plus 1 per 10 000 of population in excess of 90 000

In 2025, Vancouver's drinking water was compliant with frequency of monitoring standards set in Schedule B of the BCDWPR. The City's water sampling program exceeded the minimum number of samples per month required by Schedule B (Table 2).

Table 2. Population Size and Water Sampling Frequency in Vancouver

Year	City of Vancouver Population[1]	Number of samples per month Required[2]	Number of samples per month Collected (avg)	Number of samples per year Collected
2025	744,800	156	198	2,378

1. The 2025 data on population was collected from the City's Planning, Urban Design and Sustainability group, who works with Rennie Marketing Intelligence to create city-wide population and dwelling unit projections.
2. Minimum number of samples per month required by Schedule B of the BCDWPR.

Figure 2. Monthly Total Samples Collected in 2025

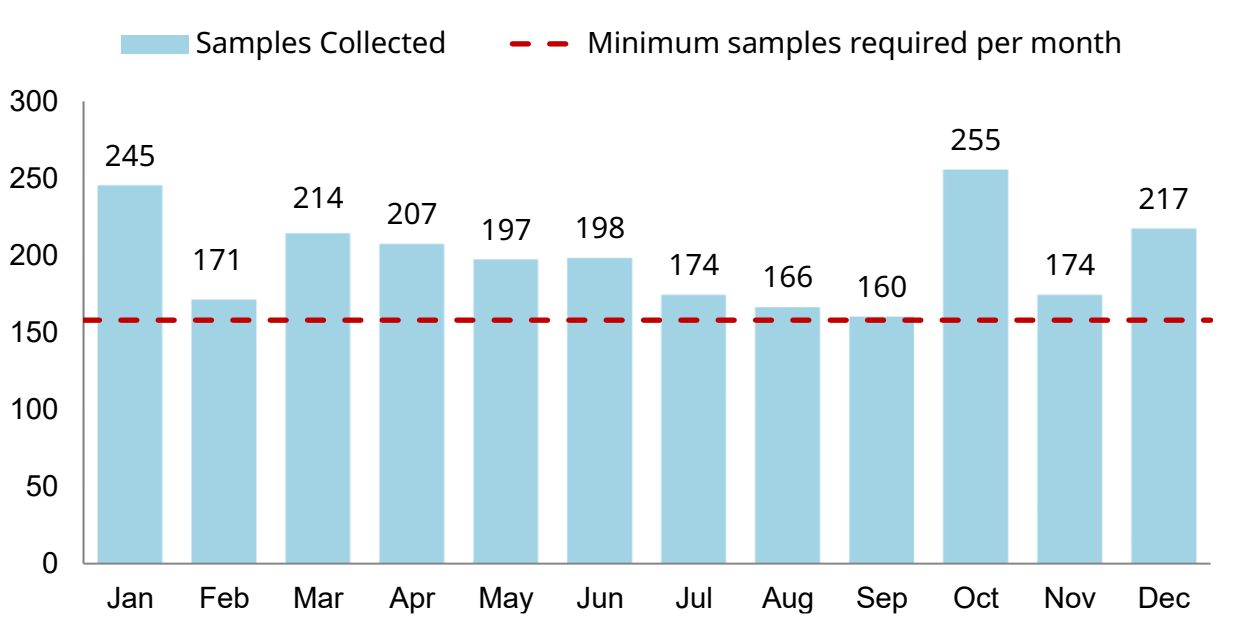


Figure 3. The drinking water quality team routinely collects water samples from over 50 dedicated drinking water sampling stations located across the city. Physical and chemical parameters are analyzed in the City's mobile lab, while bacteriological parameters, disinfection by-products, and metals samples are analyzed by Metro Vancouver. A map showing Vancouver's sampling stations can be found in Appendix A.

3.1.2 Bacteriology

BCDWPR Schedule A
Water Quality Standards for Potable Water

Parameter	Standard
Escherichia coli	No detectable *Escherichia coli* per 100 mL
Total coliform bacteria (a) 1 sample in a 30-day period (b) more than 1 sample in a 30-day period	 No detectable total coliform bacteria per 100 mL At least 90% of samples have no detectable total coliform bacteria per 100 mL and no sample has more than 10 total coliform bacteria per 100 mL

E. coli
In 2025, zero (0) of the 2,378 water samples collected tested positive for *Escherichia coli* (*E. coli*).

E. coli detection in drinking water has a strict maximum acceptable concentration (MAC) of zero. Under the BCDWPA, laboratories must immediately notify the City and the Medical Health Officer when *E. coli* is detected. A joint risk assessment is then conducted to evaluate public health risks and determine appropriate protection measures. This includes reviewing bacteriological test results, chlorine residuals, pressure levels, and other relevant data. The affected area is resampled immediately.

If the water system is operating within expected parameters, officials may wait for confirmation from follow-up results before taking further action. However, if any risk is identified, immediate actions, such as issuing a boil water notice, may be implemented as outlined in the City's Waterworks Emergency Response Plan.

Total Coliforms
In 2025, four (4) of the 2,378 samples collected tested positive for total coliform bacteria. At no time did the percentage of positive samples exceed the 10% limit stipulated in the BCDWPR.

Total coliform is a test of all bacteria within the coliform group. While not directly correlated with human health risk, the detection of total coliform may indicate:

- possible pathways for contamination, or
- contamination during sample collection or laboratory handling.

For this reason, total coliform testing is used as an indicator of system integrity and sampling conditions rather than a direct measure of risk.

Four (4) samples exceeded the standard of 10 total coliforms per 100 mL (CFU/100 mL), all occurring between September and October at two sampling stations (Stations #55 and #59).

1. September 2 - Sampling station #55 (W 23rd Avenue and Balaclava Street): 13 CFU/100mL.
2. October 2 - Sampling station #59 (Malkin Avenue and Atlantic Street): 100 CFU/100mL.
3. October 3 - Sampling station #59 (Malkin Avenue and Atlantic Street): 19 CFU/100mL.
4. October 4 - Sampling station #59 (Malkin Avenue and Atlantic Street): 11 CFU/100mL.

Investigation and follow up actions

After each result indicating the presence of total coliforms, staff promptly disinfected the affected sampling stations and collected repeat samples in accordance with the City's water quality response protocols.

- Station #55
    - Follow-up sample and retesting showed no coliforms detected.
- Station #59
    - At the time of the coliform exceedance, water samples for Station #59 were being collected from a temporary water access point because the regular sampling station was out of commission due to nearby construction. The temporary sample station was an exterior faucet at a Vancouver Parks Board field house (see Figure 4).
    - Flushing and disinfection of the sample station were repeated over three days until results confirmed no presence of coliforms.
    - Additional targeted sampling was conducted at four locations within the same pressure zone over three days, including nearby dedicated sampling stations and public facilities. All additional locations tested negative for total coliforms, confirming the sample station results was an isolated event.

- A cross-connection control inspection was conducted to rule out on-site contamination sources.
- Source of coliform was identified during Oct. 4 sampling. A leak at the external hose bib was observed to be impacting the integrity of the water quality sample collection at this location. This localized plumbing issue is the suspected cause of the repeated detections.
- The absence of total coliforms at surrounding locations indicates the issue was isolated to the sampling point and not representative of water quality in the broader distribution system.

Regulatory notification and risk assessment

Per the BCDWPR, following the results on October 2nd, City staff notified the Drinking Water Officer as required and conducted a risk assessment, which did not identify a risk to public health. All other water quality parameters remained within guidelines, and resampling confirmed the absence of coliforms.

Figure 4. Sampling Station #59 was temporarily removed during construction of the new St. Paul's hospital. Station #59 samples were being collected from a nearby Vancouver Park Board fieldhouse exterior faucet (pictured above) in the interim. This faucet was vandalized, possibly resulting in the total coliform count found in lab samples on October 2, 3 and 4. An investigation in the surrounding area showed presence of total coliforms was restricted to this faucet. Water quality was restored by disinfecting the faucet and flushing.

3.1.3 Physical and Chemical Parameters

The majority of physical and chemical parameter results were within acceptable ranges as per the GCDWQ. When a sample fell outside the guideline range, it was a temporary occurrence and did not affect water potability.

Table 3. Physical and Chemical Parameters

Parameter	Guidelines/Targets	Results		
		Average	Minimum	Maximum
Chlorine – free (mg/L Cl_2)	≥0.04 mg/L Cl_2[1]	0.66	0.08	1.28
Chlorine – total (mg/L Cl_2)	≤2.0 mg/L Cl_2[1]	0.70	0.12	1.36
pH	7.0 – 10.5	8.36	8.00	8.94
Temperature (°C)[2]	none	11.5	3.2	22.8
Turbidity (NTU)	≤1.0 NTU	0.23	0.08	7.20

1. Though the GCDWQ does not set a MAC for chlorine, most Canadian drinking water supplies maintain free chlorine residuals in the 0.04 - 2.0 mg/L range in the distribution system. Waterworks uses these operational guidelines as our benchmark.
2. In 2021, Health Canada replaced its temperature guideline with Guidance on the Temperature Aspects of Drinking Water. This updated guidance recognizes that utilities cannot directly control water temperature and can only manage its impacts. As a result, it does not include a specific temperature target. Instead, it describes how temperature influences treated water systems and how it interacts with parameters addressed in other drinking water quality guidelines.

