

Emergency City Council Revised Meeting Agenda

Monday, March 23, 2020, 6:00 p.m.

Council Chambers, Guelph City Hall, 1 Carden Street

Changes to the original agenda are noted with an asterisk "*".

Pages

1. Call to Order

2. Open Meeting

2.1 Disclosure of Pecuniary Interest and General Nature Thereof

***3. Procedural Considerations**

Recommendation:

1. That by-law (2019)-20432 (the Procedural By-law) be amended as follows:

Insert definition of Emergency City Council Meeting:

"Emergency City Council Meeting" means any meeting of City Council called under Section 8.1 (d).

Insert Section 4.1 (e):

4.1 Public Notice of Meetings

e) Section 4.1 (d) shall not apply to emergency meetings called under Section 8.1 (d). The Clerk shall give public notice for emergency meetings called under Section 8.1 (d) by inclusion on the City's website as soon as possible after the meeting is called.

Insert Section 8.3:

8.3 Emergency City Council Meetings

a) Where an emergency has been declared in all or part of the City of Guelph under Section 4 or 7.0.1 of the Emergency Management and Civil Protection Act:

- i. any member of City Council may participate in any open or closed City Council meeting

electronically and be counted for the purpose of establishing quorum;

- ii. all votes shall be by show of hands or by verbal consent (yes or no); and
- iii. City Council shall have the discretion to consider any items previously considered by any committee of City Council, but not yet confirmed by City Council at the time the emergency was declared, as part of an emergency meeting called under Section 8.1 (d).

- 2. That Section 4.8 of the Procedural By-law be suspended to allow the March 23, 2020 Emergency City Council meeting called under Section 8.1 (d) to proceed without delegations.

4. Committee of the Whole Consent Report

The following resolutions have been prepared to facilitate Council's consideration of various matters and are suggested for consideration. If Council wishes to address a specific report in isolation of the Committee of the Whole Consent Report, please identify the item. It will be extracted and dealt with separately as part of the Items for Discussion.

Recommendation:

That the March 23, 2020 City Council Consent Agenda, as identified below, be adopted:

4.1 CAO-2020-02 Smart Cities Challenge Update and Confirmation of Advisory Board of Management Governance Structure

5

Recommendation:

- 1. That Council confirm its approval and support of the achievements to date under the Smart Cities Project, including all management, administrative, financial, and contractual aspects.
- 2. That Council appoint the Mayor to the Advisory Board of Management of the Our Food Future initiative and that this appointment be reviewed twice per term as part of Council's nomination committee process.

4.2 IDE-2020-22 Dolime Community Engagement Results for Proposed Settlement Pathway

19

Recommendation:

That the settlement pathway outlined in the report titled "Dolime Community Engagement Results for Proposed Settlement Pathway," dated March 2, 2020, be approved and staff be directed to take the

first steps in implementing the settlement pathway.

4.3 IDE-2020-24 2019 Water Services' Annual and Summary Report

25

Recommendation:

1. That Guelph City Council approves the 2019 Water Services' Annual and Summary Report.
2. That Guelph City Council endorse the updated Organizational Structure of the Operational Plan as defined in section o) of the 2019 Water Services' Annual and Summary Report and shown in Attachments 2 and 3.

***5. Chief Administrative Officer Delegated Authority**

Recommendation:

1. That, given the declaration of a global pandemic by the World Health Organization on March 11, 2020 and an emergency declaration by the Province of Ontario on March 18, 2020 in relation to COVID-19, the CAO be directed, further to and in accordance with the authority outlined in Chief Administrative Officer (CAO) By-law (2019)-20425 and the Emergency Management Program and Emergency Response Plan By-law (2019)-20358, to take such action(s) as may be deemed to be required by the CAO to protect the property and the health, safety and welfare of the citizens and visitors to the City of Guelph while managing budgetary considerations, both revenue and expenditure.
2. That this authority be authorized for the period of the global COVID-19 pandemic as determined by the World Health Organization or the emergency period as declared by the Province of Ontario.
3. That a full reporting of the financial impacts and costing of this emergency be provided to Council upon the end of the COVID-19 pandemic as determined by either the World Health Organization or the declaration of emergency declared in the Province of Ontario.

***6. Fiscal Relief Measures (Council Memo)**

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Recommendation:

The following fiscal relief measures are recommended for Council's consideration:

1. Parking permit fee waiver to assist downtown businesses and employees for the month of April.
2. Continued waiving of Transit fees for the month of April 2020.
3. Providing property tax relief to businesses and residents for the month of April through:
 - The waiver of interest and penalties that would be applied May

1.

- The waiver of NSF charges through to April 30, 2020.
- Ceasing all progressive collection activities until April 30, 2020.
- Waiving of tax statement fees related to mortgage requirements.
- Option to defer monthly Pre-authorized Debit (PAD) plans upon written request of at least ten days prior to withdrawal date. (email: tax@guelph.ca)

***7. By-laws**

Resolution to adopt the by-laws. (Councillor Allt)

Recommendation:

That By-law Numbers (2020)-20479 to (2020)-20480 and (2020)-20487 to (2020)-20488 are hereby passed.

- | | | |
|-------------|--|------------|
| *7.1 | By-law Number (2020)-20479 | 236 |
| | Being a By-law to amend By-law Number (2002)-17017 - the Traffic By-law (Through Highways in Schedule V, Traffic Control Signals in Schedule VI, All-way Stop Signs in Schedule IX, Pedestrian Crossovers in Schedule X, One-way Streets in Schedule XI, No Parking in Schedule XV and No Stopping in Schedule XVI). | |
| *7.2 | By-law Number (2020)-20480 | 306 |
| | A By-law to stop up and close part of Dublin Street described as Part of Dublin Street, Plan 8, designated as Part 1, Reference Plan 61R-21723, City of Guelph. | |
| *7.3 | By-law Number (2020)-20487 | 307 |
| | A by-law to authorize the execution of an agreement between The Corporation of the City of Guelph and Her Majesty the Queen in Right of the Province of Ontario, represented by the Minister of Transportation for the Province of Ontario. (Dedicated Gas Tax Funds for Public Transportation Program). | |
| *7.4 | By-law Number (2020)-20488 | 308 |
| | A by-law to confirm the proceedings of a meeting of Guelph City Council held March 23, 2020. | |

8. Adjournment

Staff Report



To	Committee of the Whole
Service Area	Office of the Chief Administrative Officer
Date	Monday, March 2, 2020
Subject	Smart Cities Challenge Update and Confirmation of Advisory Board of Management Governance Structure
Report Number	CAO-2020-02

Recommendation

1. That Council confirm its approval and support of the achievements to date under the Smart Cities Project, including all management, administrative, financial, and contractual aspects.
 2. That Council appoint the Mayor to the Advisory Board of Management of the Our Food Future initiative and that this appointment be reviewed twice per term as part of Council's nomination committee process.
-

Executive Summary

Purpose of Report

To provide Council with an update of the "Our Food Future" initiative and detail the proposed governance structure.

Key Findings

On May 14, 2019, Infrastructure Canada announced that the City of Guelph/County of Wellington's proposal to create Canada's first technologically enabled circular food economy was selected a winner of the [Smart Cities Challenge](#), and a recipient of \$10M.

Over the succeeding months, staff have implemented a project plan to oversee the 5-year initiative. Activities included:

- setting up a Smart Cities office
- finalizing Agreements with the Federal Government and Project Collaborators
- hiring a firm to lead the communications and community engagement strategy
- developing a project management plan in accordance with the City of Guelph's Project Management Office discipline
- confirming cross-sectoral membership on identified program delivery tables; and
- establishing early cross-functional pilots/projects that connect the three goals and demonstrate broad community impact

A component of the governance structure includes the appointment of the Mayor as a member on the City/County Advisory Board of Management. This appointment is supported by the City Clerk's Office, and will be maintained through the City's nominating/striking process.

On February 24, 2020, By-law Number: (2020)-20476 was adopted authorizing the City to enter and execute an agreement between Her Majesty the Queen in Right of Canada, as represented by the Minister of Infrastructure and Communities, and The Corporation of the City of Guelph, in respect of the Smart Cities Challenge.

Financial Implications

The \$10 million grant from Infrastructure Canada is structured to allow for coverage of all expenses related to the establishment and execution of the Our Food Future initiative.

One of the key deliverables of this initiative is to demonstrate the degree to which the \$10 million grant is able to leverage additional investment within the community. To that end, reporting of this project will extend beyond actual expenditures and will include participants' in-kind contributions.

Report

Accomplishments since June 24, 2019 Presentation to Council

Smart Cities Office Established:

On September 3, 2019, the Smart Cities Office officially opened. An in-kind contribution of the County, the dedicated office facility provides a space for City and County staff to work together to manage the initiative. City staff dedicated to the initiative include an Executive Director, Manager, Program Coordinator (2-year contract) and Administrative Coordinator (5-year contract).

The Smart Cities Office provides a primary point of contact for the Our Food Future initiative; responsible for the overall issues, risks and change management requirements. It provides project management, administration and oversight for the execution of key project milestones and deliverables. Responsible for coordinating the governance system, financial administration and performance monitoring/reporting, it also coordinates and delivers the overall engagement, communication and management functions and guides the implementation of technology and data strategies, on behalf of all projects.

Knowledge Sharing/Recognition:

Since the announcement of the Infrastructure Canada Smart Cities Challenge win, members of the Smart Cities team have presented at 24 events, locally, nationally and internationally, reaching an audience of approximately 4,000 people; in addition to podcasts and radio broadcasts.

Additionally, on April 6, 2020, in Denver, Colorado, the Our Food Future initiative will be recognized at the Smart 50 Awards, in collaboration with Smart Cities Connect, Smart Cities Connect Foundation, and US Ignite, in the category of community engagement. This prestigious award annually recognizes the 50 most influential and innovative projects in smart communities worldwide.

Communications and Community Engagement Strategy Finalized:

Following a competitive Request for Proposals process, which included a review of proposals by City and County staff, Dillon Consulting was selected as the consultant to

develop and execute a communications and community engagement strategy for the Our Food Future initiative.

Project Management Processes Instituted:

During the project development stage of the Smart Cities Challenge application, the City and County held various roundtables to support decision-making, strategic direction, planning and development for the overall initiative and the nine specific pathfinder projects. Each of these teams included broad-based sectoral representation with collaborators, including participation from the University of Guelph, Conestoga College, health organizations, food security and social innovation agencies, businesses and school boards, as well as residents, data and technology experts, and food producers. These collaborators contributed to the success of the application through their extensive networks, service delivery capacity and engagement channels with community and client groups. The participant-led roundtables co-created project plans and budgets, as well as carried out prototyping experiments.

A Transitional Advisory Board was also formed, providing executive-level membership from the community, small and medium enterprises, large businesses, academic institutions, the tech sector, public health, the Ontario Centres of Excellence, the Ontario Federation of Agriculture, Ontario Agri-Food Technologies, Bell Canada and RBC. Co-chaired by a community representative and the CAOs of the City and County, the Transitional Advisory Board met for a series of strategic meetings, providing subject matter expertise and strategic advice and supporting knowledge mobilization.

The Our Food Future initiative is classified a "Tier 1" program under the City's Project Management Policy, which has direct support and oversight from the Project Management Office. This classification provides a stage-gate approach that includes budget planning (pre-initiation), initiation, planning, execution (with monitoring/controlling) and close-out. Staff will monitor activities as per the Program Management Plan (in particular, cost, schedule, risk and change management). The Contribution Agreement as negotiated with Infrastructure Canada also identifies additional project management requirements.

As per the expectations of the Tier 1 Project Management discipline, the following processes have been implemented:

- Program and Project Charters approved
- Risk Register completed
- Financial tracking and reporting established
- Implementation Schedule prepared and baselined
- Program Management Plan completed

Additionally, the City of Guelph are implementing processes to track the amount of funding leveraged from the Smart Cities award as well as the monetary value of the in-kind contributions of the community.

