Water Efficiency Strategy

2024 Progress Report

Environmental Services Department

As per the Accessibility for Ontarians with Disabilities Act (AODA), this document is available in an alternate format by e-mailing waterservices@guelph.ca or by calling 519-837-5627; TTY: 519-837-5688 or text 226-821-2132.

This page left intentionally blank.

Table of Contents

List of Tables

List of Figures

Background

Water servicing capacity reclaimed through conservation and efficiency continues to be a priority in achieving a sustainable and cost-effective community water supply. The 2014 Council-approved Water Supply Master Plan (WSMP) established a reduction target of 9,147 cubic metres in average daily production by 2038 to guide the City's water efficiency programming. In 2016 Council approved the Water Efficiency Strategy (WES) that defined programs, policies and resources necessary to help the City meet the 2014 WSMP reduction targets.

In 2022 Council endorsed an updated WSMP that will inform an update to the WES. The successor strategy to the WES is currently in development with Montrose Environmental Inc., and is named The Blueprint: Guelph's One Water Plan. The Blueprint is Guelph's first integrated water management strategy, and represents a holistic, sustainable approach to managing Guelph's water resources. Recognizing the interconnectedness of drinking water, stormwater, and wastewater, The Blueprint will view and treat all forms of water as part of a single, integrated system. This initiative is rooted in deep respect for Indigenous knowledge, wisdom, and stewardship traditions, emphasizing reciprocity and care. The Blueprint is scheduled and on track to be completed in Q3 of 2025. For more information on The Blueprint, visit guelph.ca/plans-and-strategies/blueprint-one-water-plan.

The following sections outline the water efficiency and optimization goals achieved from the WES between January 1 and December 31, 2024.

Water Reduction Target Progress

Building off the data analysis completed for the 2014 WSMP, the WES identified a ten-year water savings goal of 6,265 cubic metres per day between 2017 and 2026. The Strategy anticipated significant supply capacity to be reclaimed through water loss management and efficiencies realized within the industrial, commercial and institutional sector.

Based on community uptake and participation in direct-savings water efficiency programs, the total water savings achieved for 2024 was 203 cubic metres per day. Since the implementation of the 2016 WES, the cumulative water savings achieved to is 2,467 cubic metres per day (2017-2024). However, in analyzing water production over this same period highlights the impact potential indirect savings initiatives have had. These indirect savings can be associated with reclaimed loss due to leaks (infrastructure and private side) and adherence to the City's Outdoor Water Use and Healthy Landscapes Programs.

Based on reductions in energy needed for water treatment and distribution, it is anticipated that 4.64 tonnes of greenhouse gas (GHG) emissions and over $6,800 in energy costs will be avoided through this year's water savings, year-over-year. The methodology used in the WES was established by Facilities and Energy Management – Energy and Climate Change to ensure consistency.

Figure 1 presents the daily average volumetric production values as projected in the 2014 WSMP, 2016 WES, and actual production. The City continues to experience lower average daily production volumes than those projected through the WSMP. This is due, in part, to the successful implementation of the 2016 WES.

Figure 1: Water Supply Master Plan (2014), Water Efficiency Strategy (2016) and Actual (2013-2024) Production