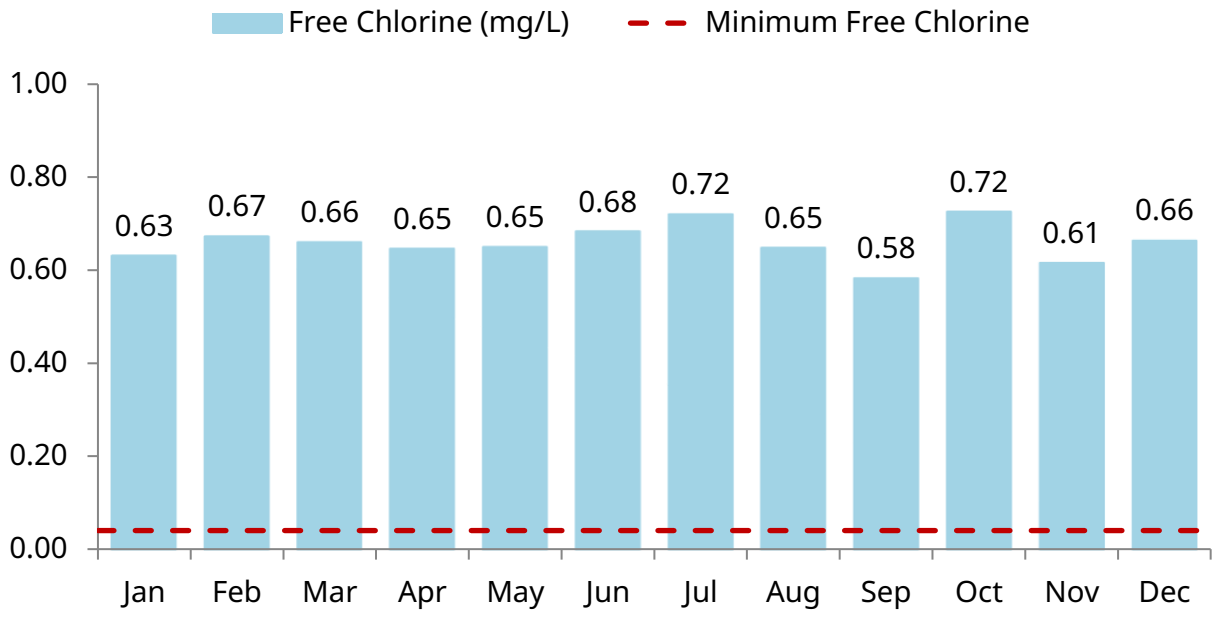
Chlorine (Cl_2)

Chlorine is used to disinfect the water and safeguard against microbial re-growth or contamination. Health Canada does not set a formal MAC for chlorine because concentrations used in drinking water are considered low-toxicity, however, most Canadian drinking water supplies maintain free chlorine residuals in the 0.04 - 2.0 mg/L range in the distribution system.

In 2025, 100% of water samples showed chlorine levels within recommended operational guidelines. The annual average value for total chlorine was 0.70 mg/L and for free chlorine was 0.66 mg/L.

Total chlorine includes both combined chlorine, which forms when free chlorine reacts with organic material in the water, and free chlorine. Free chlorine refers to the amount of chlorine available in the water to continue disinfecting.

Figure 5. Average Monthly Free Chlorine (mg/L) in 2025



pH

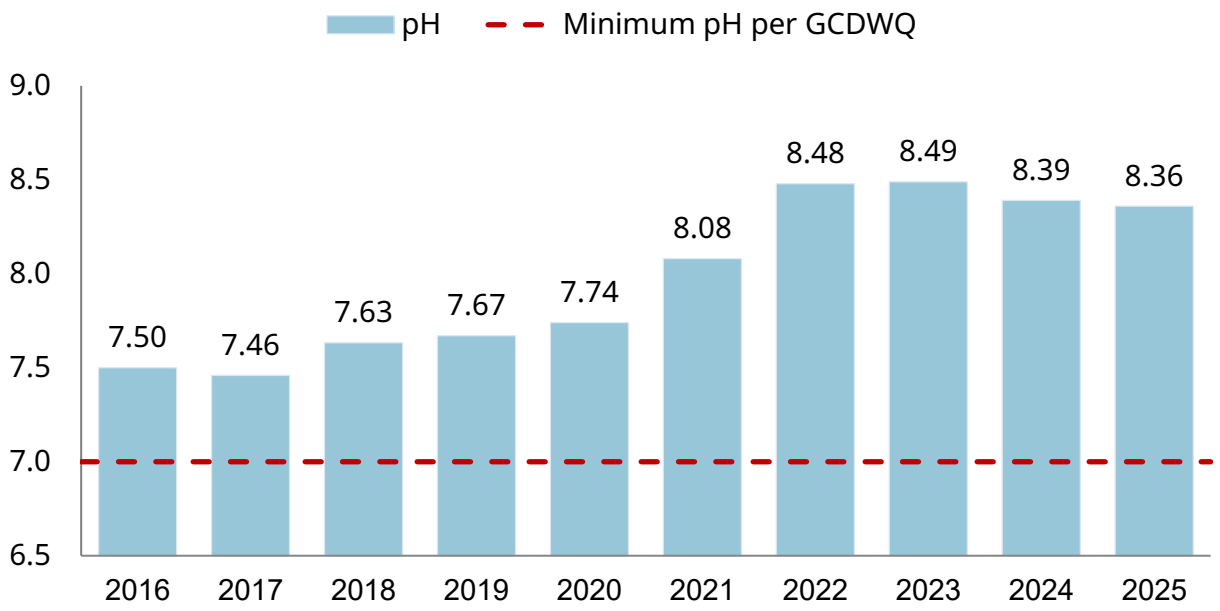
pH is a measure of the acidity/basicity of water. Per the GCDWQ, drinking water should have a pH in the range of 7 to 10.5.

In 2025, the average pH in Vancouver was 8.36.

The pH of water can determine which chemical reactions will occur in piping infrastructure and possible leaching of metals. Metro Vancouver's corrosion control program began in 2021 and treats the region's naturally soft and acidic water by raising the pH and alkalinity so that it is less likely to corrode building pipes made of copper or lead.

The City of Vancouver primarily receives water treated by the Seymour-Capilano filtration plant, which uses calcium hydroxide (lime) to increase pH and carbon dioxide to increase alkalinity. The water treatment plant on the Coquitlam source uses sodium carbonate to increase pH.

Figure 6. Average Annual pH (2016-2025)

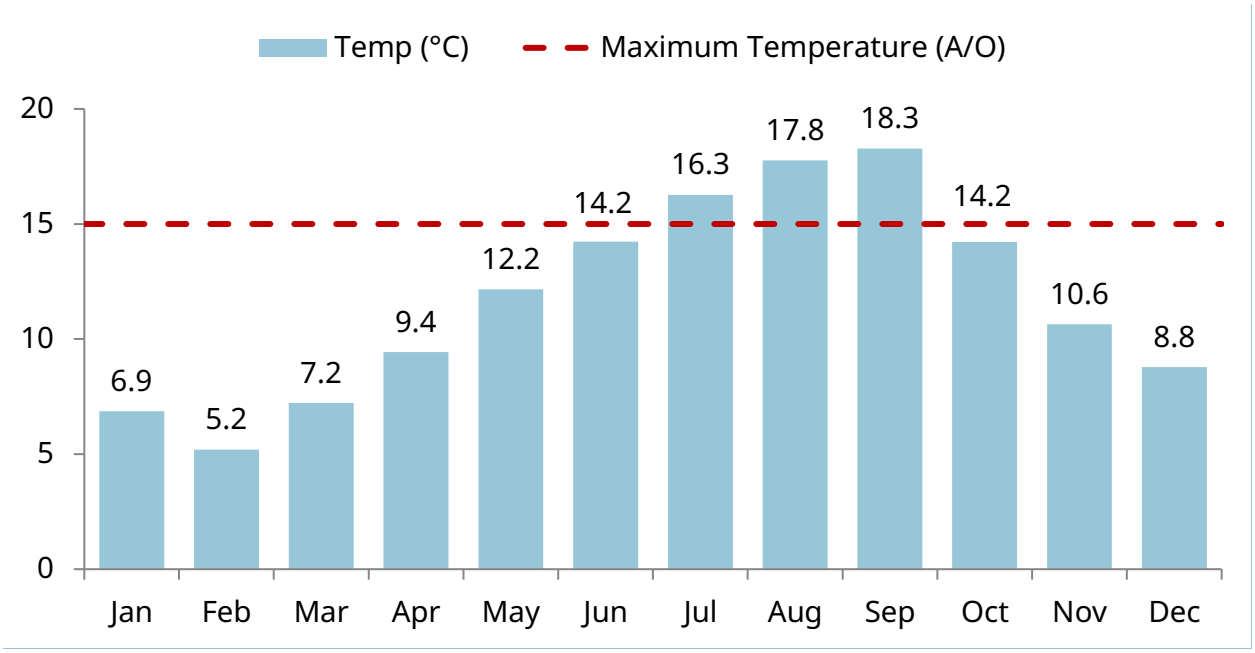


Temperature

The Guidelines for Canadian Drinking Water Quality (GCDWQ) no longer set an aesthetic objective (A/O) for temperature because water suppliers cannot control reservoir temperatures. However, we continue to compare results to the former aesthetic objective of <15 °C. Temperatures above 15 °C can affect aesthetic qualities and may contribute to bacterial regrowth.

Vancouver's drinking water temperature is driven by source water conditions and seasonal variation. Distribution system temperatures remained below 15 °C for most of the year, with occasional exceedances during the summer months.

Figure 7. Average Monthly Temperature (°C) in 2025

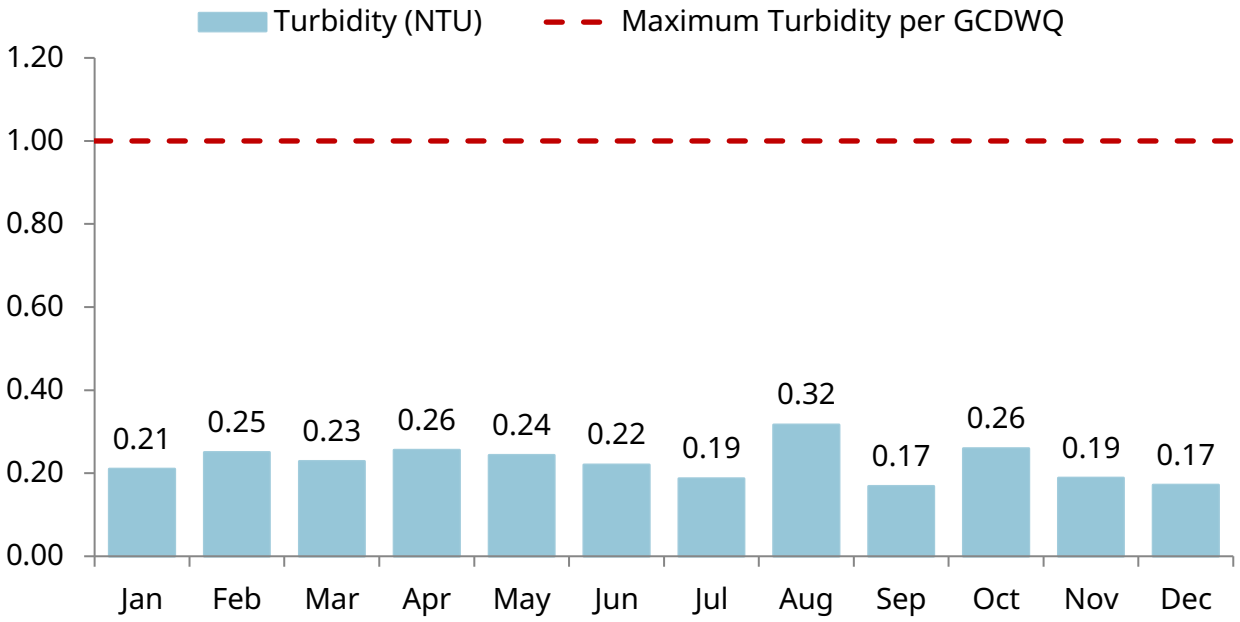


Turbidity

Turbidity is a measure of the clarity or cloudiness of water. The GCDWQ sets an objective of less than or equal to 1.0 nephelometric turbidity units (NTU) for turbidity in drinking water. Elevated turbidity levels can pose an aesthetic concern for customers and limit the effectiveness of disinfection.