Agreements Finalized:

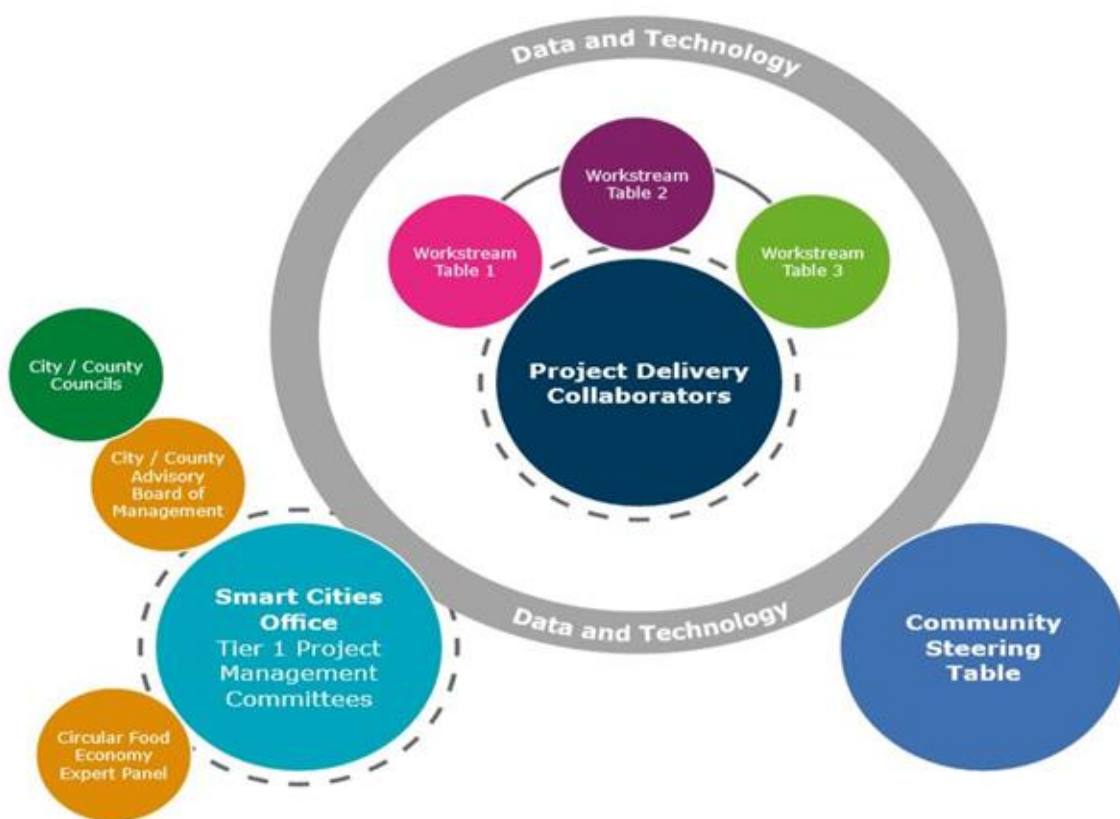
On July 12, 2019, the City received correspondence from the Government of Canada confirming the approval-in-principle of the City of Guelph's award of up to \$10M to implement the Our Food Future initiative over the term of the funding agreement.

City staff have negotiated the final particulars of the mandatory agreement with the Government of Canada. A special By-law authorizing the execution of that agreement has proceeded separately.

The City and project collaborators have also negotiated and finalized participant 5-year contracts. Principal organizations are required to ensure cross-sectoral collaboration with community members and applicable expert organizations to ensure a fulsome, community centred approach to program delivery. Details of the collaborator requirements are identified in Appendix 1. Remaining funding is designated for the execution of pilots or demonstration projects aimed to realize the circular food economy in action and the administration of the Smart Cities office.

Governance Structure:

The Our Food Future governance structure is outlined in the diagram below.



Community Participant Tables

The Community Steering Table includes core delivery participants, as well as organizations that may not be directly involved in project implementation, but play a supporting role in achieving the outcomes of the initiative. This local community-coordination table will receive regular reports from Project Delivery Collaborators and provides advice regarding implementation, resource coordination, community and stakeholder engagement, and outreach. The membership of this multi-sector table reflects principles of diversity and inclusion.

The Smart Cities office has also established a Program Delivery Team, comprised of City/County staff and delivery leads from the three Workstream tables, as well as data and technology experts from the City, County and community.

A strong data and technology approach is foundational to the Our Food Future initiative, encircling the work of the individual projects. Establishing a system of public data collection and use that is sustainable and participatory is a key step in building a healthy, circular digital economy. To do that, a robust data management plan is required. Our Food Future will embrace an open system that interconnects public and private systems and stakeholders. By establishing an open system, data from a variety of sources will be collected and shared across a variety of community collaborators, allowing the community to design interventions specific to local needs. The concept of a Data Utility will operate as a public trust, designed and governed according to the core proposition that access to public data is a service provided to the community to enable engagement, transparency, value creation and ongoing improvements in services. This new form of infrastructure will act as a test case for conceptualizing a comprehensive Data Utility program citywide in the future.

Appendix 2 identifies the composition of the Our Food Future leadership tables.

Expanding the knowledge of international Smart City best practices, developments in technology and data, innovation approaches, and providing considerations for sustainable future developments in circular food economy thinking, a Circular Food Expert Panel will seek advice from national and global leaders in these fields.

City/County Advisory Board of Management

The City/County Advisory Board of Management is designed to ensure public accountability in the coordination of a joint City/County initiative of this nature. Operating under the authority of Guelph City Council, this board will provide the strategic direction and oversight for the Our Food Future initiative as a whole. The Board will be responsible for monitoring the implementation/achievement of the circular food economy vision and objectives, addressing the ongoing sustainability of the initiative and resolving issues where required. Participants of the Advisory Board of Management will meet twice yearly.

Appointment of the Mayor as the City's Council representative on the Advisory Board of Management is requested at this time. Similarly, County of Wellington staff are proceeding with their regular processes to request the appointment of the Mayor of the Township of Centre Wellington on this shared committee.

The following City and County staff will provide support to the City/County Advisory Board of Management:

- CAO Scott Stewart, City of Guelph
- CAO Scott Wilson, County of Wellington
- Barb Swartzentruber, City of Guelph
- Mark Montgomery, County of Wellington
- Greg Clark, City of Guelph
- Ania Orlowska, City of Guelph

Activities for 2020:

Communications and Community Engagement

- Components include but are not limited to:
 - identifying key messages and a statement of the overall vision for engaging the community
 - establishing guiding principles for engagement and communications
 - completing an analysis of engagement and communications-related risks to the Our Food Future initiative and corresponding mitigation strategies
 - designing community and stakeholder engagement objectives, including broader objectives that span the entire initiative, and more detailed engagement objectives for Year 1
 - a stakeholder analysis and a strategy for managing various levels of stakeholder involvement in the initiative
 - compiling a fulsome communications toolkit that will include elements such as brand guidelines, an image library, protocols, video and multimedia resources, social sharing assets and guidelines etc.
 - establishing engagement tools and tactics tailored to the needs of stakeholders and the project objectives. Specifically, intentional strategies for engaging youth/schools, Indigenous communities, new Canadians, older adults, and the rural/farming communities
 - instituting a digital engagement strategy describing the community engagement hub and data dashboard
 - engagement monitoring, evaluation and reporting plan

Nutritious Food Workstream

- Commencing an assessment of neighbourhood food assets to determine which areas do or do not have access to healthy food so interventions can be considered and tested

Business Workstream

- Launching the Circular Food Economy iHub – hosting hackathons, design jams and challenges to bring businesses and researchers together to tackle food system challenges
 - In December 2019, one such event was held in collaboration with Agriculture and Agri-Food Canada (AAFC). AAFC's Regional Research Users Meeting brought researchers, businesses and academia together for a one day session to discuss advancements in food waste loss prevention. Speakers included City staff, initiative collaborators and AAFC officials. Innovation Guelph staff also facilitated a half-day session to discuss collaboration opportunities between researchers and businesses. 40 participants attended the event
- Launching the Harve\$t Impact Fund that will provide awards to businesses that demonstrates circular principles and providing seed funding to launch new collaborations and businesses
- Exploring the feasibility of circular food economy sustainability graduate certificate program at Conestoga College

Waste as a Resource Workstream

- Working with businesses to provide tools to reduce waste and realize cost savings and greenhouse gas reductions by altering practices
- City and County waste departments working together to acquire baseline data related to food waste generation at the household level, with the intent to evaluate

opportunities to collaborate on food waste reduction and diversion initiatives in the future

- Participating in a nation-wide awareness campaign highlighting the realities and repercussions of food waste

Cross-Functional Pilots/Projects

- Initiating demonstration projects within the community – e.g. the SEED’s upcycle kitchen taking surplus food and processing it into healthy, value added products (e.g. jams, sauces, etc.). These products can then be sold at sliding scale rates, creating greater access to a wider range of food products more affordably
- Commencing the newcomer pilot (a collaboration with the University of Guelph’s Centre for Urban Organic Farming) to leverage existing relationships to identify the food needs of new Canadians in one of Guelph’s lower income neighbourhoods, growing the food on the University of Guelph urban farm, and providing farming skills to newcomer women and youth
- Supporting a Food Waste project, led by the Recycling Council of Ontario, which will pilot a method and model to better manage edible food so it maintains and maximizes highest value, and optimize organics and packaging recycling within the institutional, commercial and industry sector
- Debuting a collaborative portal data utility where data can be shared in an open and transparent way
- Continuing to foster community based relationships and collaborations.
Examples include:
 - working with school boards to imbed the Our Food Future vision in curricula
 - providing placement opportunities to University students across the workstreams and Smart Cities office
 - expanding the SEED community market into the Guelph Y facility
- Our County collaborators will also develop their rural broadband access pilot to help connect the rural communities and create an on-farm pilot to test and showcase the benefits of digital agriculture

Financial Implications

The \$10 million grant from Infrastructure Canada is structured to allow for coverage of all expenses related to the establishment and execution of the Our Food Future initiative. Reporting requirements over the five years are in line with current practices at this City, as well collaborators will be expected to provide quarterly reporting of all financial activity to support this requirement.

One of the key deliverables of this initiative is to demonstrate the degree to which the \$10 million grant leverages additional investment within the community.

The majority of the funding from the grant will flow directly to the City’s collaborators, via Participant Contracts. Full financial reporting of their activities and progress will be provided to the City on a quarterly basis in order to ensure compliance with INFC requirements of the grant agreement.

In addition, information related to in-kind or ancillary projects that leverage the overall investment will be collected and shared as part of the quarterly Tier-1 public reporting.

Strategic Plan Alignment

The Our Food Future initiative specifically aligns with the Strategic Plan priority areas of Powering, Building and Sustaining our future.

Through Our Food Future, Guelph will become a global innovation leader with its “made-in-Guelph” circular economy. Two of the goals for Our Food Future include supporting local and regional economies through the creation of new circular food businesses /collaboration opportunities and increasing revenues by recognizing the value of waste. Through this work, innovation through collaborations will be encouraged and businesses opportunities fostered, all of which contribute directly to the [Powering our Future](#) priority area of the Strategic Plan.

Participants will seek strategic investments that nurture social well-being, and by increasing access to affordable, nutritious food, the City of Guelph will continue to build strong, vibrant, safe and healthy communities that promote resilience in the people who live here. This work therefore contributes directly to the [Building our Future](#) priority area of the Strategic Plan.

Further, efforts to reduce and reimagine food waste will continue the City’s commitment to care for the local environment which is directly supportive of the [Sustaining our Future](#) priority area of the Strategic Plan

This initiative also aligns with other City priorities:

- Creating a culture to drive innovation and forming a foundation of [Building Partnerships](#). With its four commitments, when realized, it will be easier for business:
 - Get to yes - working with the community using a solutions-oriented mindset
 - Providing the tools needed to ensure processes are clear and straightforward
 - Building the right team to get the job done
 - Listen, learn, lead – the City’s culture of continuous improvement
- Enhancing Guelph’s profile as the heart of the innovation corridor
 - The City is anchored by a rich tradition in agriculture, the expertise and world-class research facilities at the University Guelph, home to the Ontario Agricultural College, and a cluster of companies and government agencies engaged in research, innovation and commercialization in the sector.
- Completing the implementation of Prosperity 20Next and setting the groundwork for the City’s next 5 year economic development strategy
- Reaching the City’s bold sustainability goals
- Leadership in progressive waste programming and waste diversion
- Guelph’s [Community Plan](#) which outlined goals shared by residents, businesses and other stakeholders that require collective efforts to achieve environmental, economic/social resiliency and adaptation including a circular food system – all of which are integral to the Our Food Future Vision.

Departmental Approval

Financial Services

Legal Services

Project Management Office

Report Author

Cathy Kennedy, Manager, Smart Cities Office



Approved By

Barb Swartzentruber
Executive Director, Smart Cities Office
Office of the Chief Administrative
Officer
519-822-1260 extension 2255
cathy.kennedy@guelph.ca



Recommended By

Scott Stewart
Chief Administrative Officer
Office of the Chief Administrative
Officer
519-822-1260 extension 2221
scott.stewart@guelph.ca

Appendix 1

Collaborator Project Details

Alectra Gre&t Centre - \$150,000 (matched funding)

The data management plan includes the establishment of a Data Utility, similar in concept of public utilities that provide core infrastructure services, such as electricity and water. The concept of a Data Utility is gaining momentum around the world as more cities recognize the critical nature data represents in effective community engagement. A Data Utility will become a critical infrastructure service, responsible to support the requirements of Guelph-Wellington residents in an open and secure manner. However, providing secure, transparent access to data is only half of the role of the Data Utility. Equally important is integrating it with a solution/application development platform that will enable an innovation ecosystem for value-added services to be developed and monetized. The Data Utility will operate as a public trust, designed and governed according to the core proposition that access to public data is a service provided to the community to enable engagement, transparency, value creation and ongoing improvements in services. This will require the implementation of strict governance and security measures, aligned to the requirements of the individual data sources and designed for reliability/resilience. This new form of infrastructure will act as a test case for conceptualizing a comprehensive Data Utility program citywide in the future.