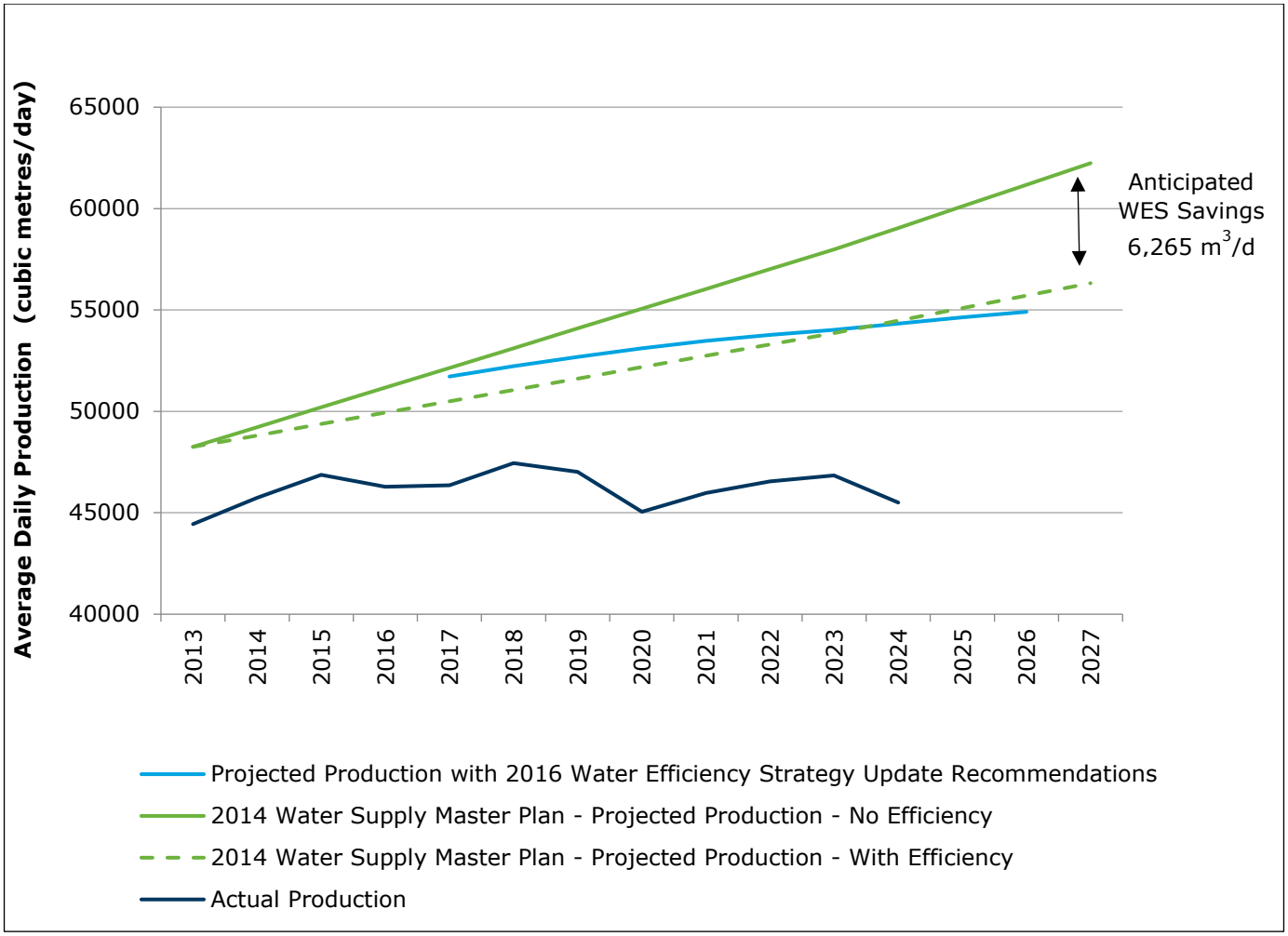
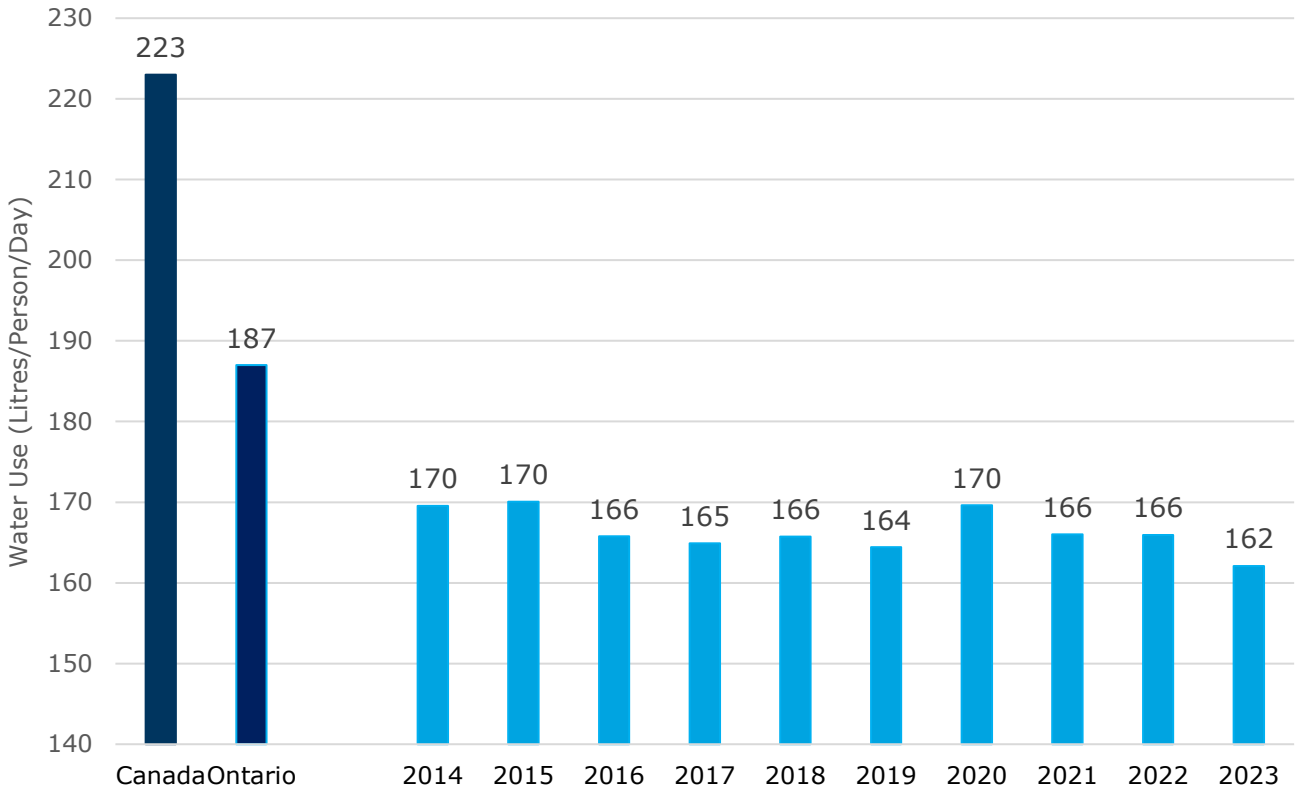