The majority (99.7%) of water samples had turbidity results lower than 1.0 NTU. When turbidity above 1.0 NTU was briefly observed, there was no associated bacteriological growth. These elevated results were associated with localized disturbances and did not affect water potability.

Figure 8. Average Monthly Turbidity (NTU)



3.1.4 Disinfection By-products, Metals, Volatile Organic Compounds, and Aesthetics

All Disinfection By-Products (DBP) were well below the Maximum Acceptable Concentrations (MAC) as per the GCDWQ. Metals results were below GCDWQ MAC and met aesthetic objectives (AO). DBP results and Metals results are provided in Appendices B and C. Aesthetic concerns from the public were managed on a case-by-case basis. A summary is provided in Table 4.

Disinfection By-products (DBPs)

DBPs are compounds formed by the interaction between chlorine and naturally occurring organic substances in the water, such as breakdown products of decaying leaves and vegetation. Two groups of DBPs, Haloacetic acids (HAA) and Trihalomethanes (THM), are monitored four times yearly at 10 locations.

The MAC listed in the GCDWQ is based on locational running annual averages from quarterly samples. The running locational averages for THM and HAA in Vancouver's drinking water were consistently below the MAC (see Appendix B).

Metals

Metal levels are monitored twice yearly at five locations. Sampling results showed metals in Vancouver's drinking water were below the GCDWQ MAC (see Appendix C).

Table 4. DBPs, Metals, VOCs, and Aesthetic Concerns

Category	Parameter	Guidelines	Results
Disinfection By-products (DBPs)	Haloacetic Acids, total (HAAs)	0.08 mg/L (MAC)	All sample results were below guideline MAC (Appendix B)
	Trihalomethanes, total (THMs)	0.10 mg/L (MAC)	
Metals	Copper	1.0 mg/L (AO)	All sample results were below guideline MAC or AO. (Appendix C)
	Iron	0.1 mg/L (AO)	
	Lead	0.005 mg/L (MAC)	
	Zinc	5.0 mg/L (AO)	
	Other metals	Parameter-specific	
Volatile Organic Compounds (VOCs)	Vinyl Chloride	0.002 mg/L (MAC)	Not applicable[1]
Aesthetics	Odour & Taste	No specified guideline	Assessed on case-by-case basis

1. Health Canada does not recommend sampling for vinyl chloride in distribution systems without pre-1977 PVC pipes.

Aesthetics

In 2025, Waterworks received 668 questions and complaints from the public about drinking water and performed 71 on-site investigations. The remainder of the investigations were addressed by phone and email. Most complaints were related to localized discolouration due to water main construction and repair work, hydrant operation or private-side plumbing activity. The Utility's jurisdiction over water quality terminates at the curb stop of the water service connection; however, we support customers with our expertise and experience. Complaint type is detailed in Table 5.

Table 5. Water Quality Complaints in 2025

Category	Total Number of Complaints in 2025
Appearance: Dirty/Turbid	445
Appearance: Milky/Cloudy	20
Odour: Chemical/Chlorine	19
Other: Miscellaneous	83
Aesthetics: Musty or earthy odour/taste	101

Report your drinking water concerns

Vancouver customers are encouraged to report water quality concerns by calling 3-1-1 or using the VAN311 app. Customer feedback supports our ability to promptly address possible issues with our distribution system, or to improve customer experience when the root cause is on the private side. More information on how to resolve water quality concerns is available on the City's website.

Fall 2025 drinking water aesthetics

Starting in October of 2025, City of Vancouver Waterworks received reports from customers noticing an earthy or musty odour or taste in the drinking water. Waterworks worked closely with Metro Vancouver and the health authority (Vancouver Coastal Health) to investigate the issue.

The customer reports were not limited to Vancouver, indicating the potential source as the Metro Vancouver drinking water supply. Based on described odours, geosmin and 2-methylisoborneol were suspected. Metro Vancouver conducted testing of all source water reservoirs and treated drinking water.

Metro Vancouver's testing identified low levels of a naturally occurring compound called geosmin in the Seymour source water. Geosmin is produced by algae and bacteria in surface waters as well as by benthic (bottom-dwelling) cyanobacteria, and can impart an earthy or musty odour. Although some people are sensitive to its taste or smell, geosmin is not harmful to health.

Geosmin was not detected in the Capilano or Coquitlam reservoirs. A related compound, 2-methylisoborneol (MIB), which can also cause taste and odour concerns, was also not detected in any of the reservoirs.

In response, Metro Vancouver made operational adjustments to reduce the amount of water drawn from the Seymour source and increase supply from the Capilano source. Geosmin concentrations in treated water leaving the Seymour Capilano Filtration Plant (SCFP) steadily declined and fell below laboratory detectable limits by early November.

Throughout this period, City of Vancouver drinking water was regularly tested. Test results confirmed that the water continued to meet all federal guidelines and provincial regulatory requirements and remained safe to drink. Metro Vancouver continues to monitor source water conditions and evaluate options to reduce the likelihood of similar occurrences in the future.

Additional information about this event is available on the Metro Vancouver website, in their *Greater Vancouver Water District 2025 Water Quality Annual Report*, *Volume 1* and *Volume 2*.

3.2 Cross Connection Control Program

Figure 9. Backflow prevention plays a vital role in protecting the drinking water system by preventing reverse flow and reducing the risk of contamination.

The Cross Connection Control Program is a cooperative effort between Vancouver's Drinking Water Utility and City Plumbing Inspectors, as well as business owners, property owners, and contractors. The program is responsible for administration and enforcement of *Water Works By-law No. 4848 – Part IV Cross Connection Control* which regulates the selection and installation of backflow prevention methods, as well as annual testing, maintenance and reporting requirements.

Backflow is the undesirable reversal of flow of water or other substances into the drinking water supply. Backflow prevention is required for cross connections to prevent non-potable liquids from backflowing into the drinking water supply. Many industrial, institutional, commercial and residential properties have cross connections, such as:

- In-ground irrigation systems
- Water-fed boilers
- Fire sprinkler systems
- Commercial kitchen equipment

Backflow can occur due to:

- Back siphonage - negative or reduced pressure in the water supply system
- Back pressure - downstream pressure exceeding the supply pressure

Backflow prevention assemblies are mechanical devices with internal, springs, seals, and other moving parts that may fail over time due to wear and tear. These assemblies must be maintained in good working condition and tested annually to ensure they continue to function properly, prevent backflow, and protect the drinking water system.

The program also conducts proactive audits of both City-owned and private properties to identify potential contamination risks. From these audits, we enforce the installation of backflow prevention methods and annual testing of existing backflow assemblies to help ensure the continued high-quality of Vancouver's drinking water system.

In 2025, the program achieved a 90% compliance rate with annual testing requirements and received 42,937 backflow assembly test reports – representing a 171% increase over the past decade and a 29% increase over the last five years.

To learn more about the program, visit our *Protecting Water Quality* webpage: https://vancouver.ca/home-property-development/protecting-water-quality.aspx or contact us at backflow@vancouver.ca.

3.3 Access to Water

The Access to Water Program was developed in 2012 in response to the 2010 World Health Organization declaration of safe drinking water as a basic human right. Since its inception, the program has emphasized equitable access to the City of Vancouver's high-quality drinking water and supported climate change adaptation and extreme heat preparedness.

The Access to Water program has 3 primary functions:

1. **Installation, Operation and Maintenance of Permanent Drinking Water Fountains**: Enhancing equitable access to drinking water throughout the city.
2. **Heat Relief and Emergency Response:** Addressing immediate water needs with temporary infrastructure during heatwaves and other emergencies.
3. **Green Events:** Leveraging City events as platforms for outreach and to encourage reduction in waste and bottled water use.

Waterworks staff conduct routine cleaning, sanitizing and maintenance of all the Engineering owned assets. This infrastructure is connected directly to the City's water system, ensuring users can access the same high-quality drinking water they receive from the taps at home.

Figure 10. The Access to Water team inspects, cleans, and maintains Engineering's permanent and temporary drinking fountains, handwashing stations, and misting stations throughout the year.

3.3.1 Temporary Assets

An exciting indicator of warmer weather on the horizon is when the Access to Water temporary units are installed. The Waterworks Utility currently owns and operates a total of 35 temporary units:

- 12 Temporary Hand Washing Stations
- 10 Temporary Drinking Fountains
- 13 Temporary Misting Stations

In 2025, these assets were installed between early May and mid-November. Gaps in access to water are pre-identified and the program works to ensure that installations bring equitable access to the community and supplement public water access in the warmest months for our most high priority areas. The temporary drinking fountains and hand washing stations often serve as a pilot for future permanent installations, while the misting stations are a community favourite across the City. The misters are placed in high priority areas where they not only support cooling for vulnerable populations but can often be seen on highlight reels across various social media platforms and bring attention to the importance of water in the public realm. The misters form a key part of the City's heat response program and have been known to generate interest from other municipalities across North America.

3.3.2 Permanent Infrastructure

The Access to Water program continued to collaborate with City partners in 2025 to facilitate the installation of three new and one replacement permanent, freeze-proof drinking fountains at upgraded parklets. The locations are:

- Kamloops Street & East Hastings Street
- Bute-Robson Plaza
- Cambie Street & West 18th Avenue.
- St. George Rainway – St. George Street & East 7th Avenue

3.3.3 Water Ambassador Program

The Water Ambassador program was developed and piloted in the Downtown Eastside over the summer of 2025. This program was an opportunity in collaboration with SpencerCreo Foundation, where community peers were hired for supplementary micro-cleaning, sanitizing and functionality checks on the Access to Water units in one of our most high priority areas.

Peers attended the units six times per week, from July through the end of October, with the Access to Water Maintenance Operator attending for more complex work once a week, or as needed for repairs. The increased cleaning grew trust within the community that these units are safe to use and provide high-quality drinking water.