Provision Coalition: Business Tools and Services - \$548,000

- Project: Business tools and services
- Co-lead of Waste as a Resource Workstream. Membership includes:
 - City of Guelph (expertise from waste management and energy management departments), County of Wellington, Innovation Guelph, University of Guelph, Wellington Waterloo Community Foundations

This project will develop, curate and share a suite of tools, business diagnostics and services to help public organizations and businesses reinvent their processes and business models. This includes developing baseline data, measurement technologies to support evidence based interventions and decision making that increase sustainability and circular principles.

Dillon Consulting: Communications and Community Engagement Strategy - \$670,000

- Strategy and implementation components include but are not limited to:
 - identifying key messages and a statement of the overall vision for engaging the community
 - establishing guiding principles for engagement and communications
 - completing an analysis of engagement and communications-related risks to the Our Food Future initiative and corresponding mitigation strategies
 - designing community and stakeholder engagement objectives, including broader objectives that span the entire initiative, and more detailed engagement objectives for Year 1
 - a stakeholder analysis and a strategy for managing various levels of stakeholder involvement in the initiative
 - compiling a fulsome communications toolkit that will include elements such as brand guidelines, an image library, protocols, video and multimedia resources, social sharing assets and guidelines etc.

- establishing engagement tools and tactics tailored to the needs of stakeholders and the project objectives. Specifically, intentional strategies for engaging youth/schools, Indigenous communities, new Canadians, older adults, and the rural/farming communities
- instituting a digital engagement strategy describing the community engagement hub and data dashboard
- engagement monitoring, evaluation and reporting plan

County of Wellington: County based pilots/initiatives - \$845,000

- County Food Hub feasibility study, City/County collaboration on food waste reduction/diversion initiatives, Rural Broadband Access Pilot and Digital Agriculture Capacity-Building Adoption of an on-farm pilot
- Co-lead of Waste as a Resource Workstream. Membership includes:
 - City of Guelph (expertise from Solid Waste and Energy Management departments), Innovation Guelph, Provision Coalition, University of Guelph, Wellington Waterloo Community Foundations

This work will include conducting a feasibility study for County Food Hub, launching the Rural Broadband Access Pilot, launching Digital Agriculture Capacity Building & Adoption (on-farm pilot), and leveraging Guelph/Wellington Solid Waste Master Plan by exploring, developing, executing and evaluating opportunities to collaborate on food waste reduction and diversion initiatives.

\$600,000 has also been allocated to the City's Solid Waste Department for staffing and to support their work with the County to explore, develop, execute and evaluate opportunities to collaborate on food waste reduction and diversion initiatives.

Innovation Guelph: Circular Food Economy Innovation Hub (CFE iHub) - \$1,136,400

- Co-lead of Circular Business Workstream. Membership includes:
 - City of Guelph (expertise from the Business Development Enterprise department), County of Wellington, 10C, Business Centre Guelph-Wellington, Conestoga College, Guelph Chamber of Commerce, Launchit Minto, Ontario Agri-Food Technologies, the SEED University of Guelph, Wellington Waterloo Community Foundations

This "think and do" iHub will be a circular economy innovation engine for the region, helping entrepreneurs come together to tackle our most complex food challenges. It will serve as a hub for discovery, assessment and analysis of problems; ideation, user-design, prototyping and validation of solutions; and ongoing mentoring and acceleration of new circular food economy entities. It will create collaborations to re-invent local food systems and solve local food problems that are globally relevant. Anchoring the project will be the establishment and operation of collision activities that foster collaboration in the agri-tech, clean-tech, social innovation and other sectors that may contribute to the initiative's goals.

Wellington-Dufferin-Guelph Public Health: Assessing the Guelph-Wellington Food Environment and Circular Food Security and Health Action Plan - \$1,710,730

- Co-lead of Nutritious Food Workstream. Membership includes:
 - City of Guelph (expertise from the Community Investment department), County of Wellington, Guelph and Area Ontario Health Team, Guelph Neighbourhood Support

Coalition, North End Harvest Market, the SEED, Toward Common Ground, University of Guelph, Wellington Waterloo Community Foundations

- A) Utilizing on-the-ground research, surveying, GIS mapping and the results of Guelph Family Health study on the food environment, neighbourhood level access to healthy, nutritious food will be assessed, as well as behaviours related to food purchases and consumption. The data gathered will support the development an internet-based Dashboard. The Dashboard will provide access to baseline data regarding of the state of access to nutritious food and community assets. Data mapping and analysis of multiple datasets will identify access gaps, enabling us to establish targets, develop highly effective strategies and track these strategies across time. The information gathered will then be used as an evaluation or benchmarking tool.
- B) Informed by insights gathered by the Asset and Behaviour Mapping project, a Food Security and Health Action Plan will be developed to establish new intervention models, evidence-based policies and resource allocation decisions. Interventions will help influence behaviours related to food purchases and consumption, as well as attract the agri-food industry, community partners and businesses to areas with insufficient access to healthy nutritious and affordable food assets. The results will be effective investments in community-based programs and policies; greater physical and economic access to nutritious foods; well-informed and empowered residents; and, ultimately, improved population health outcomes.

10C Shared Space -The Harve\$t Impact Fund: - \$1,729,760

- Co-lead of Circular Business Workstream. Membership includes:
 - City of Guelph (expertise from the Business Development Enterprise department), County of Wellington, University of Guelph, the SEED, Innovation Guelph, Wellington Waterloo Community Foundations, Business Centre Guelph-Wellington, Launchit Minto, Conestoga College, Guelph Chamber of Commerce, Ontario Agri-Food Technologies

This expanded and connected local financial marketplace leverages granted funds to “de-risk” projects and grows institutional and venture capital opportunities. This circular fund and finance ecosystem will ensure the development/growth of a variety of types of businesses, support of social goals and enhanced success. The initial \$500,000 fund will enable new collaborations, support start-ups and facilitate innovations that apply circular ideas, data and technology to food problems. The Harve\$t Impact Fund will enable the sustainability of the Our Food Future initiative by supporting a pipeline of innovative data- and technology-driven businesses and collaborations, provide awards to circular establishments and seed new businesses.

Appendix 2

Composition of Leadership Tables

Organizations involved in the Program Delivery Table

10Carden
Conestoga College
County of Wellington
Guelph Neighbourhoods
Innovation Guelph
Ontario Agriculture Food Tech.
Provision Coalition
Toward Common Ground
The SEED
University of Guelph
Wellington Dufferin Guelph Public Health

Organizations involved in the Community Steering Table

10Carden
Conestoga College
County of Wellington
General Mills
Grand River Metis Council
Guelph Chamber of Commerce
Guelph Family Health Team
Innovation Guelph
LHIN
Maple Leaf Foods
OMAFRA
Ontario Agriculture Food Tech.
Ontario Federation of Agriculture
Poverty Task Force
Provision Coalition
Second Harvest
Toward Common Ground
The SEED
University of Guelph
YMCA/YWCA
Wellington Catholic District School Board
Wellington District School Boards

Appendix 2 Continued

Composition of Leadership Tables

Organizations involved in the Data/Tech Team

Alectra Utilities
County of Wellington
Innovation Guelph
Ontario Agriculture Food Tech.
Toward Common Ground
Upper Grand District School Board
University of Guelph
Wellington Dufferin Guelph Public Health
Wellington Waterloo Community Futures

Staff Report



To	Committee of the Whole
Service Area	Infrastructure, Development and Enterprise Services
Date	Monday, March 2, 2020
Subject	Dolime Community Engagement Results for Proposed Settlement Pathway
Report Number	IDE-2020-22

Recommendation

That the settlement pathway outlined in the report titled "Dolime Community Engagement Results for Proposed Settlement Pathway," dated March 2, 2020, be approved and staff be directed to take the first steps in implementing the settlement pathway.

Executive Summary

Purpose of Report

To present the findings of the public education and engagement program and to obtain Council approval to implement the proposed settlement pathway to protect Guelph's water.

Key Findings

Public feedback

The results of feedback from the nine-week Our Community, Our Water public education and engagement program indicate that there is support in the community to proceed with the proposed solution to protect Guelph's drinking water provided:

- environmental considerations are a focus of development planning, especially with respect to present wildlife and plants,
- development planning considers and mitigates increased traffic and is designed to be an accessible neighbourhood, and
- the City and taxpayers don't bear responsibility for risks and costs of land development and water safety.

Water management system

A preliminary technical assessment of alternatives for an on-site water management system, which will be undertaken if the settlement pathway proceeds, has shown that a program that involves management and monitoring of water levels in the quarry pond is a viable option which will achieve objectives for long term drinking water quality and quantity protection. This option will be subject to further study through an operational testing program. It is expected that new water supply capacity will be obtained from the water management strategy, referred to as Pond Level Management ("PLM") which will require new City infrastructure to be

constructed including the PLM pumping station. Therefore, a Class Environmental Assessment (EA) will be implemented as is required under the Ontario Environmental Assessment Act.

Planning Approvals

The quarry closure and redevelopment component of the settlement pathway is subject to a number of provincial and municipal restructuring and planning approvals. The provincial approval requirements will need to be discussed with the Province if Council decides to proceed with the proposed settlement pathway.

Financial Implications

Financial implications are subject to a confidential mediation process.

Report

Background

The Dolime Quarry, owned by River Valley Development (RVD), is an active quarry with rock extraction and water-taking permissions that the City believes presents current and long-term water quality and quantity concerns for the City's water supply. City staff have identified that risks arise from a breach in the Vinemount Aquitard (the layer of rock providing protection to the Gasport Aquifer that provides the majority of the City's water supply). The City has been engaged in a study, negotiation and confidential mediation process with RVD and the Ministry of Environment, Conservation and Parks (MECP) since 2014 with the aim of resolving the City's Appeal against MECP's approval of RVD's Permit to take Water (PTTW), currently before the Environment Review Tribunal (ERT).

Settlement discussions between RVD and the City reached a point where a potential settlement path emerged. This proposed pathway (the "settlement pathway") involves the following components: bring the Dolime quarry lands into the City's boundary, build a water management system at the quarry pond to protect Guelph's drinking water and potentially increase the amount of drinking water available in the municipal aquifer, close the quarry and redevelop the quarry lands for residential development. This settlement pathway would require the agreement of the County of Wellington and Township of Guelph-Eramosa and agreement and approvals from the Province

Public Engagement

Our Community, Our Water summary and results

The City launched **Our Community, Our Water** on October 1, 2019 through a media event, and a meeting with the Wellington Water Watchers. The public education and engagement program focused on sharing the proposed solution for addressing the City's concerns with drinking water quality and quantity related to operations at the Dolime quarry.

Limits to engagement

Limitations to the engagement process should be noted. First, it was not possible to provide a complete picture for how added land and a new residential development would be factored into the Province's growth plans for Guelph. This can only be addressed through discussions with the Province which would only occur if Council

approves moving ahead with the proposed solution (i.e. City staff need to be directed to work with the Province for approvals and planning). Second, capital and operational cost allocations to implement the proposed solution were not available. Final costs won't be available until after any required environmental assessments are completed.

Education and engagement

Our Community, Our Water took place over a nine-week period from October 1-November 30, 2019. The first four weeks of the program were focused on introducing the proposed solution to the community, both in the City and the Guelph-Eramosa Township. The City used a variety of traditional (print ads and media) and digital (video and web, screen and social media ads) to reach the community ([see link for detailed reporting](#)).

During the education phase, people were encouraged to submit questions via phone, email, social media and through the City's Have Your Say website. The City publically answered 16 questions through the Have Your Say site, and addressed other questions posed through social media, email and by phone.

The first open house was held at City Hall on October 29, 2019, with two sessions at 2-4 p.m. and 6-8 p.m. This open house officially launched the engagement phase of the program. Thirty-seven people attended the open house (both sessions) and provided feedback through one of three methods: on computers connected to the City's Have Your Say website, written on a community whiteboard, or filled out on paper.

A second open house was held at the Holiday Inn and Conference Centre on November 26, 2019, again with two sessions at 2-4 p.m. and 6-8 p.m. Forty-seven people attended the open house (both sessions) and provided feedback through one of three methods: on computers connected to the City's Have Your Say website, written on flipcharts, or filled out on paper.

The City also participated in or held a total of four pop-up sessions:

- Breezy Corners Breakfast hosted by Councillor James Gordon on October 31, 2019
- West End Recreation Centre information booth on November 9, 2019
- Old Quebec Street Mall information booth on November 16, 2019 (hosted to coincide with the arrival of attendees for a Guelph Storm Hockey Game)
- Ward 5 Townhall hosted by Councillors Cathy Downer and Leanne Piper on November 21, 2019

Through these events, City staff spoke with over 150 people who had the opportunity to talk to City staff, have questions answered, and provide comments in person, or online later at their convenience.

The three questions asked throughout engagement were:

- i. What do you think are the benefits of the proposed solution for our community?
- ii. What do you think are the challenges of the proposed solution for our community?

- iii. Council will consider water, financial, technical and planning aspects of the proposed solution in making their decision. What additional considerations are important to you in the context of this proposed solution?

These questions were aimed at understanding what our community values with respect to the proposed solution in terms of perceived benefits and risks, and whether there was a sense of benefit that outweighed risk or vice versa. The third question was aimed at ensuring Council understood what considerations were important to the community as they look to make a decision on whether to pursue the proposed solution.

November 30, 2019 was the last day for people to submit comments about the proposed solution.