Figure 2 presents the City of Guelph's average residential water use between 2014 and 2023, calculated using the volumetric consumption of water of all residential properties – low, medium and high density. The City of Guelph's residential water use was largely declining from 2014 to 2019 at an approximate rate of 3.1 litres less per person per day. Despite water use increasing in 2020 during the COVID pandemic, values have continued to decrease to 162 litres per person per day (2023), which is 2.3 litres below the pre-pandemic levels of 164 litres (2019). Despite a growing population, Guelph continues to remain below provincial and national averages of 187 and 223 litres per person per day. Consumption values are not yet reportable to year end 2024 and are not included at this time.

Figure 2: Average Residential Water Use



Note: Canada and Ontario water use data retrieved from Statistics Canada, Table 38-10-0271-01 Potable water use by sector and average daily use (2023).

The following sections outline the individual program successes for 2024, as identified in the 2016 WES.

Water Efficiency Incentive and Rebate Programs

During 2024, participation in direct water savings programs achieved an estimated savings of 203 cubic metres per day. These savings fell approximately 72% short of the annual target (719 cubic metres per day). Challenges included staffing gaps and transitions and continuing to re-establish and adapt programs post-pandemic. For the period of 2017 to 2023 an estimated combined water savings of 2,467 cubic metres per day has been achieved.

In 2024, 592 rebate applications and audits were completed through the City's residential rebate programs. An additional two audits and three business upgrades were processed, along with upgrades to five City facilities. For more information on the individual water efficiency programs available, visit guelph.ca/rebates.