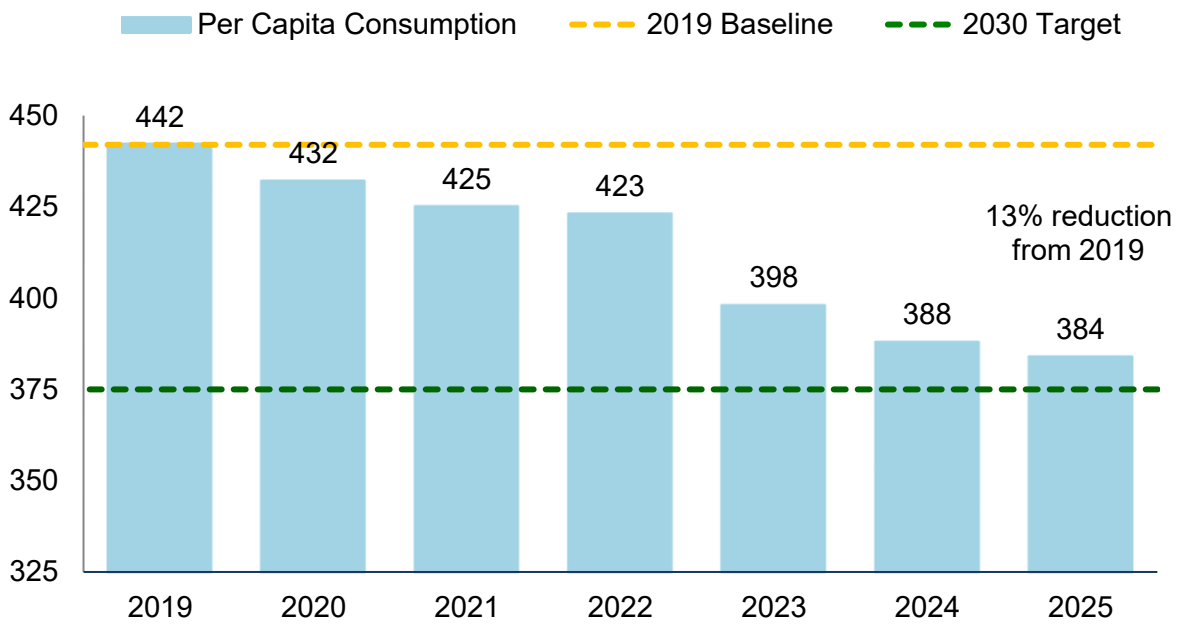
Figure 11. Installed as part of the new, permanent Kamloops-Hastings Plaza, the replacement fountain at Kamloops Street and East Hastings Street supports public access to drinking water and community use of the space.

4.0 Water Conservation and Demand Management

Water conservation is a key component of drinking water demand management, protecting our drinking water supply now and into the future. A growing population with densified development, and the effects of climate change on source waters, put increasing pressure on Vancouver's drinking water supply. The Water Demand Management Strategy (WDMS, 2021) implements operational and policy requirements to offset the growing demand on our drinking water system, modeling sustainable use for future generations. Expanding regional drinking water supply has high financial, social, and environmental costs; reducing drinking water demand delays future needs for costly source expansion.

The WDMS builds on previous conservation success to support further reductions via accelerated residential water metering, advanced meter reading technology, and equitable water rates. The strategy targets a 15% reduction in drinking water consumption per capita by 2030, in addition to recognizing the need to offset drinking water use where feasible in future development. At the end of 2025, consumption was at 384 L/cap/day; a 13% drop from 2019 (Figure 12: Per Capita Water Consumption).

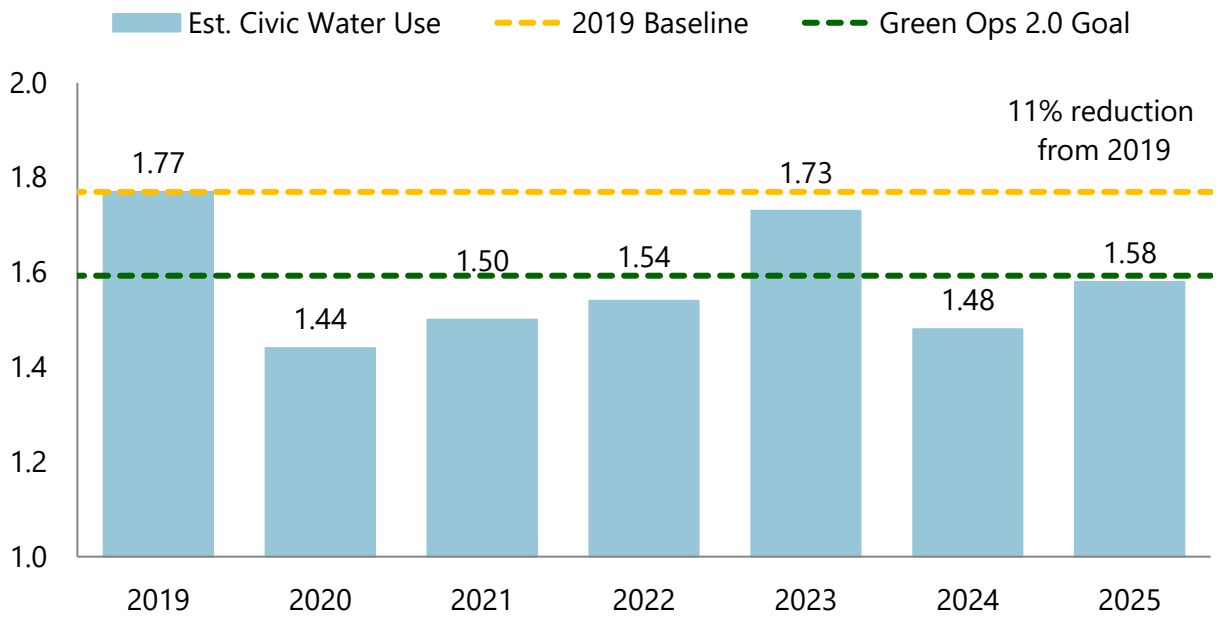
Figure 12. Per Capita Water Consumption (litres/capita/day)



The Green Operations 2.0 Plan (2020) further aims to reduce civic facility water consumption by 10% from 2019 levels, by 2030. In 2020, the 10% reduction goal was surpassed, associated primarily with pandemic-related facility closures (Figure 13: Civic

Facilities and Operations Water Consumption). Civic water use in 2025 was 1.58 billion litres, or 11% below the 2019 baseline.

Figure 13. Civic Facilities and Operations Water Consumption (billions of litres)



Operational highlights in 2025 include:

- Installation of 21 new water meters in existing civic facilities.
- 1,700 notification letters to customers regarding high water consumption.
- Resolution of 400 new high water consumption cases from customers, and completion of 910 investigations into high water use.
- Residential Leak Detection and Irrigation Assessment program from May – August.
- Drinking Water Regulations Enforcement Program issued 919 tickets and 423 warnings.
- Developed policy research proposal to investigate effectiveness of current watering regulations.
- Policy analysis of accelerated Single-Family metering, including installing a meter when property ownership is transferred.

5.0 Asset Management

The Drinking Water Utility is responsible for the installation, operation, and maintenance of the City's water distribution system. This includes 1,464 km of water mains, 99,712 service connections, 27,721 meters, 6,601 hydrants, 27,214 valves, and 32 pressure-reducing valve (PRV) stations. The Utility also operates and maintains the Dedicated Fire Protection System comprised of 12 km of 600 mm diameter steel pipe, designed to withstand the maximum credible earthquake for Vancouver. Detailed information about the system inventory is available in Appendix D.

Funding for Waterworks is allocated through the Capital and Operating Budgets. The capital program funds the installation, replacement, and upgrading of infrastructure. The operating program covers the purchase of bulk water from Metro Vancouver and all costs associated with the maintenance and operation of the municipal water system.

5.1 Capital Program

In 2025, capital investments in the water system totaled approximately $29.9M. This funding was allocated across twenty-five sub-programs, which supported the installation of new infrastructure that primarily replaced aged water mains, service connections, hydrants, and meters. Major capital programs are highlighted in the following sections.

5.1.1 Distribution Main Construction

Distribution main construction, funded through the Distribution Main Replacement, and Utility Development Cost Levy (UDCL) programs, represents the largest component of the Waterworks capital budget. In 2025, approximately 11 km of distribution mains were constructed at a cost of $26M.

The Waterworks asset management team ensures the water system remains reliable by identifying replacement candidates and setting a target replacement rate for each capital planning cycle. The target rate is determined by reviewing the distribution system's overall condition, specifically considering main age, material, and leak or break history. The goal is to establish a replacement rate that minimizes the risk of water main failure while maximizing the service life of system assets.

From 2019 to 2025, the target water main replacement rate was adjusted to between 0.5% and 1.0% of the system to better reflect asset deterioration. In practice, the actual

replacement rate has varied based on funding, resource availability, risk assessment, and coordination opportunities, as shown in Figure 14.

Looking forward, the water main renewal rate is expected to increase to approximately 1.1% per year over the next decade, in anticipation of a large portion of the water system nearing the end of its service life.

Waterworks completes many distributions main replacement projects throughout the year to ensure our water supply is reliable and resilient. Customers that might be affected by upcoming work will receive advance notification by mail. Additionally, any projects causing road closures are announced on the City's website.

Figure 14. Annual Distribution Main Replacement Rate (2016-2025)

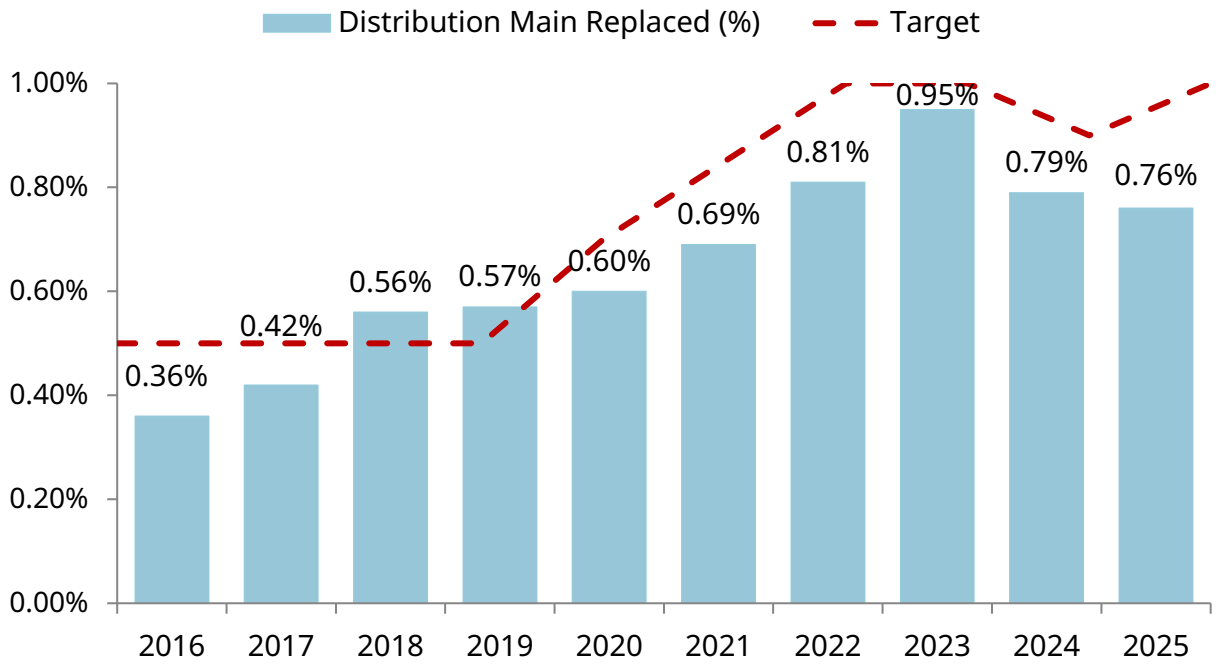


Table 6. Completed 2025 Distribution Main Program Funded Projects

Package Name	Street Segment	Pipe Diameter (mm)	Length of Project (m)
St. George Street (2025) †	St. George Street, East 18th Avenue to East 22nd Avenue (2025)	200	221