Internal communications and engagement

The City also hosted internal opportunities for staff from other departments to learn about the proposed solution and ask questions or provide comments. All staff were invited to learn about the program and the program team held specific sessions for staff in Planning Services and Water Services (most directly impacted).

Outcomes

The City collected 135 written comments on the proposed solution from all sources. About 10 per cent of overall comments were out of scope of the engagement (including off-topic or unrelated comments) and were not included for further analysis. All comments are available in the [detailed report](#).

Overall, comments about the proposed solution were primarily neutral to positive (81 per cent).

Four key themes were brought forward from residents regarding the proposed solution:

1. Water protection: Most comments and inquiries received were related to, and supportive of, the need for water protection, particularly given the unique groundwater source the City uses for drinking water.
2. Environmental considerations: With respect to the development aspect of the proposed solution, some respondents identified concerns and had questions pertaining to plants and wildlife in the area and ensuring they are considered in the final plans.
3. Growth and long-term sustainability: A key theme voiced by respondents was related to Guelph's growth as a community, and spoke to the need for innovative and accessible neighbourhoods to support a potential increase in population and traffic.
4. Cost implementations to taxpayers: Some respondents believe that RVD should be responsible for any risks and costs associated with the redevelopment of the land and water safety, and the City and taxpayers should not be accountable for providing any funds.

More details on these key themes and the overall findings of the engagement are available in the [Our Community, Our Water engagement report](#).

Settlement Pathway

On-Site Water Management System Component

City staff have completed preliminary technical assessments of the proposed settlement pathway for the Dolime quarry. Initial technical assessment of alternatives for an on-site water management strategy has shown that a program called Pond Level Management (PLM) which involves management and monitoring of water levels in the quarry pond is a viable option which will achieve both long term drinking water quality protection and quantity objectives. This plan would be subject to further study through an operational testing program (OTP). It is expected that new water supply capacity will be obtained from PLM which will require new City infrastructure to be constructed including a pumping station. This and other technical water management system requirements will be confirmed as part of a Class Environmental Assessment (EA) will be implemented as is required under the Ontario Environmental Assessment Act.

The detailed technical requirements of pond level management will need to be obtained through an OTP which monitors groundwater levels. An operational testing program consisting of an expanded data gathering, monitoring and verification program, conducted over several years, is now needed to:

- validate effectiveness of PLM;
- provide an accurate estimate of the maximum, sustainable water available to the City's water supply wells within the southwest quadrant under PLM;
- establish a final post-closure design and contingency program for PLM; and
- finalize the cost estimates for PLM.

Quarry Redevelopment Component

One of the components of the proposed settlement pathway is the anticipated planning approval process for the redevelopment of the quarry lands.

It should be emphasized that this component of the settlement pathway will require approvals that are not within the decision-making authority of the City including provincial approvals as well as approval of the Councils for both the County of Wellington and Township of Guelph Eramosa. Consultation has been carried out with all three of these government bodies.

Planning approvals will involve public engagement.

Financial Implications

Financial implications are subject to a confidential mediation process.

Consultations

Finance - James Krauter, Deputy Treasurer/Manager, Taxation Revenue

Legal, Realty and Court Services - Christopher Cooper, General Manager/City Solicitor

Corporate Communications and Customer Service - Tara Sprigg, General Manager

Strategic Plan Alignment

The recommendations in this report align with Sustaining our Future as the recommendations will directly lead to protecting Guelph's groundwater – the

drinking water supply for residents and businesses. The recommendations also support Building our Future as an investment in infrastructure will be required.

Attachments

None

Departmental Approval

Jennifer Rose, General Manager, Environmental Services

Report Author

Laura Mousseau, Manager, Corporate Communications

Wayne Galliher, Division Manager, Water Services

Jennifer Rose, General Manager, Environmental Services



Approved By

Jennifer Rose, B.Sc., MA
General Manager, Environment
Services
Infrastructure, Development and
Enterprise Services
519-822-1260 extension 3599
jennifer.rose@guelph.ca



Recommended By

Kealy Dedman, P.Eng., MPA
Deputy Chief Administrative Officer
Infrastructure, Development and
Enterprise Services
519-822-1260 extension 2248
kealy.dedman@guelph.ca

Staff Report



To	Committee of the Whole
Service Area	Infrastructure, Development and Enterprise Services
Date	Monday, March 2, 2020
Subject	2019 Water Services' Annual and Summary Report
Report Number	IDE-2020-24

Recommendation

1. That Guelph City Council approves the 2019 Water Services' Annual and Summary Report.
 2. That Guelph City Council endorse the updated Organizational Structure of the Operational Plan as defined in section o) of the 2019 Water Services' Annual and Summary Report and shown in Attachments 2 and 3.
-

Executive Summary

Purpose of Report

The Water Services' Annual and Summary Report (the Report) is a compilation of information that demonstrates to the water system Owner (City Council) and all stakeholders the ongoing delivery of an adequate and safe supply of drinking water to customers serviced by the City of Guelph Drinking Water System (Guelph DWS) and the Gazer Mooney Subdivision Distribution System (Gazer Mooney SDS, located in the Township of Guelph/Eramosa).

This report satisfies the regulatory requirements of the Safe Drinking Water Act (SDWA) including the Drinking Water Quality Management Standard (DWQMS); Section 81 of the Clean Water Act (CWA); and regulatory reporting required under O. Reg. 170/03 – Section 11 and Schedule 22.

Through the report, system owners, senior leaders, and customers are informed of the performance of Water Services for the period of January 1 to December 31, 2019.

Key Findings

In 2019, Water Services maintained its commitment of providing consumers in the City of Guelph and the Gazer Mooney subdivision in Guelph/Eramosa Township with a safe, consistent supply of high quality drinking water while meeting or exceeding, and continually improving on legal, operational and quality management system requirements.

Financial Implications

All financial implications of the Report were included as part the Council approved 2019 Water Services Non-Tax Operating and Capital Budgets.

Report

In satisfying the requirements of Safe Drinking Water Act (2002), Water Services is pleased to present the 2019 Water Services Annual and Summary Report for review and approval by the system Owner (City Council). Significant highlights of the report are described below. For Council and public reference, the complete report is available for review at guelph.ca/living/environment/water/drinking-water/water-testing/ or by request at 29 Waterworks Place, Guelph.

Water Services works closely with the Ministry of the Environment, Conservation and Parks and Wellington Dufferin Guelph Public Health to improve the drinking water system and ensure safe drinking water

Inspection

The drinking water system is routinely inspected annually by the Ministry of the Environment, Conservation and Parks (MECP) and externally audited by an MECP approved third-party auditor. Staff also perform required annual internal audits. Through the annual MECP inspection, there were four non-compliances identified in the Guelph Drinking Water System (Guelph DWS) and no non-conformances identified in the Gazer Mooney Subdivision Distribution Subsystem (Gazer Mooney SDS). Please note that none of the issues of non-compliance put the drinking water system or public health at risk. Please refer for section a) Incidents of Regulatory Non-Compliance in the Report for more information.

Water Services has corrected all issues of non-compliance identified through the inspection to the satisfaction of the drinking water inspector. Through the root-cause analysis process, Water Services initiates continual improvement measures and implements new policies and procedures to prevent such issues of non-compliance from reoccurring.

In the 2018-2019 MECP Inspection, a score of 100% was achieved for the Gazer Mooney SDS and 89.42% for the Guelph DWS.

Audits

Through the 2019 Drinking Water Quality Management Standard Internal and Third-Party Audits, 41 process audits were completed to confirm that Water Services is meeting the requirements of the Standard. During the third-party audit, there were two minor non-conformances identified by the auditor. One was around Element 5 – Document and Records Control and one around Element 13 – Essential Supplies and Services.

In both minor non-conformances, a root-cause analysis was completed to identify corrective and preventative actions to ensure that the issues will not occur again. In both cases, corrective and preventative actions were presented and accepted by the auditor. Both non-conformances are closed and accreditation with the DWQMS Version 2.0 standard is maintained by Water Services.

Section e) Internal and Third-Party Audit Results of the report provides more detail on the internal and third-party audits completed in 2019.

Adverse Water Quality Incidents

In 2019, there were three Adverse Water Quality Incidents (AWQIs) in the Guelph DWS. More information can be found in section b) Adverse Water Quality Incidents

of the report. Resampling results were communicated to Wellington Dufferin Guelph Public Health (WDGPH) and the AWQIs are closed.

During implementation of an enhanced Dead-End-Flushing Program to improve water quality to customers, an AWQI of a low chlorine residual in the distribution system was experienced at a hydrant, located at the end of an extension of watermain awaiting customers as part of future development. Results were communicated to WDGPH and the MECP. The watermain was flushed until a residual of 0.64mg/L was achieved. This hydrant is now part of the regular flushing program and has scheduled flushings to maintain acceptable secondary disinfection free chlorine residuals. The AWQI is closed.

There was one AWQI reported in the Gazer Mooney SDS. Resamples results were communicated to WDGPH and the AWQIs are closed.

We are ensuring accountability by following up on action items

Water Services conducts an annual Management Review, as required under the DWQMS. Management review meetings were conducted on January 25, 2019 and on January 29, 2020. Through the management review process, deficiencies are noted and reported to the Owner (Council). Water Services works diligently to ensure that any deficiencies are corrected and makes changes to policies and procedures to prevent further deficiencies. For more information, please see section i) of the report.

Collaborative Approach

A collaborative approach between Water Services and other City departments is important to deliver safe drinking water to the residents and businesses of Guelph and supports Building our Future and Sustaining our Future Strategic Priorities

- Water Services and Planning and Building Services monitor Critical Control Points (CCP) and Limits

If there are any deviations to CCPs, Water Services and Building Services undertake quick actions to resolve the issue. There was one deviation from the CCPs in 2019 and is discussed in section c) of the report.

- Water Services identifies and assesses risks to the drinking water system

An annual risk assessment is conducted by Water Services in order to mitigate or plan for hazards and hazardous events that may affect the drinking water system. Water Services presented the full results of the risk assessment to Council in March 2019. More information on the 2019 risk assessment process can be found in section d) of the report.

- Water Services prepares for emergencies

Through annual emergency response training and testing, Water Services maintains a reasonable readiness to deal with emergencies and abnormal events. All Water Services staff participate in an annual emergency test exercise along with participation from staff from the MECP, WDGPH, Corporate Communications and the Fire Department. Building relationships and defining roles and responsibilities with other government agencies prior to an emergency

is vital to ensuring an effective emergency response during actual emergency events.

Throughout 2019, Water Services responded to three actual emergencies, which are discussed further in section f) of the report.

- Water Services monitors water quality through a robust sampling program

Under the Safe Drinking Water Act, municipalities are required to monitor both the raw and treated quality of the source water supplied. This monitoring is performed for both regulatory compliance and due diligence and is expected to identify any changes within the treated water, as well as, in raw source waters.

In 2019, there were 2,658 raw (untreated) water bacteriological analyses (E. coli, Total Coliform and Background) done in the Guelph DWS. A total of 10,109 bacteriological sampling analyses (E.coli, Total Coliform, Background, HPC, and Free Chlorine Residual) were done on the treated water (both at the Point of Entry and in the Distribution system) in the Guelph DWS in 2019.

In the Gazer Mooney SDS, 573 distribution analyses (E. coli, Total Coliform, HPC, Background and Free Chlorine Residual) were completed in 2019. Of the total 13,250 analyses, 0 were outside of the Ontario Drinking Water Quality Standard criteria.

Section h) Raw and Treated Water Quality and Drinking Water Quality Trends provides further details regarding further sampling (quarterly, annual 3-year, 5-year) completed in 2019 for the Guelph DWS and the Gazer Mooney SDS.

- Customer service – ensuring consumer satisfaction

Water Services fielded 941 customer calls in 2019 that required follow up from Water Services staff. This was down from 1,027 calls received in 2018. A breakdown of the calls received can be found in section l) of the report.

By way of vote by its customers, Water Services received the Diamond Award for Best Water Delivery/Supply in the 2019 Guelph Mercury Tribune Readers' Choice.

- Listening to Water Services Staff and implementing their suggestions

Water Services values the contribution of its employees and works to implement suggestions for improvement. In 2019, Water Services staff contributed 55 suggestions to improve on programs, processes, the quality management system, or the drinking water system. Section p) and Appendix H of the report outlines the staff suggestions in more detail.

Improvements to the Drinking Water System

Improvements to the Drinking Water system show a responsible approach to maintaining water infrastructure.

Section g) of the report discusses System Maintenance and Updates made to the drinking water system in 2019. Some highlights of infrastructure maintenance completed include:

- Repair of 58 watermain breaks in 2019, which was 20% less than those experienced in 2018.

- 5 below grade well inspections, 3 well rehabilitations and 5 contact chamber/reservoir inspections were completed in 2019.
- 342 km of metallic watermain were proactively surveyed for the presence of distribution system leaks. 33 possible leaks were identified through this survey, with 28 confirmed leaks repaired by Water Services staff.
- Inspection of all distribution system hydrants with maintenance completed on 301 hydrants resulting from inspections performed to maintain these important assets in a fit state of repair.
- The valve exercising program identifies required repairs and replacements of valves. Maintenance was completed on 54 valves in 2019 and 20 valves were replaced.
- 8,597 infrastructure locate requests were completed in 2019 to protect water infrastructure during local construction activities.
- Infrastructure planning, design and construction oversight of the extension of Drinking Water System linear assets and customer servicing requests by Engineering and Transportation Services, including the installation of 600m of new City owned watermain in 2019.