Table 1: Water Efficiency Strategy Update Program Progress

Water Efficiency Program	WES Target, 2024 Average Daily Water Savings (m^3/day)	Achieved Average Daily Water Savings (m^3/day), 2024	Number of Rebates/ Audits, 2024	WES Combined Target, 2017-2024: Average Daily Water Savings (m^3/day)	Achieved Average Daily Water Savings (m^3/day), 2017-2024	Number of Rebates/ Audits, 2017-2024
Royal Flush	16	15.59	408	184	186.62	4,747
Blue Built Home	1	0	0	13	12.93	49
Home Visit/Audit	N/A	7.61	177	65	37.84	1,046
Multi-Residential Audit	4	13.07	6	70	119.71	48
Residential Sub-Water Meter	1	0.05	1	9	9.25	27
Water Smart Business	150	34.80	5	1,200	173.32	16
Municipal Facility Upgrades	22	12.46	5	176	52.73	16
Water Loss Management	475	119.36	38	2,861	1,874.46	158
Totals	**719**	**202.94**	**640**	**4,688**	**2,466.86**	**6,107**

Direct Water Savings Programs

Residential Sector

Individual residential sector program details can be found in the 2016 Water Efficiency Strategy section 13.1.1.1. The following is a 2024 summary of relevant updates, program achievements and challenges.

Royal Flush Toilet Rebate Program

The 2016 WES recommended continuing with this rebate program to replace older, inefficient toilets. In 2024 the number of applications declined from 2023 with a total of 408 rebates processed. The program was promoted during home water audits, through social media campaigns, store locations and outreach events. Participation rates and water savings are summarized in Table 1.

Blue Built Home Water Efficiency Standards and Rebate Program

The 2016 WES identified the Blue Built Home Program to reduce indoor water demand through water saving fixtures and appliances in both existing and new homes, and multi-residential buildings. In 2024, 19 single family homes received Blue Built Home certification. These homes met the certification requirements without having to make any adjustments to water fixtures or appliances, and were awarded certifications to acknowledge their leadership in water efficiency. ces have initiated Blue Built Home certifications for a greywater re-use system and a rainwater harvesting system and these projects are anticipated to be complete in 2025. The program was promoted through direct email follow-up to participants of home water audits, conversations at outreach events and on social media. Participation rates and water savings are summarized in Table 1.

All-Season Rainwater Harvesting Rebate Program

The All-Season Rainwater Harvesting Rebate programs seeks to encourage water reuse to reduce demand on drinking water supply for non-potable uses in a home or business. There were no projects approved in 2024 but there is an application in progress.

Water Use Home Visit and Audit Program

In 2024, the City contracted Greenbrain Inc. to conduct in-home water audits as part of the Water Use Home Visit and Audit Program. A total of 177 home audits were completed, representing a total water savings of 7.61 cubic metres per day. As outlined in the WES, there is an assumed 43 litre reduction in daily water use following an audit from identifying inefficient water-using fixtures such as showerheads, faucets and toilets, checking for leaks and recommending behavioural changes to reduce water use. Participation rates and savings are summarized in Table 1.

Multi-Residential Sector

Individual multi-residential sector programs are detailed in the 2016 Water Efficiency Strategy section 13.1.1.2. The following is a summary of 2024 relevant updates, program achievements and challenges.

Multi-Residential Audit Program

In 2024, the City contracted Reep Green Solutions to conduct detailed water audits of multi-residential buildings. A total of six buildings participated in the program and received a detailed report on daily water demand patterns, presence of leaks, and potential water-saving opportunities (e.g. replacing inefficient plumbing fixtures or other water using processes like water softeners). As outlined in the WES, there is an assumed ten per cent reduction in daily water use following an audit. For 2024, this equates to 13.07 cubic metres of water per day. This provides a combined water savings of 119.71 cubic metres per day since the program launch in 2018. Participation rates and savings are summarized in Table 1.

Residential Sub-Water Meter Rebate Program

The residential sub-water meter rebate program is open to single and multi-family residential sectors in the City of Guelph. In 2024, this program received one application and represents a water savings of 0.05 cubic metres per day. In 2025 staff will explore different ways to engage residents, landlords and multi-residential managers in the program, including considering targeted outreach related to additional residential dwelling units or accessory apartments. Participation rates and savings are summarized in Table 1.