	East 21st Avenue, Carolina Street to Fraser Street	200	128
	Lane West of St. George Street, East 22nd Avenue to East 23rd Avenue	200	174
Kensington Cedar South (2025) †	East 34th Avenue, Dumfries Street to Victoria Drive	200	610
	East 35th Avenue, Dumfries Street to Victoria Drive	200	628
	East 36th Avenue, Dumfries Street to Argyle Street	200	201
	East 39th Avenue, Fleming Street to Bruce Street	200	202
	Dumfries Street, East 34th Avenue to East 35th Avenue	200	91
	Argyle Street, East 35th Avenue to East 36th Avenue	200	114
	Commercial Street, East 33rd Avenue to East 36th Avenue	200	307
	Fleming Street, East 37th Avenue to East 39th Avenue (2025)	200	8
	Bruce Street, East 39th Avenue to East 41st Avenue	200	256
	Lane West of Oak Street, West 27th Avenue to West 29th Avenue	100	193
Dundas Street, Triumph Street and Pandora Street	Pandora Street, Cassiar Street to Skeena Street	200	169
	Dundas Street, Cassiar Street to Skeena Street	200	165
	Triumph Street, Cassiar Street to Kootenay Street	200	375
East 10th Avenue, East 11th Avenue, St. Catherines Street and Windsor Street	East 10th Avenue, St. Catherines Street to Windsor Street	200	140
	East 11th Avenue, St. Catherines Street to Windsor Street	200	140
	St. Catherines Street, East Broadway to East 12th Avenue	200	326

	Windsor Street, East Broadway to East 12th Avenue	200	338
East 60th Avenue and Knight Street	East 60th Avenue, 1352 East 60th Avenue to Knight Street	200	107
	Knight St, East 57th Avenue to East 59th Avenue	200	183
	Knight St, East 61st Avenue to East 63rd Avenue	200	267
McKinnon Street, East 52nd Avenue, and East 54th Avenue	McKinnon Street, East 52nd Avenue to East 54th Avenue	200	188
	East 52nd Avenue, Kerr Street to Doman Street	200	316
	East 54th Avenue, Kerr Street to Doman Street	200	321
	West 22nd Avenue, Balsam Street to Arbutus Street	200	570
	West 14th Avenue, Granville Street to Hemlock Street	200	175
	East 23rd Avenue, St. Catherines Street to Inverness Street	200	429
Victoria Fraserview West (2025) ††	East 59th Avenue, Knight Street to Argyle Street	200	362
	East 60th Avenue, Knight Street to Argyle Street	200	332
	East 61st Avenue, Knight Street to Argyle Street	200	328
	East 62nd Avenue, Knight Street to Argyle Street	200	361
	Borden Street - East 59th Avenue to East 62nd Avenue (2025)	200	301
Renfrew Collingwood Centre (2025) ††	Nootka Street - East 20th Avenue to East 22nd Avenue	200	200
		Total	**9.2km**

† *Projects started in 2024 and finished in 2025.*

†† *Projects started in 2025, to be finished in 2026.*

Table 7. Completed UDCL Program Funded Distribution Main Projects

Project Name	Pipe Diameter (mm)	Length of Project (m)
Kaslo Street, East 20th Avenue to East 22nd Avenue	300	206
Pine Street, West 1st Avenue to West 6th Avenue	300	475
West 37th Avenue, Willow Street to Ash Street	300	532
Kersland Drive, West 35th Avenue to West 37th Avenue	200	310
	Total	**1.5km**

Table 8. Completed Developer Funded Distribution Main Projects

Project Name	Street Segments	Pipe Diameter (mm)	Length of Project (m)
Arbutus Street, West 34th Avenue to West 35th Avenue	Arbutus Street, West 34th Avenue to West 35th Avenue	200	146
	West 35th Avenue, 2116 West 35th Avenue to Arbutus Street	200	34
		Total	**0.2 km**

Table 9. Completed Hardened Grid Funded Distribution Main Projects

Project Name	Street Segments	Pipe Diameter (mm)	Length of Project (m)
East 49th Avenue, Ontario Street to Fraser Street †	East 49th Avenue, Ontario Street to Main Street	200	270
		Total	**0.3 km**

† *Project started in 2025, to be finished in 2026.*

5.1.2 Transmission Main Replacement Program

Like the distribution main replacement program, the transmission main replacement program supports water system reliability by replacing aging infrastructure. Transmission mains, defined as larger than 300 mm in diameter, are essential to convey large volumes of water throughout the city. They represent approximately 5% of the City's 1,464 km of water main network. The City plans for one or two transmission replacement projects in each capital plan (every 4 years).

Construction of the West Pender Street transmission main commenced in 2024 with Phase 1, covering the section between Burrard Street and Bute Street. This phase included the replacement of 490 m of 600 mm transmission main and was completed in November 2024.

Phase 2 has been deferred to 2027 and will involve the replacement of 685 m of 450 mm transmission main between Bute Street and Cardero Street. This phase is expected to include trenchless construction between Bute Street and West Georgia Street to minimize traffic impacts and provide a cost-effective construction approach through the area. Design for Phase 2 is planned to begin in Q1 2027.

5.1.3 Service Installations

The City of Vancouver owns close to 100,000 water service lines which connect commercial and residential properties to the water system.

Based on the expected life and current age of service assets, there is a goal to replace 1,250 to 1,400 services each year, achieved through:

- 150-200 reactive renewals (leaking services replaced instead of repaired)
- Approximately 900 services upgraded through redevelopment (though not all will be “old” services due for renewal), and
- 200-300 service renewals through the distribution main replacement program.

The asset management team monitors the number of service leaks and failures and the replacement levels achieved year-to-year to ensure that funding levels continue to support the required renewal rates for the service network. Table 10 illustrates the number of services that were installed and/or replaced in 2025.

Table 10. Service Installations

Program	Installations
Reactive replacement of leaking services	95
Proactive replacement of aging services	450
New commercial services	250
New residential services	511
Total	**1,306**

The number of leaking services were lower than forecast, which resulted in fewer reactive replacements.

5.1.4 Advanced Metering Infrastructure (AMI) Project

The current meter reading system, originally procured in 2006, is now reaching the end of its useful service life. This project will replace the current reading system with an Advanced Metering Infrastructure (AMI) system. The AMI system consists of data receivers installed on existing structures around the City, which collect data hourly from surrounding water meters. Operating the AMI system will provide City staff with access to water consumption data, alerts for high water usage or broken meters, and improve customer billing procedure.

The City evaluated available technologies and services through a competitive Request for Proposal process. Installation and implementation of the new and more robust meter reading technology began at the end of 2025.

5.2 Operations and Maintenance Program

Operating and maintenance expenditures in 2025 were approximately $7.8M, under the program budget of $8.3M. The annual maintenance budget supports reactive maintenance to complete emergency repairs and ongoing corrective and preventative maintenance programs designed to:

- Ensure that water system components are reliable and in good working order.
- Maximize service life of components to realize the initial capital investment benefit.
- Promote efficient operation of the water system, resulting in a higher level of customer service.

5.2.1 Main Breaks

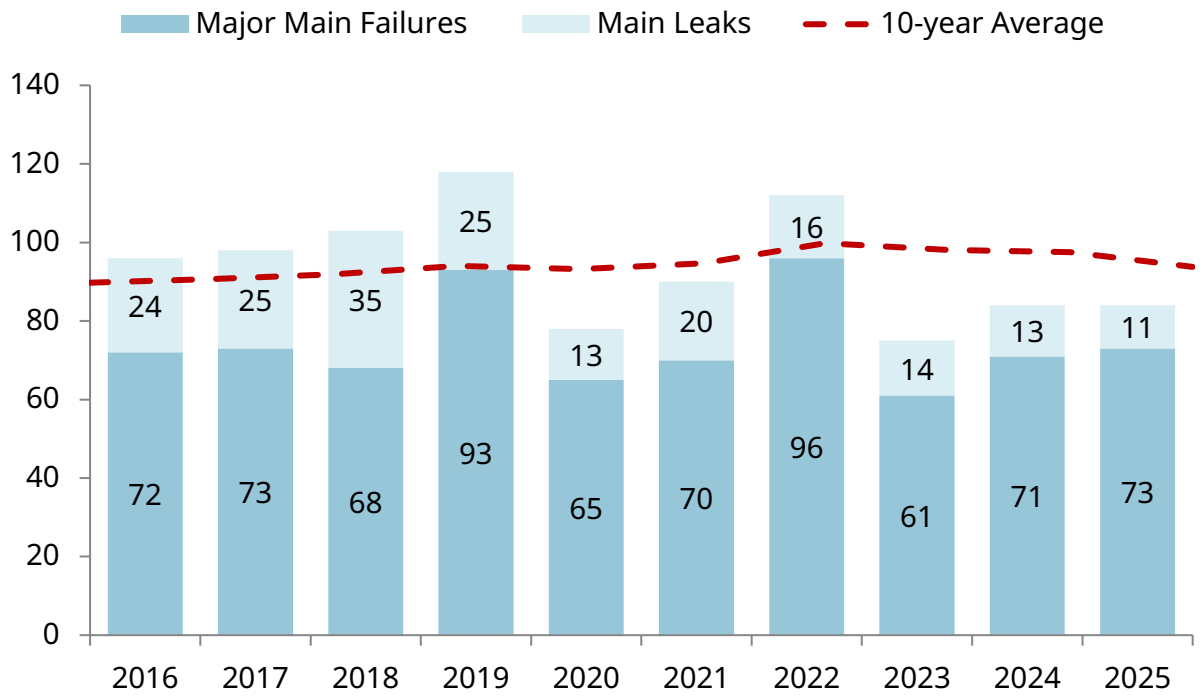
Promptly responding to water main breaks is critical to prevent possible property damage, safeguard drinking water quality, and minimize service disruptions for customers. In 2025, crews responded to 84 water main failures. The majority of the water main breaks and leaks occur during the winter months from October to January.