Water Services works with home owners to “Get the Lead Out” of the drinking water system and has replaced 703 lead services lines to date. A grant program is available to encourage replacement of privately owned lead service lines by reducing the financial burden to property owners. In 2019, 9 privately owned lead service lines were replaced through the grant program.

More information can be found in section g) Operational Performance and Statistics of the report.

Planning for the Future

Water Services is planning for the future – maintaining the drinking water system and the quality management system

Identifying resources needed to maintain the drinking water system and the quality management system shows a proactive approach to water utility planning and is discussed in section m) of the report. Operational challenges Water Services is experiencing continue to drive the need for additional resources, such as:

- a changing staff profile, with experienced staff that have retired or are due for retirement in the next few years;
- aging city infrastructure requiring increased budget considerations;
- increased demands of future growth leading to a potential source water supply shortfall requiring increased capital project and budget considerations;
- distribution system issues, such as dead-ends, frozen city infrastructure, larger infrastructure failures, aging water meters and watermains, and watermains located on easements; and
- private property issues, such as substandard water services.

Working with Engineering and Transportation Services, asset management plans completed by Corporate Asset Management and Water Services staff work to ensure that the drinking water system is maintained in a fit state of repair. Please refer to Section n) of the report for further information.

In conjunction with Engineering and Transportation Services, Water Services establishes a list of priority projects that need to be completed in the distribution

system. This is based on infrastructure conditions, inventory age, the capital asset prioritization system and system criticality.

The Water Supply Master Plan and Water and Wastewater Linear Servicing Master Plan define preferred water supply servicing alternatives in meeting the needs of existing customers and future community growth.

A 10-year capital forecast for Facility and Water Plant Upgrades was endorsed by Council as part of the 2020 Capital Budget to address a backlog in infrastructure investment required to sustain operation of the City's critical water supply facilities and processes in a fit state of repair.

In 2019, nine key capital projects have been initiated or completed. Section n) describes these capital projects in further detail.

Applicable Legislation and Changes

Water Services stays current on applicable legislation as well as changes that could affect the drinking water system or quality management system.

Appendix E of the report includes a summary of legislative and regulatory updates from January 1, 2019 to December 31, 2019.

The Municipal Drinking Water License was renewed in 2019, which includes a council approved Financial Plan and Operational Plan. There were two Permits to Take Water (PTTW) that were renewed in 2019 and one PTTW is scheduled for renewal in 2020.

A total of 33 employees at Water Services are certified to operate the drinking water system, including 17 Water Distribution Operators and 11 Water Treatment Operators.

Water Services continues to implement a proactive approach to the DWQMS by maintaining accreditation, identifying ways to improve the drinking water system, involving staff in the quality management system, ensuring any deficiencies are responded to and corrected quickly, collaborating with other municipalities in system improvements and continuing advancements to emergency prevention and preparedness plans.

Section k) of the report provides further details on how Water Services stays current with legislation and changes to the drinking water system and quality management system.

On an ongoing basis, the Quality Management Specialist with the help of additional Water Services Staff updates the Operational Plan. The Operational Plan was presented to Council on January 14, 2019 for endorsement. Updates to the Operational Plan were communicated to Water Services management and staff via email on September 10, 2019.

In maintaining an up-to-date Operational Plan, Water Services is seeking Council's endorsement of the revised Organizational Structure, with the current and new proposed structures included as attachment 2 and 3 to this report, respectively. Update to the Organization Structure includes formal identification of the Owner Representative, the General Manager of Environmental Services, to identify the person who is ultimately responsible and accountable for informing the Owner (Council) of items related to the drinking water system. Corresponding revisions to

QMS 09 Organizational Structure, Roles, Responsibilities & Authorities are made as well, including specifying that Council alone is the Owner.

Notable updates to the Operational Plan are presented in section o) of the report.

Water Services pumped 17.2 billion liters of water in 2019

Water Services processed 17,160,654 cubic metres (17.2 billion litres) of water to the distribution system in 2019, equivalent to 6,864 Olympic-sized swimming pools.

The average daily water demand was 47,015 cubic meters (47.0 million litres) per day.

The maximum day production of water in 2019 was 58,411 cubic metres (58.4 million litres) per day and occurred on November 30, 2019 due to a large watermain break, which contributed to the high amount of water pumped that day.

The minimum day production of water in the same time period was 32,477 cubic metres (32.5 million litres) per day and occurred on December 26, 2019. Please see section g) and Appendix C of the report for more information.

Water Services is a leader in water conservation and efficiency

As one of Canada's largest communities reliant on a finite groundwater supply for our drinking water needs, our ability to reclaim water and wastewater servicing capacity through conservation initiatives offers numerous benefits to our community and local ecosystem.

The 2016 Water Efficiency Strategy identified a 10-year savings goal of 6,265 cubic metres per day between 2017 and 2026. The total water savings achieved for 2019 was 658.5 cubic metres per day, which surpassed the 2019 target set in the Water Efficiency Strategy.

In 2019, 984 rebate applications and audits were completed and 38 incentives for municipal and business upgrades were processed.

The various education and outreach programming completed in 2019 provided information about Guelph's water supply, water conservation and efficiency to over 12,000 participants.

The Guelph Water Wagon, now in its seventh year of providing tap water to attendees of large, outdoor community events, provided 22,332 litres of water to event goers. Further, it provides Water Services an excellent opportunity to engage the public on:

- the value of Guelph's water;
- the need for water conservation and source protection;
- answer questions from the public around municipal tap water or Water Services programs and studies; and
- promote tap water consumption over other beverages.

More information around Water Services' Water Conservation and Efficiency Program can be found in Appendix I.

Source Water Protection protects your drinking water from contamination

Source Protection staff at Water Services continue to identify and mitigate current and future threats to drinking water sources, as required by the Clean Water Act,

2006. The 2010 Assessment Report identified a total of 942 threats to the drinking water source within the City of Guelph. Threat verification has been completed for 409 of the sites, which has resulted in 12 Risk Management Plans and an additional 4 currently in progress.

The Clean Water Act requires a section 59 Notice for development within a Wellhead Protection Area. Source Protection staff reviewed 361 applications and issued 167 Section 59 Notices in 2019.

The City of Guelph is responsible for implementing Source Protection Policies under the Grand River Source Protection Plan. There are 48 identified policies that are the responsibility of the City of Guelph to implement. Of these 48, 28 have been fully implemented with another 18 that the City has made progress on.

In 2019, the City of Guelph' Source Water Protection program was awarded the American Water Works Association Exemplary Source Water Protection Award.

The full Risk Management Official Update can be found in Appendix K of the report.

Financial Implications

All financial implications of the Report were included as part the Council approved 2019 Water Services Non-Tax Operating and Capital Budgets.

Consultations

Departmental consultation completed in support of the 2019 Water Services Annual and Summary Report, include:

- Engineering and Transportation Services;
- Planning and Building Services;
- Legal, Realty and Court Services; and
- Finance Services – Teisha Colley-Balgrave

Strategic Plan Alignment

This report is aligned with the Strategic Plan Priorities of Sustaining our Future by providing water in a sustainable way, Building our Future by maintaining and replacing water assets and Working Together For Our Future through our collaborative approach to the delivery of water services.

Attachments

Attachment-1 Annual & Summary Water Services Report – 2019

The full report is available on the City's website at:

guelph.ca/living/environment/water/drinking-water/water-testing/

Attachment-2 QMS 09-01 Organizational Structure – 2019-08-19 (old)

Attachement-3 QMS 09-01 Organizational Structure – 2020-01-20 (new)

Departmental Approval

Wayne Galliher, C.E.T., Division Manager, Water Services

Report Authors

Amy Martin, Quality Management Specialist, Water Services

John-Paul Palmer, Water Compliance Specialist, Water Services

Emily Stahl, Manager, Technical Services, Water Services



Approved By

Jennifer Rose, B.Sc., M.A.

General Manager, Environmental
Services

Infrastructure, Development and
Enterprise Services

519-822-1260 extension 3599

jennifer.rose@guelph.ca



Recommended By

Kealy Dedman, P.Eng., MPA

Deputy Chief Administrative Officer
Infrastructure, Development and
Enterprise Services

519-822-1260 extension 2248

kealy.dedman@guelph.ca

2019 Annual and Summary Report

January 1 to December 31, 2019

Guelph Drinking Water System

Corporation of the City of Guelph

Gazer Mooney Subdivision Distribution System

Township of Guelph/Eramosa



Water Services

Environmental Services Department

Last Revision: January 29, 2020

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.

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Executive Summary

The purpose of this report is to provide information to system owners and stakeholders to satisfy the regulatory requirements of the Safe Drinking Water Act (SDWA) including the Drinking Water Quality Management Standard (DWQMS); Section 81 of the Clean Water Act (CWA); and regulatory reporting required under O. Reg. 170/03 - Section 11 and Schedule 22.

This report is a compilation of information that helps to demonstrate the ongoing provision of a safe, consistent supply of high quality drinking water to customers located within the City of Guelph and the Gazer Mooney Subdivision (located in the Township of Guelph/Eramosa).

Water Services is a municipally-owned and operated water utility, established in 1879. The Guelph Drinking Water System (Guelph DWS) consists of water supply and treatment facilities and a water distribution system. The Guelph DWS is a Class II Water Treatment Subsystem and Class IV Water Distribution Subsystem.

The Gazer Mooney Subdivision Distribution System (Gazer Mooney SDS) is a Class I Distribution System supplied with water from the Guelph DWS. Guelph Water Services is the Operating Authority for this system owned by Guelph/Eramosa Township.

Both the Guelph DWS and the Gazer Mooney SDS are required to comply with the Safe Drinking Water Act (SDWA) and other regulations as well as requirements contained in Permits to Take Water (PTTW), Municipal Drinking Water Licences (MDWL), and Drinking Water Works Permits (DWWP). Having met the quality management system requirements of the SDWA, Guelph Water Services is an accredited Operating Authority with an up-to-date Operational Plan (OP). The OP is available upon request from Guelph Water Services.

The source of Guelph's drinking water is a series of 21 operational groundwater wells and a shallow groundwater collector system. These sources consists primarily of true groundwater sources, with some "groundwater under the direct influence of surface water with effective in-situ filtration" (GUDI-WEF) sources (Carter 1, Carter 2, Arkell 1, Arkell 15 and the Arkell Springs Glen Collector System).

The water system is operated to meet daily, seasonal, and other operational demands (including fire demands) with various combinations of supply sources in operation at any given time. A total of 17,160,654 cubic meters (17.2 billion litres) of water was treated and pumped to the system in 2019. The average daily water demand was 47,015 cubic metres (47.0 million litres). The maximum daily production of water in 2019 was 58,441 cubic metres (58.4 million litres) and occurred on November 30, 2019. A large watermain break occurred on this day, resulting in an increased amount of water pumped. Please see the

Results of Emergency Response Testing section for more information. The minimum daily production of water in the same time period was 32,477 cubic metres (32.5 million litres) and occurred on December 26, 2019.

All water provided to the Guelph Drinking Water System and the Gazer Mooney Subdivision Distribution System was treated with sodium hypochlorite (for chlorine disinfection) with some sources also using UV treatment, two sites using sodium silicate for dissolved iron and manganese sequestering and one site using green-sand filtration for manganese removal. All of the water supplied was continually tested and met all regulatory standards. City of Guelph Water Services maintained the drinking water system in a fit state of repair and followed best industry practices during the repair and maintenance of the system.

The City of Guelph has approximately 44,000 fully metered water service connections, 557.3 kilometres of underground watermains, and a population of approximately 131,794¹. The Gazer Mooney Subdivision has approximately 72 fully metered water service connections, 2 kilometres of underground watermains, and an approximate population of 200 people.

As the Operating Authority for both the Guelph DWS and Gazer Mooney SDS, Guelph Water Services is annually inspected by the Ministry of the Environment, Conservation and Parks (MECP) for compliance with regulatory requirements. There were four incidents of non-compliance associated with the Guelph DWS in 2019; the Gazer Mooney SDS had no incidents of non-compliance. Through the 2018-2019 MECP inspection, Water Services received a 89.42% score for the Guelph DWS and a 100% score for the Gazer Mooney SDS.

In 2019, Guelph Water Services reported three Adverse Water Quality Incidents (AWQIs) in the Guelph Drinking Water System – please refer to section b) Adverse Water Quality Incidents.

In conjunction with the Wellington-Dufferin-Guelph Public Health (WDGPH) and the MECP, all appropriate corrective actions and required reporting were completed with no health-based issues for the AQWIs.

There was one AWQI in the Gazer Mooney Subdivision Distribution System in 2019. Please refer to section b) Adverse Water Quality Incidents, Table 2 for a description of the AWQI. In conjunction with the MECP and WDGPH all appropriate corrective actions and required reporting were completed with no health-based issues stemming from these AWQIs.

¹ Statistics Canada, 2016 Census of Population.