Industrial, Commercial and Institutional Sector

Industrial, commercial and institutional sector programs are detailed in the 2016 Water Efficiency Strategy section 13.1.1.3. The following is a summary of 2024 relevant updates, program achievements and challenges.

Water Smart Business Program

The Water Smart Business Program continues to offer resources to the industrial, commercial and institutional sector - water management tools and efficiency techniques - to achieve a lower water bill for the business. In 2024 staff developed a robust outreach plan that included visiting the top 100 billed water customers in Guelph. A virtual speaker event on water reuse in the beer industry was hosted and 23 people participated, including representatives from four of Guelph’s breweries (Sleeman Breweries, Wellington Brewery, Royal City Brewing Co., and Fixed Gear Brewing Co.).

In 2024, five businesses participated in the program. Three businesses completed water savings projects that resulted in direct savings of 35 cubic metres of water per day. Two businesses completed audits that identified water savings projects and leaks totalling 59 cubic metres of water per day; the leaks were resolved by

the businesses. One other business completed an application form and is anticipated to participate in the program in 2025. Participation rates and savings are summarized in Table 1.

Municipal Operations

Details of municipal operation initiatives can be found in the 2016 Water Efficiency Strategy section 13.1.1.4. The following is a 2024 summary of relevant updates, program achievements and challenges.

Municipal Facility Water Efficiency Upgrades

The City continues to lead by example with water efficiency in its own facilities. Washrooms at five facilities (City Hall, West End Community Centre, Clair Road Emergency Service Centre, the Riverside Park cottage and Guelph Civic Museum) were retrofitted with WaterSense certified fixtures (toilets, showerheads and aerators). This resulted in 12.46 cubic metres of water saved per day. Additionally, the City actively repaired leaking infrastructure in line with best practices.

Water Loss Management Program

Water Loss Strategy

The implementation of Guelph's Water Loss Strategy continued in 2024. The City's work to date in minimizing non-revenue water has shown continuous improvement. With a low infrastructure leakage index at 1.5 – approaching a theoretical lower limit - the data now indicates that further attempts (i.e. expansions in the program) at reductions may not be economically feasible for the City; locating and fixing a potential leak may cost more than the water lost to the leak itself. A 2020 consultant's review indicated that if the City wants to further reduce non-revenue water and have its efforts remain cost effective than an additional expenditure between $97,000 to $116,000 per year should not be exceeded. This may be further explored through the One Water Plan.

Leak Detection Program

The City's leak detection program started in the spring of 2011 and aims to reduce the amount of water lost between the point of treatment and delivery to customers. The 2024 Leak Detection Program included sounding and correlation of all watermains within the City's distribution system. In total, 38 possible leaks were identified through this survey. The average daily volume of servicing capacity reclaimed through the location and remediation of these leaks (and four leaks that were identified in 2023 and repaired in 2024) equates to approximately 119.36 cubic metres per day in 2024. The reduction in water savings reflects a successful water loss management program and the need for fewer excavations to manage significant leaks. Savings attributed to reclaimed water supply capacity (production) are summarized in Table 1.

Indirect Water Savings Programs

Education is a fundamentally important tool to engage and motivate action. The commitment to increasing local water literacy is a complimentary piece to changing toilets, completing water audits, and installing water meters to ensure wise resource use. The City continues to offer a variety of successful programs to increase awareness about and influence attitudes and habits regarding water use, as well as inform the public on how the City invests public funds. Investment in Guelph's water future includes education and outreach programming.

A summary of the individual indirect water savings programs can be found in the 2016 Water Efficiency Strategy section 13.1.2. The following is a 2024 summary of relevant updates, program achievements and challenges.

Peak Season Water Demand Management Initiatives

Reduction of peak season (summer) water demand continues to be a primary objective of the City's water efficiency programming. The ability to reduce or minimize variations in seasonal water use limits the impact on finite groundwater supply during times of environmental stress and creates operational efficiencies.

Outside water use initiatives that result in indirect savings are detailed in the 2016 Water Efficiency Strategy section 13.1.2.1. The following is a 2024 summary of relevant updates, program achievements and challenges.