Waterworks collects data to track and report on program and system performance. The number of main breaks per 100 km of pipe is typically used as an indicator of the overall condition of a water distribution system.

In 2025, the City of Vancouver ranked well relative to Canadian municipal water systems despite having one of the oldest systems, with 5.7 breaks per 100 km of pipe, compared to the 2024 national median of 5.9 breaks per 100 km, for municipal systems with a similar

system age (35-55 years) and population larger than 225K. Vancouver has a below average main break rate.

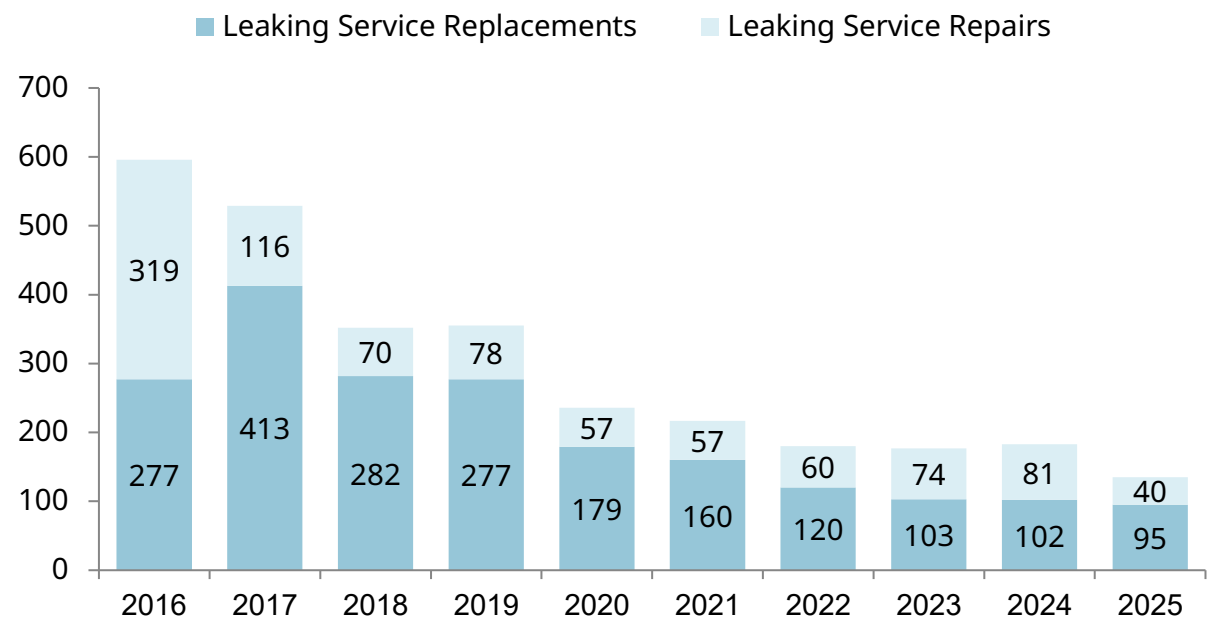
Figure 15. Main Break/Leak History (2016-2025)



5.2.2 Service Leak Repairs

In 2025, 135 leaking services were repaired (40) or replaced (95). The number of leaking services in 2025 was a significant drop compared to six years previous. The decrease in leaks is hypothesized to be a result of targeted proactive replacements during construction projects, improved renewal funding starting in 2017, and Metro Vancouver's pH adjustments implemented to decrease corrosivity of the drinking water to copper.

Figure 16. Service Leak History (2016-2025)



5.2.3 Proactive Leak Detection

In 2025, 100% of the City's water mains were proactively inspected for leaks. The Proactive Leak Detection program uses acoustic equipment to detect leaks that would otherwise go undetected.

Identifying and repairing leaking services helps reduce system water losses and reduce operating costs. Throughout the year, the leak detectors identified 174 leaks. The leak detection summary is provided in Table 11.

Table 11. Proactive Leak Detection Results

Main leaks	City side service leaks	Hydrant leaks	Valve leaks	Private side leaks	Total
7	16	62	42	47	174
		73.0%		27.0%	

5.2.4 Water Meters

In 2025, the aging meter replacement capital funding was used to replace 1,016 water meters. Waterworks replaced 70 large meters (>50 mm). Waterworks tests large meters, which comprise 10% of the total meter inventory, every 1-3 years for safety, operability, and accuracy of readings. Large meters are repaired or replaced as required based on the results.

The remaining meters replaced were aging small meters (≤50 mm). In 2025, 946 small meters were replaced. Small meters make up 90% of the meter inventory and are expected to last 20-25 years depending on their level of consumption. As small meters age, they gradually lose accuracy, and it becomes economical to replace them once they exceed their estimated service life. These replacement life cycles were verified through consumption analysis and testing to ensure accurate readings and equitable billing to our customers. A large portion of our small meter inventory is approaching the end of its expected life and will require replacement over the next 10 years.

5.2.5 Hydrants

As part of the annual fire hydrant inspection program, 100% of the hydrants in the system were inspected to ensure proper operation. Through the preventative maintenance program and construction projects, 53 hydrants were replaced in 2025.

6.0 Emergency Response Plan Summary

The City’s Waterworks Emergency Response Plan (ERP) plays a vital role in ensuring the safety and reliability of the water distribution system. In the event of an emergency, this plan provides a structured approach to safeguarding the drinking water supply and protecting public health.

The ERP is designed to meet the requirements set forth in the BCDWPA and BCDWPR, serving as a comprehensive Emergency Response Plan. Additionally, in accordance with Section 15(a) of the BCDWPR, this summary of the ERP aims to inform water users about the plan's key elements and objectives.

The ERP operates in conjunction with current corporate-level emergency plans and business continuity plans within the City of Vancouver. Together, these plans ensure a coordinated and effective response to emergencies that may impact the City's water supply.

The Waterworks Emergency Response objectives are as follows (in priority order):

1. Provide water for firefighting, including the Dedicated Fire Protection System.
2. Repair and restore the water system on a priority basis.
3. Ensure an adequate supply of potable water, with a focus on high priority facilities.
4. Maintain high standards of water quality to protect public safety.

The ERP defines clear roles and responsibilities for staff during emergencies.

During the implementation of the ERP, staff will adhere to safety protocols, communicate with relevant agencies, and minimize further damage to the water system.

Following an emergency event, staff will document actions taken, evaluate the effectiveness of the emergency response, and revise the ERP as necessary to enhance preparedness and resilience.

7.0 Financial Review

The City of Vancouver Drinking Water Utility is self-funded utility. Water purchases, capital and operating expenses, and debt charges are covered by revenues collected from water users each year. Total actual expenditures for 2025 were approximately $165M. Of this amount, $103M was used to purchase bulk potable water from Metro Vancouver, with the remaining $62M supporting operation, maintenance, capital financing, and debt servicing for the water system. A breakdown of budgeted versus actual revenues and expenditures is provided in Table 12.

Waterworks maintains a Water Rate Stabilization Reserve to buffer year-over-year variations in water demand and forecasted increases in bulk water rates from Metro Vancouver. In 2025, revenues exceeded expenditures and approximately $7.3M was transferred to the reserve.

Table 12. Financial Summary

2025 Revenue	Budget	Actual
Flat Rate	$61,672,797	$60,385,070
Metered Rate	$94,549,120	$92,465,065
Meter Service Charge	$7,016,908	$6,713,106
Fire Line Flat Rate	$4,420,922	$4,206,222
Other Revenues	$3,126,321	$1,322,309
Total Revenues	$170,786,068	$165,091,772

2025 Expenditures	Budget	Actual
City Debt	$35,328,776	$35,332,901
Water Purchases (Metro Vancouver)	$107,544,208	$103,451,486
Operating & Maintenance	$20,982,486	$19,053,254
Total Expenditures	$163,855,470	$157,837,641
Transfer (from)/to Stabilization Reserve	$6,941,497	$7,254,131
Total Expenditures (incl. Transfer)	$170,796,967	$165,091,772

Appendix A: Map of Drinking Water Sample Stations

CITY OF VANCOUVER

WATER SAMPLING SITES
53 DEDICATED STATIONS

Appendix B: Disinfection By-products Sampling Results

Disinfection By-products Sampling Results[1]