Water Services' risk assessment updates, emergency response testing, internal and external audits help facilitate continual improvement of Water Services' processes and programs through implementation of corrective actions.

Water Services continues to implement:

- Recommendations of the 2016 Water Efficiency Strategy.
- Source water protection based on a MECP approved Source Water Protection Plan.
- Arkell Springs Forest Stewardship Project investments (to protect the Arkell Wellfield's source water quality).
- The Lead Reduction Plan in accordance with the regulatory relief provisions of the SDWA.
- Facility asset management and infrastructure reviews to optimize priority projects.
- A robust backflow prevention program overseeing 2,879 properties with 6,790 backflow prevention devices installed.

Details of ongoing and emerging water quality, supply/treatment, and distribution initiatives are outlined in section h) of this report and include successful programs related to: water conservation and efficiency, Arkell Springs forest stewardship, source water protection, lead reduction and frozen services prevention and monitoring.

The City has completed this Annual & Summary Report to satisfy the regulatory requirements of the Safe Drinking Water Act, O. Reg. 170/03 (Section 11 and Schedule 22). For more information please contact Guelph Water Services at (519) 837-5627 or waterservices@guelph.ca.

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Purpose

The purpose of this report is to provide information to several stakeholders and to satisfy the regulatory requirements of the Safe Drinking Water Act (SDWA) including the Drinking Water Quality Management Standard (DWQMS), Clean Water Act (CWA) and regulatory reporting required under O. Reg. 170/03 - Section 11 and Schedule 22. The report is a compilation of information that helps to demonstrate the ongoing provision of a safe, consistent supply of high quality drinking water to customers located within the City of Guelph and the Gazer Mooney Subdivision, located in the Township of Guelph/Eramosa.

Scope

This Water Services Annual and Summary Report includes information from both the **Guelph Drinking Water System** and the **Gazer Mooney Subdivision Distribution System** for the period of January 1 to December 31, 2019, unless otherwise noted. The information is required to be reported to the following:

- the Drinking Water System Owners:
 - Guelph City Council, Chief Administrative Officer (CAO) and Deputy CAO – Infrastructure, Development and Enterprise;
 - Township of Guelph Eramosa (Council and CAO);
- Senior officials of Guelph Water Services and Township of Guelph/Eramosa; and
- the general public and interested stakeholders.

This report satisfies the requirements of both the Safe Drinking Water Act (SDWA) and Ontario Regulation 170/03:

Section 11, Annual Reports which includes:

- a brief description of the drinking water systems;
- a list of water treatment chemicals used;
- a summary of the most recent water test results required under O. Reg. 170/03 or an approval, Municipal Drinking Water Licence (MDWL) or order;
- a summary of adverse test results and other issues reported to the Ministry of the Environment, Conservation and Parks (MECP) including corrective actions taken;
- a description of major expenses incurred to install, repair or replace required equipment; and
- the locations where this report is available for inspection.

Schedule 22, Summary Report which includes:

- list the requirements of the Safe Drinking Water Act, the regulations, the system's approval, Drinking Water Works Permit (DWWP), MDWL, and any orders applicable to the system that were not met at any time during the period covered by the report;
- for each requirement that was not met, the duration of the failure and the measures that were taken to correct the failure;
- a summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows; and
- a comparison of this information to the rated capacity and flow rates approved in the system's approval, DWWP and/or MDWL.

This report satisfies applicable requirements for both the Guelph Drinking Water System and the Gazer Mooney Subdivision Distribution System.

A copy of this report is available for viewing at:

- **City of Guelph Water Services**, 29 Waterworks Place, Guelph;
- **Township of Guelph/Eramosa**, 8348 Wellington Rd. 124, Rockwood; and
- **Online** at guelph.ca/water.

Any inquiries can be made to:

- City of Guelph Water Services by e-mailing waterservices@guelph.ca or by calling 519-837-5627.
- Township of Guelph/Eramosa Public Works – Water / Wastewater by e-mailing general@get.on.ca or by calling 519-856-9596.

Notice

Please note that every reasonable effort is made to ensure the accuracy of this report. This report is published with the best available information at the time of publication. In the event that errors or omissions occur, the online report will be updated. Please refer to the online version of the report for the most current version.

Please note that some hyperlinks in the document are linked to Guelph's electronic document management system (EDMS), which is available for internal City use only.

Systems Overview

Guelph Drinking Water System

Water Services at the City of Guelph is committed to providing consumers with a safe, consistent supply of high quality drinking water while meeting or exceeding, and continually improving on legal, operational and quality management system requirements. Water Services strives to provide reliable and cost-effective water treatment and distribution systems for the safe production and delivery of consistently high quality water. Established in 1879, Water Services and is a municipally-owned and operated water utility.

The Guelph Drinking Water System is classified as a Class II Water Treatment Subsystem and a Class IV Water Distribution Subsystem. All necessary licences have been obtained by staff to operate the Guelph Drinking Water System. As of December 31, 2019 thirty-three team members held drinking water certificates to operate and maintain the water system.

In 2019, Water Services maintained full scope accreditation to the Drinking Water Quality Management Standard (DWQMS) Version 2.0 after a successful on-site verification audit, conducted by the third-party accreditation body - NSF International Strategic Registrations. This full accreditation satisfies part of the requirements under the Municipal Drinking Water Licensing Program.

The distribution system (including watermains, valves, fire hydrants, services, and meters) serves a population of approximately 131,794² within the City of Guelph. All new system components meet NSF 61³ requirements or approved equivalents and are installed and maintained in accordance with approved industry standards. Water system customers are fully metered and billed in accordance with the Water and Wastewater Customer Rates and Charges by-law.

The Guelph Drinking Water System distribution system is comprised of the following infrastructure:

- 6.38 kilometres of 900-1,050 mm diameter water supply aqueduct;
- five underground storage reservoirs with a combined approximate capacity of 48,000 cubic metres (48 million litres);

² Statistics Canada, 2016 Census of Population.

³ NSF/ANSI Standard 61: Drinking Water System Components - Health Effects

- three water towers with a combined approximate capacity of 11,200 cubic metres (11.2 million litres);
- 557.3 kilometres of buried watermain with a diameter < 900 mm;
- 4,286 watermain valves;
- 2,809 fire hydrants; and
- approximately 44,000 water services and water meters.

The source of Guelph's drinking water is a series of 21 operational groundwater wells and a shallow groundwater collector system. The drinking water sources consist primarily of true groundwater, with some "groundwater under the direct influence of surface water with effective in-situ filtration" (GUDI-WEF) sources. The GUDI-WEF sources include: Carter Well 1 and 2; Arkell 1; Arkell 15; and the Arkell Springs Glen Collector System.

The Guelph Drinking Water System uses 12 per cent Sodium Hypochlorite (that is NSF 60⁴ certified) for primary disinfection for the following 11 sources:

- Downey Well
- Burke Well
- Park Well 1 and 2
- Emma Well
- Dean Well
- University Well
- Queensdale Well
- Helmar Well
- Calico Well
- Water Street Well (UV treatment available on site)

12 per cent Sodium Hypochlorite along with ultraviolet light treatment is used as part of a multi-barrier primary disinfection for the following ten sources:

- Arkell Wells 1, 6, 7, 8, 14 and 15
- Arkell Springs Glen Collector System
- Carter Wells 1 and 2
- Membro Well

NSF 60-certified Sodium Silicate, used for aesthetic purposes to sequester dissolved iron and manganese is also used at Helmar Well and Queensdale Well.

⁴ NSF/ANSI Standard 60: Drinking Water Treatment Chemicals - Health Effects

In total, Water Services operates and maintains 31 facilities.

The replacement cost of the Guelph Drinking Water System is estimated to be \$620.3 million or approximately \$4,578 per capita (2019, based on 2017 projected population).

The Guelph Drinking Water System operations are funded directly from the sale of water, with minor additional funding through government grant programs. Property taxes are not used to fund the operation, maintenance or capital renewal of the system.

A total of 17,160,654 cubic meters (17.2 billion litres) of water was treated and pumped to the system in 2019. The average daily water demand was 47,015 cubic metres (47.0 million litres). The maximum daily production of water in 2019 was 58,441 cubic metres (58.4 million litres) and occurred on Nov 30, 2019. The minimum daily production of water in the same time period was 32,477 cubic metres (32.5 million litres) and occurred on December 26, 2019.

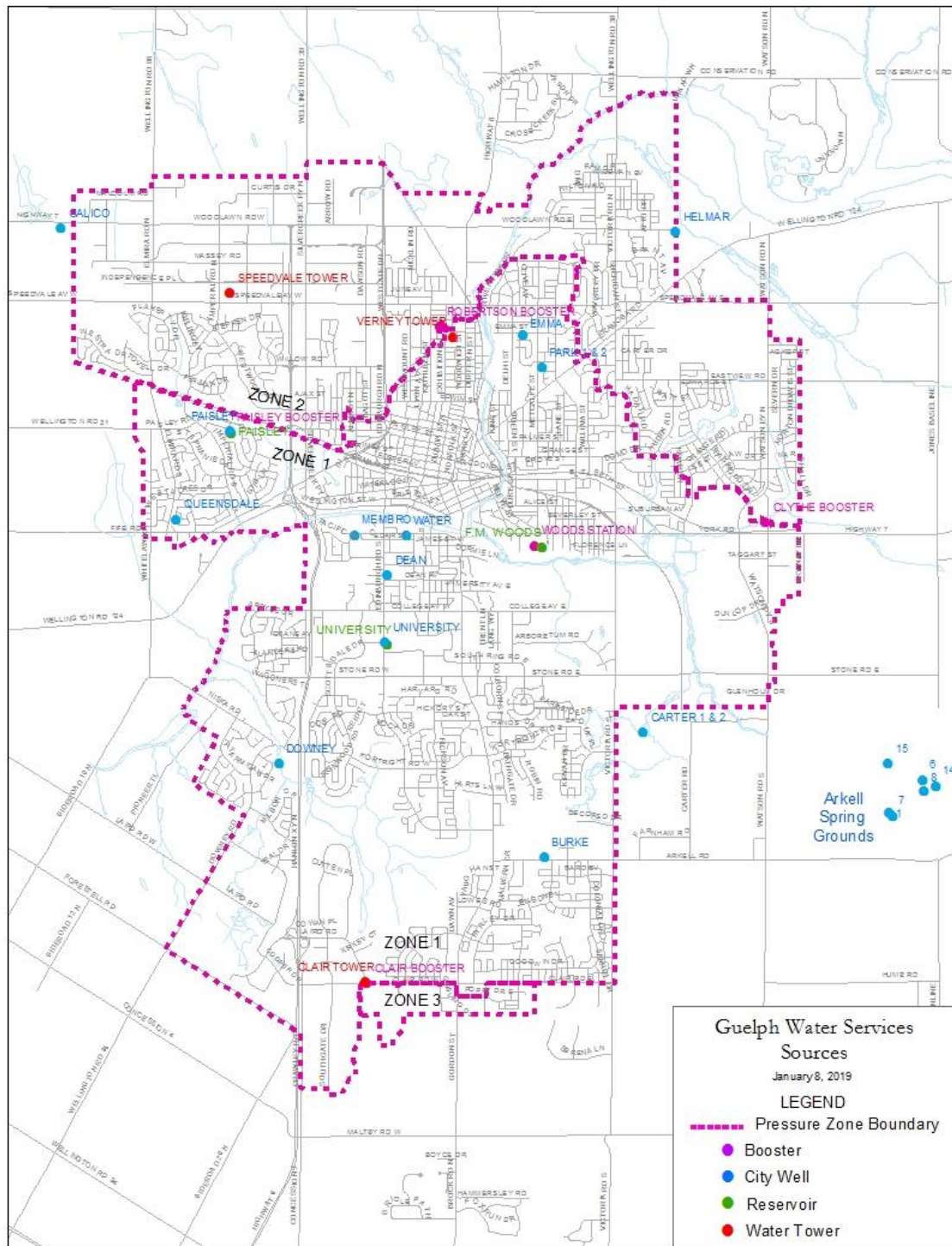
In 2019, all regulatory microbiological and chemical quality samples were taken by certified operators and tests on water samples collected throughout the drinking water system were performed by accredited, licensed laboratories. These tests include both regulatory and operational testing – in most cases only regulatory reporting is included in this report. In all cases, the drinking water supplied to all customers was confirmed safe and the water was of higher quality than all Ontario and Canadian health-related guidelines.

The Guelph Drinking Water System is defined as a large residential system operated under the regulatory requirements of the Safe Drinking Water Act and the Ontario Water Resources Act (accessed at [Ontario e-laws](#)). In 2019, the Guelph Drinking Water System operated under Municipal Drinking Water Licence (MDWL) 017-101, Issue numbers 11 and 12 and the Drinking Water Works Permit (DWWP) 017-201, Issue numbers 7 and 8.

The MDWL and the DWWP describe system-specific requirements that are supplementary to provincial regulations and act as licences for water supply and distribution operations. These documents outline specific conditions and requirements regarding operation, maintenance and upgrades that are required by the system and are considered regulatory in nature. These documents are available by request for viewing at Water Services, 29 Waterworks Place, Guelph.