Outside Water Use Program

This program is driven by the City's Outside Water Use Bylaw, which restricts certain outdoor water-using activities during peak demand, when conditions such as dry, hot weather and river flows warrant restrictions.

The Outside Water Use Program (OWUP) is in effect all year, but conditions are only monitored between April and October. No level changes were experienced in the 2024 season. New this year was the introduction of Microsoft Power BI to report on conditions. Internal and public condition reports were distributed weekly via email and on the website.

Residents were notified of the current water level and corresponding restrictions through media advertisements including radio and social media, and the Program road signs around the city.

Permits were issued through the season and no permits were suspended. In 2024, 75 permits were issued:

- 25 new lawn watering permits;
- 0 treated lawn watering permits;
- 50 time shift permits.

Healthy Landscapes Program

The Healthy Landscapes Program continues to offer various resources to residents on preferred landscape management tools and techniques that result in desired yard aesthetics and reduced impact on water resources.

The annual speaker series featured two virtual and two in-person talks on outdoor water conservation topics from tree care to growing vegetables and garden design. There were over 280 participants in the 2024 speaker series, and a further 120 participants in the three-part Landscape Vegetable Garden Design Course. A backyard composing workshop was hosted in the fall with over 50 participants learning how to start composting.

Healthy Landscape visits continued to be a popular resource, with 310 free one-hour visits completed in 2024. Visits covered topics ranging from replacing lawns with gardens, water efficient lawn care tips and general water-saving landscaping advice. For more information on the Healthy Landscapes Program, visit guelph.ca/healthylandscapes.

The annual rain barrel sale was offered again as an online ordering and delivery service. In partnership with Stormwater Engineering, 600 rain barrels were sold to Guelph residents in 2024. An additional 20 rain barrels were purchased and distributed to City facilities and community gardens. Rain barrels capture rainwater for reuse in gardens and assist in managing pressure on stormwater infrastructure during rain events.

Public Outreach and Education Programs

Public outreach and education program initiatives are detailed in the 2016 Water Efficiency Strategy section 13.1.2.2. The following is a 2024 summary of relevant updates, program achievements or challenges.

Curriculum-Linked Education Programming

School presentations – The Grade 2 and Grade 8 programs on water and wastewater (including source protection messaging) continue to be a popular resource for local schools. In 2023, 17 school presentations were delivered, engaging 471 students.

Facility tours – Guided tours of the F.M. Woods Water Treatment Plant and the Water Resource Recovery Centre provide students the opportunity to see first-hand where their water comes from and what happens when it goes down the drain. In 2024, guided tours of F.M. Woods were on hold due to on-site construction, and tours typically delivered each year by the Grand River Conservation Authority were also on hold. In 2024, five wastewater facility tours were delivered, engaging over 60 students.

Guest speaker events – Staff collaborated with local school boards to deliver the H2Awesome Conference for students in Grades 6 to 8. Five guest speaker sessions

were planned between World Water Day (March 22) and Earth Day (April 22) on water and wastewater topics. This virtual event engaged over 2,275 students.

Waterloo-Wellington Children's Groundwater Festival – The City once again supported this successful annual event. In 2024 the festival was held at Marden Park in Wellington County, and covered a variety of topics from water and wastewater treatment to source water protection and conservation. Over the five-day event, a total of 4,156 elementary students were engaged, with 1,185 students from the Upper Grand District School Board and 369 students from the Wellington Catholic District School Board. The activity stations covered a variety of topics from water and wastewater treatment to source water protection and conservation. A virtual option of the festival was also offered in 2024 so students and teachers could participate remotely, and 887 students registered.

Public Outreach Events

A variety of outreach events were coordinated throughout the year to raise awareness about water conservation and efficiency. These events included:

Fix-A-Leak Week – A series of in-person outreach events were organized to engage the public in discissions about household leaks and indoor water conservation. About 100 participants were engaged at locations throughout the city, including public libraries, the University of Guelph, recreation centres, hardware stores, and Old Quebec St Mall (before a Guelph Storm game). Toilet leak detection tabs and conservation-related promotional material were distributed, and residents were encouraged to book a free home water audit.