Sample Site	Date Sampled	THM (µg/L)						HAA (µg/L)						
		Bromodichloromethane	Bromoform	Chlorodibromomethane	Chloroform	Total Trihalomethanes	**Total THM Quarterly Average (Avg.) (GCDWQ Limit 100 ppb)**	Dibromoacetic Acid	Dichloroacetic Acid	Monobromoacetic Acid	Monochloroacetic Acid	Trichloroacetic Acid	Total Haloacetic Acid	**Total HAA Quarterly Avg. (GCDWQ Limit 80 ppb) ALARA[2]**
Station 3 Porter & Victoria	24-Apr-24	<1	<1	<1	27	28	**26**	<0.5	13	<0.5	<0.5	9.1	22	**20**
	13-Sep-24	1	<1	<1	25	27	**26**	<0.5	9.2	<0.5	<0.5	6.9	16	**20**
	26-Nov-24	<1	<1	<1	29	30	**26**	<0.5	15	<0.5	1	12	28	**19**
	30-Jan-25	<1	<1	<1	24	25	**28**	<0.5	13	<0.5	<0.5	10	23	**22**
	9-Apr-25	<1	<1	<1	30	31	**28**	<0.5	15	<0.5	<0.5	12	26	**23**
	10-Sep-25	<1	<1	<1	30	31	**29**	<0.5	10	<0.5	<5.0	7.4	18	**24**
	19-Nov-25	<1	<1	<1	35	35	**29**	<0.5	14	<0.5	<5.0	12	26	**22**
Station 7 8100 Champlain	24-Apr-24	<1	<1	<1	29	30	**27**	<0.5	14	<0.5	1.1	12	27	**23**
	13-Sep-24	1	<1	<1	25	27	**27**	<0.5	8.3	<0.5	<0.5	5.6	14	**19**
	26-Nov-24	<1	<1	<1	35	35	**26**	<0.5	12	<0.5	0.7	14	26	**20**
	30-Jan-25	<1	<1	<1	27	27	**30**	<0.5	13	<0.5	<0.5	11	24	**23**
	9-Apr-25	<1	<1	<1	31	31	**30**	<0.5	15	<0.5	<0.5	11	26	**23**
	10-Sep-25	<1	<1	<1	32	33	**32**	<0.5	12	<0.5	<5.0	13	25	**25**
	19-Nov-25	<1	<1	<1	28	29	**30**	<0.5	14	<0.5	<5.0	8.3	22	**25**
Station 24 Champlain & Arlington	24-Apr-24	<1	<1	<1	28	28	**27**	<0.5	9.5	<0.5	0.6	5.7	16	**18**
	13-Sep-24	1	<1	<1	25	27	**26**	<0.5	7.8	<0.5	<0.5	4.8	13	**16**
	26-Nov-24	<1	<1	<1	29	30	**26**	<0.5	13	<0.5	0.8	9.4	23	**16**
	30-Jan-25	<1	<1	<1	26	26	**28**	<0.5	12	<0.5	<0.5	8.3	20	**18**
	9-Apr-25	<1	<1	<1	30	30	**28**	<0.5	14	<0.5	<0.5	9.5	23	**20**
	10-Sep-25	<1	<1	<1	28	29	**29**	<0.5	8.6	<0.5	<5.0	5.2	14	**20**
	19-Nov-25	<1	<1	<1	33	33	**28**	<0.5	13	<0.5	<5.0	8.6	22	**19**
Station 28 E 10th & Woodland	24-Apr-24	<1	<1	<1	29	30	**28**	<0.5	13	<0.5	0.7	9.3	23	**20**
	13-Sep-24	1	<1	<1	27	29	**28**	<0.5	9.6	<0.5	0.7	5.9	16	**21**
	26-Nov-24	<1	<1	<1	36	37	**27**	<0.5	15	<0.5	1.2	15	31	**20**
	30-Jan-25	<1	<1	<1	27	28	**31**	<0.5	13	<0.5	<0.5	12	25	**24**
	9-Apr-25	<1	<1	<1	34	35	**32**	<0.5	16	<0.5	1.3	11	29	**25**
	10-Sep-25	<1	<1	<1	30	31	**33**	<0.5	8.5	<0.5	<5.0	5.7	14	**25**
	19-Nov-25	<1	<1	<1	30	30	**31**	<0.5	14	<0.5	<5.0	9.8	24	**23**
Station 30 1100 Foundry Quay	24-Apr-24	<1	<1	<1	25	26	**24**	<0.5	11	<0.5	0.9	6.5	19	**17**
	13-Sep-24	1	<1	<1	22	24	**24**	<0.5	8.4	<0.5	<0.5	4.9	13	**17**
	26-Nov-24	<1	<1	<1	25	26	**23**	<0.5	13	<0.5	1	8.2	22	**16**
	30-Jan-25	<1	<1	<1	23	23	**25**	<0.5	12	<0.5	<0.5	6.9	19	**18**
	9-Apr-25	<1	<1	<1	28	28	**25**	<0.5	13	<0.5	<0.5	9.3	22	**19**
	10-Sep-25	<1	<1	<1	25	25	**26**	<0.5	7.6	<0.5	<5.0	4.5	12	**19**
	19-Nov-25	<1	<1	<1	31	32	**25**	<0.5	14	<0.5	<5.0	9.8	24	**18**

1. Disinfection By-product analysis performed by Metro Laboratory.
2. ALARA stands for “As Low As Reasonably Achievable.”

Disinfection By-products Sampling Results[1]

Sample Site	Date Sampled	THM (µg/L)						HAA (µg/L)						
		Bromodichloromethane	Bromoform	Chlorodibromomethane	Chloroform	Total Trihalomethanes	**Total THM Quarterly Average (Avg.) (GCDWQ Limit 100 ppb)**	Dibromoacetic Acid	Dichloroacetic Acid	Monobromoacetic Acid	Monochloroacetic Acid	Trichloroacetic Acid	Total Haloacetic Acid	**Total HAA Quarterly Avg. (GCDWQ Limit 80 ppb) ALARA[2]**
Station 54 Salish & Sennok	24-Apr-24	<1	<1	<1	28	29	**26**	<0.5	11	<0.5	0.8	7.8	20	**17**
	13-Sep-24	1	<1	<1	25	27	**27**	<0.5	7.9	<0.5	<0.5	5.6	14	**17**
	26-Nov-24	<1	<1	<1	29	30	**26**	<0.5	11	<0.5	<0.5	11	22	**17**
	30-Jan-25	<1	<1	<1	25	26	**28**	<0.5	9.6	<0.5	<0.5	8	18	**19**
	9-Apr-25	<1	<1	<1	31	31	**29**	<0.5	14	<0.5	1.1	11	26	**20**
	10-Sep-25	<1	<1	<1	26	27	**29**	<0.5	8.8	<0.5	<5.0	5.9	15	**20**
	19-Nov-25	<1	<1	<1	34	34	**28**	<0.5	11	<0.5	<5.0	11	22	**20**
Station 55 W 23rd & Balaclava	24-Apr-24	<1	<1	<1	25	26	**24**	<0.5	11	<0.5	1	6.1	18	**16**
	13-Sep-24	<1	<1	<1	21	22	**23**	<0.5	7.2	<0.5	0.6	4.6	12	**16**
	26-Nov-24	<1	<1	<1	28	29	**23**	<0.5	13	<0.5	1.3	9.8	24	**16**
	30-Jan-25	<1	<1	<1	24	24	**25**	<0.5	12	<0.5	<0.5	7.4	19	**18**
	9-Apr-25	<1	<1	<1	29	29	**26**	<0.5	13	<0.5	<0.5	9.2	23	**20**
	10-Sep-25	<1	<1	<1	26	27	**27**	<0.5	9.3	<0.5	<5.0	5.2	14	**20**
	19-Nov-25	<1	<1	<1	35	36	**27**	<0.5	11	<0.5	<5.0	11	22	**19**
Station 58 Euclid & Chatham	29-May-23	<1	<1	<1	18	20	**26**	<0.5	7.5	<0.5	1	3	11	**13**
	23-Sep-23	1	<1	<1	24	26	**27**	<0.5	8.5	<0.5	<0.5	7	15	**13**
	4-Dec-23	<1	<1	<1	22	23	**29**	<0.5	10	<0.5	<0.5	6	16	**13**
	30-Jan-25	<1	<1	<1	22	23	**24**	<0.5	12	<0.5	<0.5	7.9	20	**17**
	9-Apr-25	<1	<1	<1	25	25	**24**	<0.5	12	<0.5	<0.5	7.2	19	**18**
	10-Sep-25	<1	<1	<1	23	24	**24**	<0.5	7.8	<0.5	<5.0	5	13	**18**
	19-Nov-25	<1	<1	<1	30	31	**24**	<0.5	13	<0.5	<5.0	7.9	20	**17**
Station 62 Belmont & Tolmie	24-Apr-24	<1	<1	<1	32	33	**29**	<0.5	4.8	<0.5	<0.5	8.2	13	**13**
	13-Sep-24	1	<1	<1	24	26	**28**	<0.5	5.7	<0.5	<0.5	4.9	11	**13**
	26-Nov-24	<1	<1	<1	32	34	**28**	<0.5	6.1	<0.5	<0.5	12	18	**13**
	30-Jan-25	<1	<1	<1	25	26	**30**	<0.5	7.3	<0.5	<0.5	10	17	**15**
	9-Apr-25	<1	<1	<1	33	33	**30**	<0.5	7.7	<0.5	<0.5	11	18	**16**
	10-Sep-25	<1	<1	<1	29	30	**31**	<0.5	4.7	<0.5	<5.0	5.4	10	**16**
	19-Nov-25	<1	<1	<1	44	45	**30**	<0.5	4.9	<0.5	<5.0	12	16	**15**
Station 70[2] 723 SE Marine	24-Apr-24	<1	<1	<1	25	26	**24**	<0.5	11	<0.5	<0.5	7.1	18	**19**
	13-Sep-24	1	<1	<1	25	27	**25**	<0.5	9.5	<0.5	<0.5	5	14	**17**
	26-Nov-24	<1	<1	<1	32	32	**24**	<0.5	16	<0.5	1	11	28	**17**
	30-Jan-25	<1	<1	<1	21	22	**27**	<0.5	13	<0.5	<0.5	8.8	22	**21**
	9-Apr-25	<1	<1	<1	29	29	**28**	<0.5	15	<0.5	<0.5	10	25	**22**
	10-Sep-25	<1	<1	<1	24	25	**27**	<0.5	10	<0.5	<5.0	8.5	19	**24**
	19-Nov-25	<1	<1	<1	28	28	**25**	<0.5	13	<0.5	<5.0	7.2	21	**22**

1. Disinfection By-product analysis performed by Metro Laboratory.
2. ALARA stands for “As Low As Reasonably Achievable.”

Appendix C: Metals Sampling Results

Metals Sampling Results

Sample Site	Date Sampled	GCDWQ MAC[1] (µg/L)										
		<100 (OG)[2]	6	10 (ALARA)[2]	2000	5000	7	None required	50	n/a	**≤1000 (AO)[2]**	**≤100 (AO)**
		Aluminum Total	Antimony Total	Arsenic Total	Barium Total	Boron Total	Cadmium Total	Calcium Total	Chromium Total	Cobalt Total	**Copper Total**	**Iron Total**
Station 9 Harrison & Rosedale	19-Jun-25	25	<0.5	<0.5	3.1	<10	<0.2	8630	<0.05	<0.5	<0.5	20
	09-Dec-25	31	<0.5	<0.5	3.2	<10	<0.2	9540	<0.05	<0.5	<0.5	13
Station 19 38th & Camosun	19-Jun-25	20	<0.5	<0.5	2.8	<10	<0.2	7890	<0.05	<0.5	<0.5	<5
	09-Dec-25	32	<0.5	<0.5	3.1	<10	<0.2	9240	<0.05	<0.5	<0.5	6
Station 26 Franklin & Kootenay	19-Jun-25	22	<0.5	<0.5	2.8	<10	<0.2	8600	<0.05	<0.5	<0.5	8
	09-Dec-25	32	<0.5	<0.5	3.2	<10	<0.2	9470	<0.05	<0.5	<0.5	19
Station 34 10th & Willow	19-Jun-25	24	<0.5	<0.5	2.7	<10	<0.2	7620	<0.05	<0.5	3.2	10
	09-Dec-25	35	<0.5	<0.5	3.2	<10	<0.2	9140	<0.05	<0.5	3.1	7
Station 39 37th & Hudson[4]	18-Aug-25	21	<0.5	<0.5	2.9	<10	<0.2	8160	<0.05	<0.5	<0.5	<0.5
	09-Dec-25	34	<0.5	<0.5	3.2	<10	<0.2	9190	<0.05	<0.5	<0.5	6

1. MAC = Maximum Acceptable Concentration.
2. OG = Operational Guidelines; AO = Aesthetic Objective; ALARA = As Low as Reasonably Achievable.
3. 120ug/L exceeds Mn in our water; so we compare to lower A/O.
4. Station 39 sampled in August.