Figure 1: Guelph Drinking Water System shows the locations of the Guelph Drinking Water System facilities that were active in 2019.

Figure 1: Guelph Drinking Water System



Gazer Mooney Subdivision Distribution System

The Gazer Mooney Subdivision Distribution System is a Class 1 Distribution Subsystem that serves approximately 200 people, and is owned by the Township of Guelph/Eramosa. The system is operated by Guelph Water Services through a legal agreement that was signed by representatives of the City of Guelph and the Township of Guelph/Eramosa. The current agreement came into effect on March 1, 2019 and will continue until February 29, 2024 and will be automatically renewed and extended to February 28, 2029, unless terminated earlier.

All of the water for the Gazer Mooney Subdivision Distribution System is supplied from the Guelph Drinking Water System. All water is treated to provincial standards in the Guelph Drinking Water System and no further treatment chemicals are added to the Gazer Mooney Subdivision Distribution System.

All new distribution infrastructure components meet NSF 61 requirements or approved equivalents and are installed and maintained in accordance with approved industry standards. The system is fully metered.

The Gazer Mooney Subdivision Distribution System is comprised of the following infrastructure:

- approximately 720 meters of 200mm diameter watermain;
- approximately 600 meters of 150mm diameter watermain;
- six watermain valves;
- six fire hydrants;
- one sampling station; and
- approximately 72 water services and water meters.

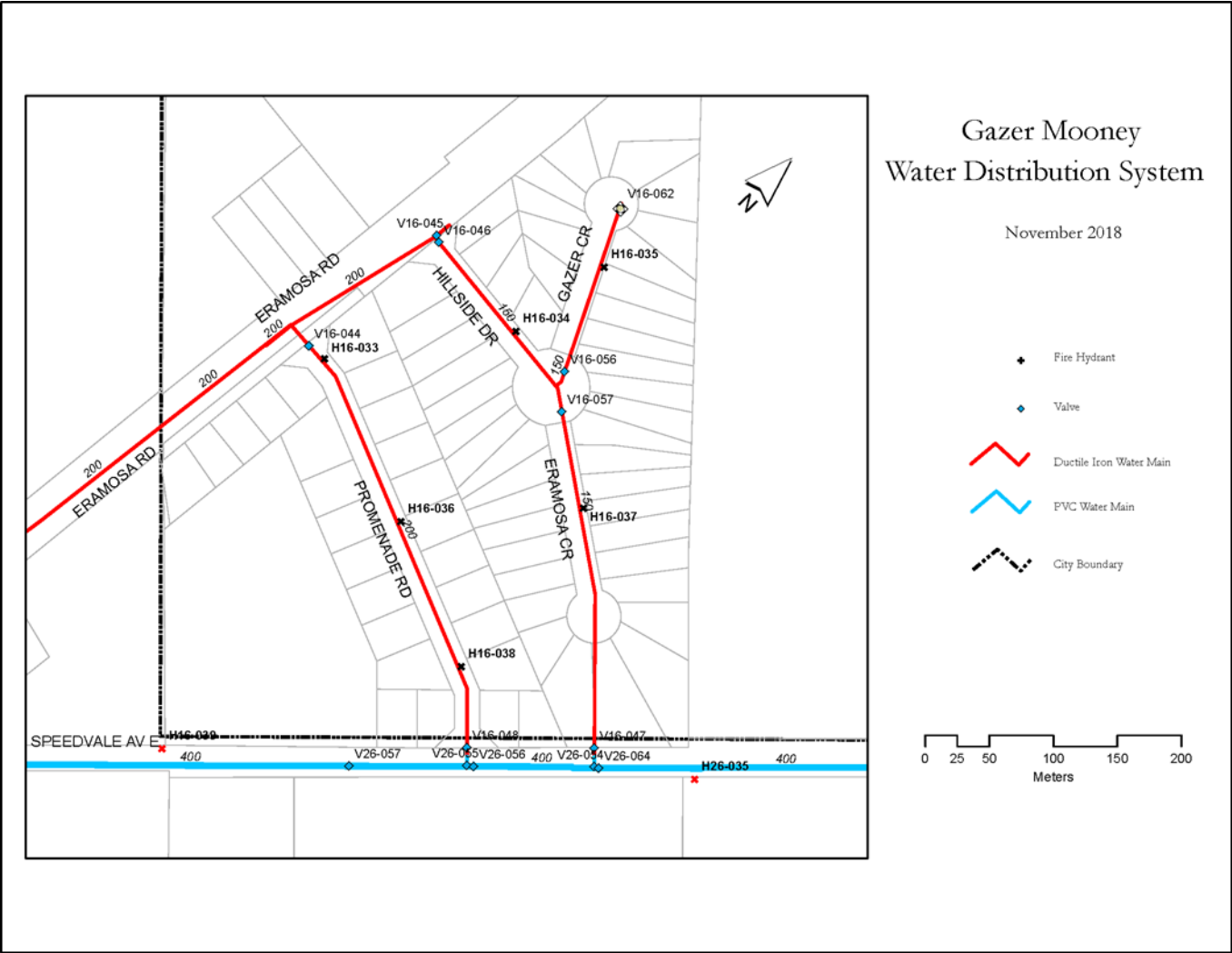
The cost of construction of the Gazer Mooney Subdivision Distribution System in 1980 was listed as \$197,933.

The Gazer Mooney Subdivision Distribution System is considered a small residential system and is operated under the regulatory requirements of the Safe Drinking Water Act and the Ontario Water Resources Act which may be found at [Ontario e-laws](#).

In 2019, the Gazer Mooney Subdivision Distribution System operated under Municipal Drinking Water Licence No. 104-103, Issue number 2; and Drinking Water Works Permit No. 104-203, Issue number 2. These documents are available by request for viewing at Water Services, 29 Waterworks Place, Guelph and at the Township of Guelph/Eramosa, 8348 Wellington Rd. 124, Rockwood.

Figure 2: Gazer Mooney Water Distribution System shows the location of the Gazer Mooney Subdivision Distribution System.

Figure 2: Gazer Mooney Water Distribution System



Water Services' Annual and Summary Report

a) Incidents of Regulatory Non-Compliance

This section describes all incidents of non-compliance.

Guelph Drinking Water System

There were four incidents of non-compliance associated with the Guelph Drinking Water System in 2019. The four incidents are described below:

- Caps on the water level monitoring access points on two wells, located inside secure buildings, were found to not be in place. This was immediately corrected at the time of inspection.
- A Form 1 (Record of Watermains Authorized as a Future Alteration) was completed in November 2019 for work on a watermain that occurred in September 2019. The City's DWWP requires the Form 1 to be completed prior to the watermain being placed into service. Water Services is working with Engineering and Transportation Services to develop a procedure to ensure that Form 1's are completed prior to any watermain additions, modification, replacement or extension being placed into service.
- A chlorine residual in a dead-end of the distribution system was found to be below 0.05mg/L, which is discussed further in section b) Adverse Water Quality Incidents. Water Services is committed to ensuring that an acceptable chlorine residual is maintained throughout the water distribution system and has implemented a regular flushing program in this area.
- It was found that HPC analysis was not completed on two treated water samples taken on February 6, 2019. This was caused by human error, where the treated water samples were mistakenly recorded on the chain of custody as raw water samples; HPC analysis is not required for raw samples. Water Services now has separate chains of custody for raw and treated water samples to help eliminate the chance of this reoccurring.

A score of 89.42% was achieved in the 2018-2019 Ministry of the Environment, Conservation and Parks Annual Inspection Report for the Guelph Drinking Water System.

Water Services has corrected all issues of non-compliance identified during the MECP inspection. Through the root-cause analysis process, Water Services initiates continual improvement measures and implements new policies and procedures to prevent issues of non-compliance from re-occurring.

Gazer Mooney Subdivision Distribution System

There were no incidents of non-compliance associated with the Gazer Mooney Subdivision Distribution System in 2019.

A score of 100% was achieved in the 2018-2019 Ministry of the Environment, Conservation and Parks Annual Inspection Report for the Gazer Mooney Subdivision Distribution System.

b) Adverse Water Quality Incidents

This section describes all Adverse Water Quality Incidents (AWQI's). This term refers to any unusual test result from treated water that does not meet a provincial water quality standard, or a situation where disinfection of the water may be compromised. An adverse water quality incident indicates that on at least one occasion and at a certain instance in time, a water quality standard was not met. On average, the Guelph Drinking Water System processes four to five AWQI's annually.

Many AWQI's have proven to be the result of water sampling and testing problems rather than poor water quality. False positive results can be caused by: contaminated sampling containers and equipment; improper sampling technique; handling and transportation; and sampling analysis errors.

Please note: The City was granted regulatory relief from Schedule 15.1 of O. Reg. 170/03 in favour of a Guelph specific Lead Reduction Plan (LRP). Residential sample results collected under the LRP that have lead concentrations above 10 µg/L, are tracked and reported to Wellington-Dufferin-Guelph Public Health, the Ministry of the Environment, Conservation and Parks (as per MDWL 017-101, Schedule D) and the customer. See 0 Status of Ongoing and Emerging Water Quality, Supply and Distribution Initiatives for more information on the Lead Reduction Plan.

Guelph Drinking Water System

In 2019, there were three adverse water quality incidents (AWQI's #144857, #144859 and #148104) and a summary of these are included in Table 1.

Table 1: Guelph Drinking Water System Adverse Water Quality Incidents, 2019

#	Date	AWQI #	Location	Description	Corrective Action	Re-sample Results Good	Deviation from Critical Control Point ⁵
1 & 2	Feb. 25	144857 and 144859	Burkes Well - POE (S002)	Sodium result of 66 mg/L at S002	Water Services was informed by the laboratory of two sodium exceedances, both at a concentration of 66mg/L. Wellington-Dufferin-Guelph Public Health (WDGPH), MECP, and Spills Action Centre (SAC) were notified. Re-samples were taken and results of 71 mg/L were received on March 4, confirming Burke treated source water is above the aesthetic objective lower limit of 20 mg/L. Resample results were communicated to the WDGPH and the AQWI was closed.	No ⁶	No

⁵ Please see Section c) Deviations from Critical Control Point (CCP) Limits and Response Actions of this report for a description of “critical control points”.

⁶ The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets. Water Services communicated the sodium test results to the Wellington-Dufferin-Guelph Public Health Unit.

#	Date	AWQI #	Location	Description	Corrective Action	Re-sample Results Good	Deviation from Critical Control Point ⁵
3	Sept. 17	148104	Hydrant H29-068	Distribution system chlorine residual below 0.05 mg/L	<p>Hydrant H29-068 was flushed on Sept. 17 as part of a Dead-End-Flushing Program and a chlorine residual of 0.00mg/L was recorded. After 35 minutes of flushing at approximately 7 L/sec., a residual of 0.64 mg/L was achieved.</p> <p>Wellington-Dufferin-Guelph Public Health (WDGPH), MECP, and Spills Action Centre (SAC) were notified.</p> <p>Hydrant H29-068 is now part of the regular flushing program and has scheduled flushings to maintain acceptable secondary disinfection free chlorine residuals. The AWQI is closed.</p>	Yes	Yes

Gazer Mooney Subdivision Distribution System

There was one adverse water quality incident in the Gazer Mooney Subdivision Distribution System in 2019.

Table 2: Gazer Mooney Subdivision Distribution System Adverse Water Quality Incidents, 2019

#	Date	AWQI #	Location	Description	Corrective Action	Re-sample Results Good	Deviation from Critical Control Point ⁷
1	Mar. 26	145058	Gazer Mooney Lift Station (GM223)	Sodium result of 26 mg/L at GM223	Wellington-Dufferin-Guelph Public Health (WDGPH), MECP, Spills Action Centre (SAC), and Guelph/Eramosa Township staff were notified. Re-samples were taken and results of 24 mg/L were received on March 28, confirming Gazer Mooney treated water is above the aesthetic objective lower limit of 20 mg/L. Resample results were communicated to the WDGPH and the AQWI was closed.	No ⁸	No

⁷ Please see Section c) Deviations from Critical Control Point (CCP) Limits and Response Actions of this report for a description of “critical control points”.

⁸ The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets. Water Services communicated the sodium test results to the Wellington-Dufferin-Guelph Public Health Unit.

c) Deviations from Critical Control Point (CCP) Limits and Response Actions

A critical control point in the drinking water system is where control can be applied to prevent or eliminate a drinking water hazard, or to reduce it to an acceptable level. Water Services has identified three Critical Control Points (CCP) in the drinking water system:

- 1) Multi-Barrier Primary Disinfection - To remove or inactivate pathogens potentially present in the source water.
- 2) Secondary Disinfection - To ensure the maintenance of a disinfectant residual throughout the distribution system.
- 3) Backflow Prevention - To prevent cross-contamination that can result from the flowing back of or reversal of the normal direction of flow of water.

Any deviations from the CCPs are reported to both the Owners and Top Management, and are summarized in b) Adverse Water Quality Incidents in this report. There was one deviation from the Critical Control Points in 2019. The deviation was related to secondary disinfection. Information about this incident and actions taken to resolve the issue is outlined in b) Adverse Water Quality Incidents under item 3.