Girl Guides and Scouts Badge Program – In 2023 staff developed a pilot badge program for community groups such as Girl Guides and Scouts. Water, wastewater and solid waste badges were developed along with engaging activities. To earn the badge for each service area, youth participate in a facility tour and complete the follow-up activity. This program remained available for 2024 but was not booked by any community groups.

Summer Camp Programming – In 2024, staff collaborated with the City's Culture and Recreation Services team to deliver summer camp activities related to water, wastewater and solid waste. Campers had the opportunity to learn about water treatment, distribution, and conservation by participating in interactive games and activities. A total of 8 programs were delivered, engaging 274 youth.

Public Works Week Open House – On May 25, the public had the opportunity to learn more about the City's water and wastewater services through interactive displays and conversations. An estimated 2,000 people attended the event and engaged with educational displays related to water topics, including metering, locates, source water protection, water treatment and distribution, water conservation and drinking water promotion.

EcoMarket – This annual event attracts people from all over Guelph who are looking for ways to fight climate change, reduce their impact on the environment and save money. Over two days of this event, staff engaged in meaningful conversations about the City's water, wastewater and solid waste services with over 75 individuals.

Speaking engagements – *Orientation to Ontario* information sessions were delivered to new residents of Guelph through a partnership with Immigrant Services Guelph-Wellington. The presentations engaged 34 people across two presentations introducing the City's water, wastewater and solid waste services.

Drinking Water Promotion

In support of the City's 2009 Public Promotion Action Plan for City Drinking Water Consumption, the Guelph Water Wagon provides tap water to attendees of large, outdoor community events during the spring and summer months.

Staff attended 41 event days, providing 22,200 litres of water to the public. As a result of offering this service, over 44,000 500-millilitre-sized plastic water bottles were diverted from waste streams.

Research Programs

Drought Response Operation Plan (DROP)

In 2023, the City retained AECOM Canada Ltd. to prepare a Drought Response Operational Plan (DROP). The DROP builds on the work completed through the Tier Three Study, which provided a framework for evaluating the impact of drought on the City's water supply system. The DROP has been developed to address the draft source water quantity policy, providing a robust protocol to protect the water supply resources and other users in and around the city and mitigate the potential impacts of a longer-term (greater than 3 years) drought.

The purpose of the DROP is to manage the impacts of drought on the City's water supply by identifying indices with associated thresholds and triggers for increasing levels of drought severity and outlining increasing levels of action for the City to take at each level.

A drought is a prolonged period of abnormally low precipitation, potentially leading to diminished groundwater levels. The lack of adequate precipitation, either rain or snow, can cause reduced soil moisture, reductions in groundwater storage, diminished stream flow, crop damage, and a general water shortage.

The DROP identifies indices with associated thresholds and triggers for increasing levels of drought severity and corresponding action for the City to take at each level. The Plan was completed in early 2024, and over the course of the year staff prepared to test the suggested DROP framework. Telemetry equipment was installed at the seven wells identified in the DROP to collect data on groundwater levels, and a PowerBI dashboard was developed with the suggested indices and

triggers (e.g. precipitation, streamflow, groundwater, temperature, firm capacity assessment, large scale climate patterns and community feedback). In 2025, the Plan will be used in the review and update to the existing Outside Water Use Bylaw (2014) – 19714 and corresponding Outside Water Use Program.

Environmental Programs Framework

In 2023, the City contracted KPMG to develop an Environmental Programs Framework (EPF). The goal is to evaluate all programs delivered by Environmental Programs staff across the disciplines of water efficiency, source water protection, tap water promotion, wastewater and solid waste. The EPF was completed in early 2024 and provides a tool to assess the various programs in a standard way, looking at dimensions that include value, efficacy, reach and tracking. Progress on the EPF's implementation is underway, and has helped determine program alignment with goals of the Water Efficiency Strategy (and other service area strategies), and the City's Strategic Plan, and identify opportunities for collaboration, shared processes and resources to meet individual and shared program goals more effectively and efficiently. In 2025 staff will implement the recommendation for an Integrated Communications Plan for Environmental Programs and map out program outcomes and tactics to further enhance collaboration and refinement.