Metals Sampling Results

Sample Site	Date Sampled	GCDWQ MAC (µg/L)										
		5 (ALARA)	None required	≤20 (AO)	1	n/a	n/a	n/a	50	None required	≤200000 (AO)	**≤5000 (AO)**
		Lead Total	Magnesium Total	Manganese[3] Total	Mercury Total	Molybdenum Total	Nickel Total	Potassium Total	Selenium Total	Silver Total	Sodium Total	**Zinc Total**
Station 9 Harrison & Rosedale	19-Jun-25	<0.5	178	2.2	<0.05	<0.5	<0.5	145	<0.5	<0.5	1480	<3.0
	09-Dec-25	<0.5	189	2.1	<0.05	<0.5	<0.5	164	<0.5	<0.5	1630	<3.0
Station 19 38th & Camosun	19-Jun-25	<0.5	164	1	<0.05	<0.5	<0.5	145	<0.5	<0.5	1480	<3.0
	09-Dec-25	<0.5	188	1.8	<0.05	<0.5	<0.5	164	<0.5	<0.5	1690	<3.0
Station 26 Franklin & Kootenay	19-Jun-25	<0.5	173	2.3	<0.05	<0.5	<0.5	148	<0.5	<0.5	1500	<3.0
	09-Dec-25	<0.5	191	3.1	<0.05	<0.5	<0.5	167	<0.5	<0.5	1620	<3.0
Station 34 10th & Willow	19-Jun-25	<0.5	168	8.5	<0.05	<0.5	<0.5	143	<0.5	<0.5	1980	<3.0
	09-Dec-25	<0.5	183	2.6	<0.05	<0.5	<0.5	162	<0.5	<0.5	1650	<3.0
Station 39 37th & Hudson[4]	18-Aug-25	<0.5	185	3.6	<0.05	<0.5	<0.5	166	<0.5	<0.5	1790	3.2
	09-Dec-25	<0.5	186	2.9	<0.05	<0.5	<0.5	164	<0.5	<0.5	1700	<3.0

1. MAC = Maximum Acceptable Concentration.
2. OG = Operational Guidelines; AO = Aesthetic Objective; ALARA = As Low as Reasonably Achievable.
3. 120ug/L exceeds Mn in our water; so we compare to lower A/O.
4. Station 39 sampled in August.

Appendix D: System Inventory

Appendix D - System Inventory[1]

Diameter	Asbestos Cement	Concrete	HDPE[2]	Steel	DICL[3]	Cast Iron	Other[4]	PVC	Unknown[5]
System total (m)	60	8,132	3,030	36,168	687,616	733,897	6,307	802	721
Pre-1920									
20 mm						0	38		
25 mm						0	4		
50 mm						0	44		1
75 mm						279			
100 mm						582			
150 mm				47	4	7,947			2
200 mm				56		5,343			
300 mm						2,316			13
400 mm				24					2
450 mm				235					
600 mm									
625 mm				6					
650 mm									
800 mm				3,258					
Total (m)	**0**	**0**	**0**	**3,625**	**4**	**16,465**	**86**	**0**	**18**
Years: 1920-1929									
25 mm							5		
100 mm						578			
150 mm						14,659			
200 mm						3,310			
300 mm						330			
450 mm				29					
500 mm				11					
600 mm				1,430					
Total (m)	**0**	**0**	**0**	**1,470**	**0**	**18,877**	**5**	**0**	**0**
Years: 1930-1939									
20 mm						1	21		
25 mm							2		
50 mm							36		
100 mm				150		331			
150 mm				35		31,927			
200 mm						9,829			
300 mm				60		7,092			
350 mm				10					
450 mm				3,385					
500 mm				1,236					
600 mm				968					
625 mm				690					
750 mm				1,737					
800 mm				3					
Total (m)	**0**	**0**	**0**	**8,274**	**0**	**49,179**	**59**	**0**	**0**
Years: 1940-1949									
25 mm							10		
40 mm						15			
100 mm						526			
150 mm				5	1	79,441			
200 mm						34,083			0
300 mm				29		10,898			
450 mm						266			
800 mm				426					
Total (m)	**0**	**0**	**0**	**459**	**1**	**125,229**	**10**	**0**	**0**
Years: 1950-1959									
25 mm							147		
50 mm						12	639		
100 mm						469			
150 mm				6		100,979			
200 mm				12		54,233			
250 mm				24					
300 mm				91		34,575		3	30
450 mm				40	1	29			
600 mm				491					
750 mm				952					
Total (m)	**0**	**0**	**0**	**1,616**	**1**	**190,297**	**786**	**3**	**30**

1. Data was collected until February 28, 2026
2. HDPE - High-Density Polyethylene
3. DICL - Cement Lined Ductile Iron
4. Other - Combined Data for Copper Galvanized Pipe
5. Unknown - Data missing regarding material

Appendix D - System Inventory[1]

Diameter	Asbestos Cement	Concrete	HDPE[2]	Steel	DICL[3]	Cast Iron	Other[4]	PVC	Unknown[5]
System total (m)	60	8,132	3,030	36,168	687,616	733,897	6,307	802	721
Years: 1960-1969									
20 mm						8	138		
25 mm							553		
40 mm							334		
50 mm							1,344		
100 mm				6	457	2,278			
150 mm				39	507	155,321			30
200 mm	60			81	665	111,898			
300 mm				1,016	6,608	27,046			1
350 mm				1					
450 mm				420	1,828	8,559			
500 mm				114	2				
600 mm				325					
650 mm				509					
675 mm				1,507					
750 mm				877					
900 mm				7					
Total (m)	**60**	**0**	**0**	**4,902**	**10,068**	**305,110**	**2,370**	**0**	**31**
Years: 1970-1979									
20 mm							38		
25 mm							105	32	
40 mm							110		
50 mm						0	127	121	
100 mm					2,089				
150 mm					44,766	5,163			
200 mm				14	52,521	4,844		2	5
250 mm					10,005				
300 mm				57	51,095	312			
400 mm					4,462				
450 mm				1,145	707				
500 mm					1,642				
600 mm				24	1,275				2
625 mm				5					
750 mm		154		16					
800 mm				264					
Total (m)	**0**	**154**	**0**	**1,526**	**158,567**	**10,319**	**381**	**156**	**8**
Years: 1980-1989									
20 mm							58		
25 mm							1	37	
40 mm							255		
50 mm							479	12	
100 mm					989				
150 mm				41	34,165	50		1	
200 mm				70	27,333	69		4	5
250 mm					6				
300 mm			37	40	37,656	4		1	10
400 mm				74	544				
450 mm		53		29	3,159				
550 mm					49				
650 mm		1							
750 mm		6,324		1,165					
900 mm		1,599							
1000 mm				172					
Total (m)	**0**	**7,978**	**37**	**1,590**	**103,900**	**123**	**793**	**54**	**15**

1. Data was collected until February 28, 2026
2. HDPE - High-Density Polyethylene
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4. Other - Combined Data for Copper Galvanized Pipe
5. Unknown - Data missing regarding material

Appendix D - System Inventory[1]

Diameter	Asbestos Cement	Concrete	HDPE[2]	Steel	DICL[3]	Cast Iron	Other[4]	PVC	Unknown[5]
System total (m)	60	8,132	3,030	36,168	687,616	733,897	6,307	802	721
Years: 1990-1999									
20 mm							38		
25 mm							102		
40 mm							31		
50 mm					3		314		4
100 mm					1,021			9	
150 mm					10,470			192	
200 mm					69,531	4		184	
250 mm					34				
300 mm					55,638			4	
400 mm				5	2,379				
450 mm				14	1,106				
500 mm				8					
600 mm				5,705	5,518				
750 mm				101					
900 mm					3,689				
1000 mm				10					2
Total	**0**	**0**	**0**	**5,843**	**149,389**	**4**	**486**	**389**	**6**
Years: 2000-2009									
20 mm							17		
25 mm					29		69		
40 mm							1		
50 mm							141		
100 mm			298		2,792				
150 mm			148	3	6,359	14			
200 mm					85,753	101			6
250 mm					3				
300 mm				6	36,019			11	5
400 mm				40	55				
450 mm					557				
500 mm				2					
600 mm				5,861	4,528				
650 mm									
750 mm				4	210				
900 mm					1				
Total (m)	**0**	**0**	**446**	**5,917**	**136,305**	**115**	**228**	**11**	**11**
Years: 2010-2019									
25 mm							23		
40 mm							43		
50 mm			79				111		
100 mm			590		567	1			
150 mm			131		4,012	50		1	
200 mm			32		72,223	31		142	
300 mm					17,112	11		38	
400 mm				9	25				
450 mm					30				
500 mm					20				
600 mm				2	5,736			1	
750 mm					51				
unknown					15				
Total (m)	**0**	**0**	**832**	**11**	**99,790**	**93**	**178**	**182**	**0**

1. Data was collected until February 28, 2026
2. HDPE - High-Density Polyethylene
3. DICL - Cement Lined Ductile Iron
4. Other - Combined Data for Copper Galvanized Pipe
5. Unknown - Data missing regarding material

Appendix D - System Inventory[1]

Diameter	Asbestos Cement	Concrete	HDPE[2]	Steel	DICL[3]	Cast Iron	Other[4]	PVC	Unknown[5]
System total (m)	60	8,132	3,030	36,168	687,616	733,897	6,307	802	721
Years: 2020-2026									
20 mm							2		
25 mm							40		
40 mm							1		
50 mm							13		
100 mm					18				
150 mm			184		1,514	9			
200 mm			88		15,743	8		3	
300 mm			35		9,306	1			
400 mm			1,408						
450 mm				2	36				
600 mm				1	1,300				
750 mm					839			2	
900 mm					730				
unknown					13				
Total (m)	**0**	**0**	**1,715**	**3**	**29,497**	**18**	**56**	**6**	
Years: Unknown									
20 mm						20	60		
25 mm							259		
40 mm							66		
50 mm						5	485		28
75 mm						28			
100 mm					21	1,172			
150 mm				202		10,458			135
200 mm				83		3,832			427
250 mm						1,076			
300 mm				13	15	1,322			1
350 mm				1					
400 mm									2
450 mm				9	58	154			10
500 mm				2	95				
600 mm				591					
800 mm				23					
1000 mm				8					
Total (m)	**0**	**0**	**0**	**931**	**94**	**18,069**	**870**	**0**	**603**
Total watermain in system (m)									**1,476,734**

1. Data was collected until February 28, 2026
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