Additional information (e.g. critical control limits and response actions) is included in Appendix A: Summary of Critical Control Points and Critical Control Limits.

d) The Effectiveness of the Risk Assessment Process

This section confirms the occurrence of reviews of the risk assessment process. The risk assessment process determines the effectiveness of identifying and appropriately assessing the risk of hazards and hazardous events to the drinking water system. It also identifies the appropriate control measures; critical control points (CCPs); and related critical control limits (CCLs) related to the hazards and hazardous events. A description of the CCPs and CCLs are included in Appendix A: Summary of Critical Control Points and Critical Control Limits.

The annual risk assessment review was conducted by Water Services staff over several meetings between August 15 and August 30, 2019. The updated risk assessment outcomes was subsequently reviewed and approved at a management meeting on September 24, 2019. The results of the Risk Assessment are not made available to the public, but are made available to internal staff and the Guelph DWS Owners.

Through the risk assessment process, the following Water Services program or process aspects were added:

- Locates - Inability to properly locate due to no tracer wire installed or installed incorrectly or not locatable material leading to watermain damage;
- Locates - Inability to properly locate due to inaccessible, incorrect or not updated records resulting in damaged watermain.

e) Internal and Third-Party Audit Results

Internal auditing and third-party auditing is performed to fulfill the mandatory requirements of the Drinking Water Quality Management Standard (DWQMS). The internal audit is completed using trained internal Water Services staff as auditors. The purpose of audits are to evaluate the level of conformance of Water Services to the DWQMS. Audits identify both conformance and non-conformance with the Standard, as well as, opportunities for improvement. Appendix B: Summary of Internal and External Audit Plans includes the past two years' internal and external audit plans and the plan for the upcoming year.

2019 Internal Audit

The internal audit was completed on April 1 to April 5, 2019 and looked at 17 processes at Water Services. Many strengths were identified during the internal audit, including a sense of pride, ownership and commitment to the DWQMS and processes outlined in the Operational Plan. Participating staff at all levels are knowledgeable and aware of their duties as it relates to providing safe drinking water to the water consumers.

There were no non-conformities identified during these internal audits.

Various opportunities for improvement, such as: improved document and records control; training; communications; essential services; staffing levels; emergency management; and standard operating procedure creation were also noted in the internal audit report. Water Services strives to promptly address issues identified in internal audits as part of continuous improvement of its procedures and processes. The next internal audit is scheduled to take place between March 2 and 6, 2020.

2019 External Audit

The third-party external on-site verification audit was completed between November 25 and November 27, 2019 by NSF International Strategic Registrations and looked at 24 processes at Water Services. Accreditation to the DWQMS Version 2.0 was maintained.

The auditor noted that there continues to be strong evidence of ongoing commitment to the DWQMS at the City of Guelph. System strengths observed during the audit include:

- Staff participation / engagement
- Ownership / pride
- DWQMS documentation
- Management review process
- Internal audit process
- Continual improvement
- Communication: internal and external
- Risk assessment process
- Leak detection program
- Emergency planning / testing processes

There were two minor non-conformities identified during this audit. The first minor non-conformance related to Document and Records Control (DWQMS Element 5). The auditor noted that: there was a standard operating procedure that does not reflect current practices for calibration and verification of colorimeters; and an obsolete version of design specifications was found to be available to operators.

The second minor non-conformance relates to Essential Supplies and Services (DWQMS Element 13) and documentation around chemical receiving. Instances were identified where the lot number was missing on the bill of lading from our chemical supplier.

In both minor non-conformances, immediate containment of the issues were taken. A root-cause-analysis was completed to identify corrective and preventative actions to ensure that the issues will not occur again. In both minor non-conformances, the auditor accepted our corrective and preventative actions and the minor non-conformances are considered closed.

Noted opportunities for improvement by the auditor were related to improving the following processes:

- Document and Records Control (DWQMS 5);
- Communications (DWQMS 12);
- Infrastructure Maintenance, Rehabilitation and Renewal (DWQMS 15);
- Sampling, Testing and Monitoring (DWQMS 16); and

- Continual Improvement (DWQMS 21).

Water Services maintains a culture of continual improvement and works towards implementing improvements suggested by the external auditor. The minor non-conformances and opportunities for improvement will be reviewed by the external auditor at the next on-site audit, scheduled between November 23 and 25, 2020.

f) Results of Emergency Response Testing

Emergency response testing is regularly completed as part of the Water Services' Quality Management System (QMS) to ensure that Water Services maintains a reasonable readiness to deal with emergencies and abnormal events. The ability to properly manage emergencies and unplanned failures is critical in demonstrating that Water Services has taken a diligent approach in its operations.

Water Services' last emergency test exercise involved a mock scenario where a large watermain break occurred on a section of 20 inch watermain that feeds the west end of the city, which resulted in low pressure and/or no water for the affected customers, a boil water advisory and a workplace incident where a car drove into the watermain trench, resulting in an investigation by the Ministry of Labour. The emergency test exercise was held on November 1, 2019 and included representatives from the Ministry of the Environment, Conservation and Parks (Inspector), representatives from Wellington-Dufferin-Guelph Public Health (WDGPH) as well as Water Services and other City staff. All other Water Services' staff participated in sessions that took place between November 6 and 8, 2019.

Water Services had three actual emergency events in 2019.

The first one occurred on May 10, 2019. A contractor who was working on site at Water Services punctured the gas main with a backhoe. Water Services staff evacuated the building until the gas supply could be shut off. Fire Services were on scene to assess the situation and determine when staff could return to work. The gas main was repaired by Union Gas.

The second emergency involved four watermain breaks on a section of Silvercreek Parkway on the weekend of September 13, 2019. Based on the poor structural condition of this segment of watermain, an emergency replacement of that section of pipe was initiated on September 16, 2019. Following completion of reconstruction of this segment of pipe it was returned to regular service in early October.

The third emergency involved a large watermain break on a 16" watermain on Speedvale Avenue between the Hanlon Parkway and Silvercreek Parkway on November 30, 2019. This resulted in significant water loss from the Speedvale Tower; although pressure was maintained throughout the north end of the city during the watermain break. Emergency repairs were completed by a contractor, with Water Services staff overseeing the repairs.

Feedback from emergency testing and from actual emergency events is gathered during debriefing sessions and improvement items are incorporated into the Emergency Plan, standard operating procedures and/or daily operations.

Table 3 includes the dates of Completed Emergency Response Tests for the past three years and planned tests for 2020.

Table 3: Emergency Response Tests

Hazardous Event / Hazard ⁹	2017	2018	2019	2020
Long-term impacts of climate change	Dec. 8, 13 (2017 test)	Jan. 26 (2017 test)		
Source water supply shortfall	Jan. 20 (2016 test)			Planned test
Extreme weather events (e.g. tornado, ice storm, flood)	Dec. 8, 13 (2017 test)	Jan. 26 (2017 test)		
Sustained extreme temperatures (e.g. heat wave, deep freeze)	Dec. 8, 13 (2017 test)	Jan. 26 (2017 test)		
Chemical spill impacting source water				Planned test
Sustained pressure loss		Nov. 23, 28-30 (2018 test)	Nov. 1, 6-8 (2019 test)	

⁹ The Hazardous Event / Hazard list reflects the MECP's mandated "Potential Hazardous Events for Municipal Residential Drinking Water Systems to Consider in the Risk Assessment" document.

Hazardous Event / Hazard ⁹	2017	2018	2019	2020
Backflow / Cross-connection		Nov. 23, 28-30 (2018 test)		
Terrorist threat				Planned test
Vandalism				
Sudden changes to raw water characteristics (e.g. turbidity, pH)	Dec. 8, 13 (2017 test)	Jan. 26 (2017 test)		Planned test
Failure of equipment or process associated with primary disinfection (e.g. UV, chlorination)				
Failure of equipment or process associated with secondary disinfection (e.g. chlorination)				
Loss or contamination of treated water supply		Nov. 23, 28-30 (2018 test)	Nov. 1, 6-8 (2019 test) Sept. 13 and Nov. 30 (main breaks)	
Loss of monitoring system			Nov. 3 (AWQI)	

g) Operational Performance and Statistics

The following section describes Operational performance statistics within Water Services that includes:

- 2019 Totalized Pumpages as per the Municipal Drinking Water Licence and Permits to Take Water;
- 2019 Instantaneous Flows as per Permit to Take Water requirements;
- Water Production and Population;
- 2019 Arkell Springs Glen Collector Flows;

- Water Supply Capacity;
- System Maintenance and Updates; and
- Status of Ongoing and Emerging Water Quality, Supply and Distribution Incentives.

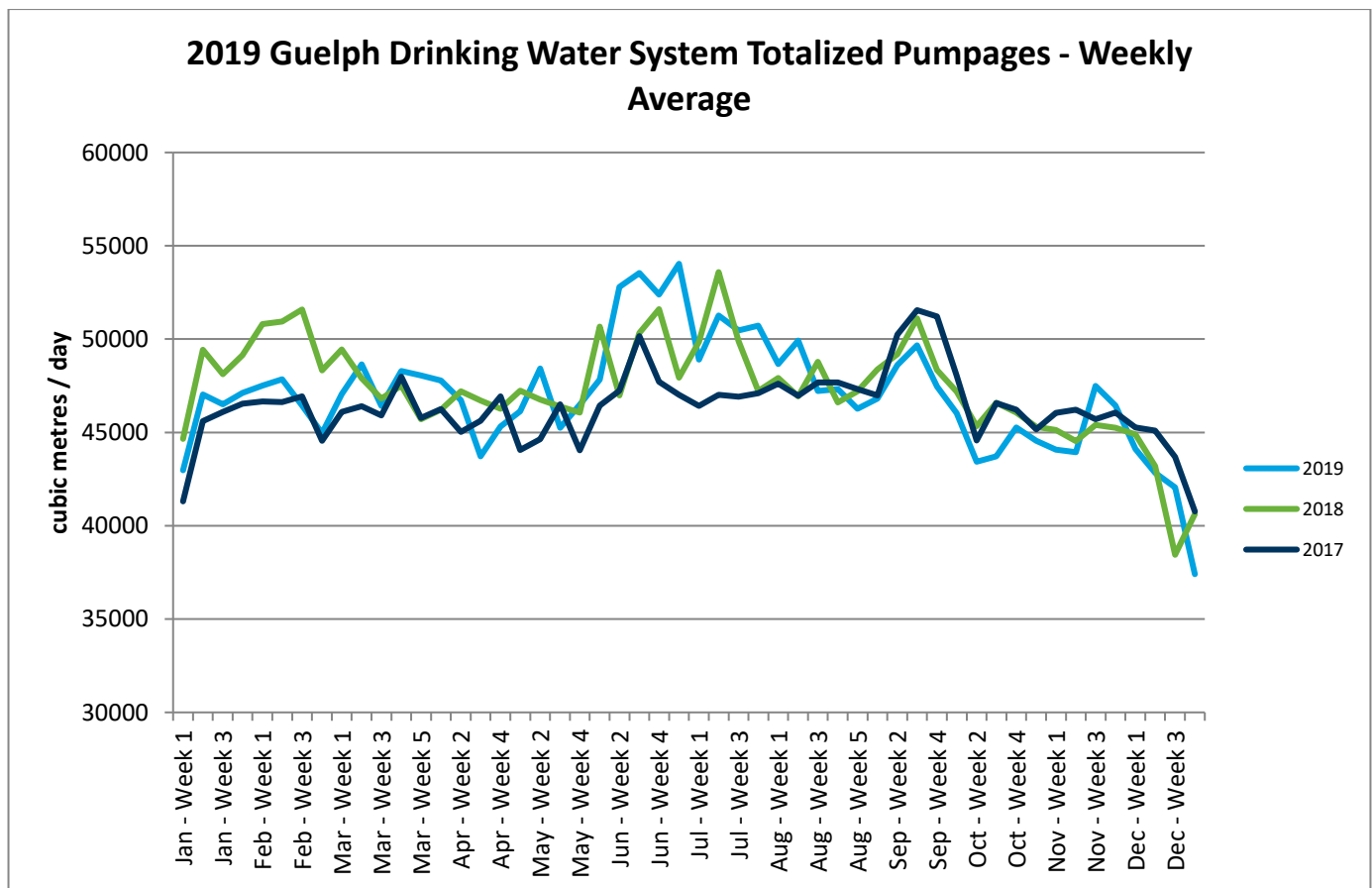
2019 Totalized Pumpages and Instantaneous Flows

The Safe Drinking Water Act and the Ontario Water Resources Act each require that operating authorities record and report both water takings as governed by Permits-to-Take-Water, and water being supplied to the City of Guelph.

Summaries of total water pumped, instantaneous flows and capacity (flows and volumes compared to rated capacities) by the City of Guelph can be found in Appendix C: Total Water Pumped and Instantaneous Flows.

Figure 3 below, depicts the water pumpage rate in cubic metres per day (m^3/day) that is averaged each week.

Figure 3: Totalized Pumpages, 2019



Water Services processed 17,160,654 cubic metres (17.2 billion litres) of water to the distribution system in 2019, equivalent to 6,864 Olympic-sized swimming pools. This represents 0.9 per cent less water being supplied to the distribution system in 2019 as compared to the same time period in 2018 and 1.4 per cent more water than in 2017.

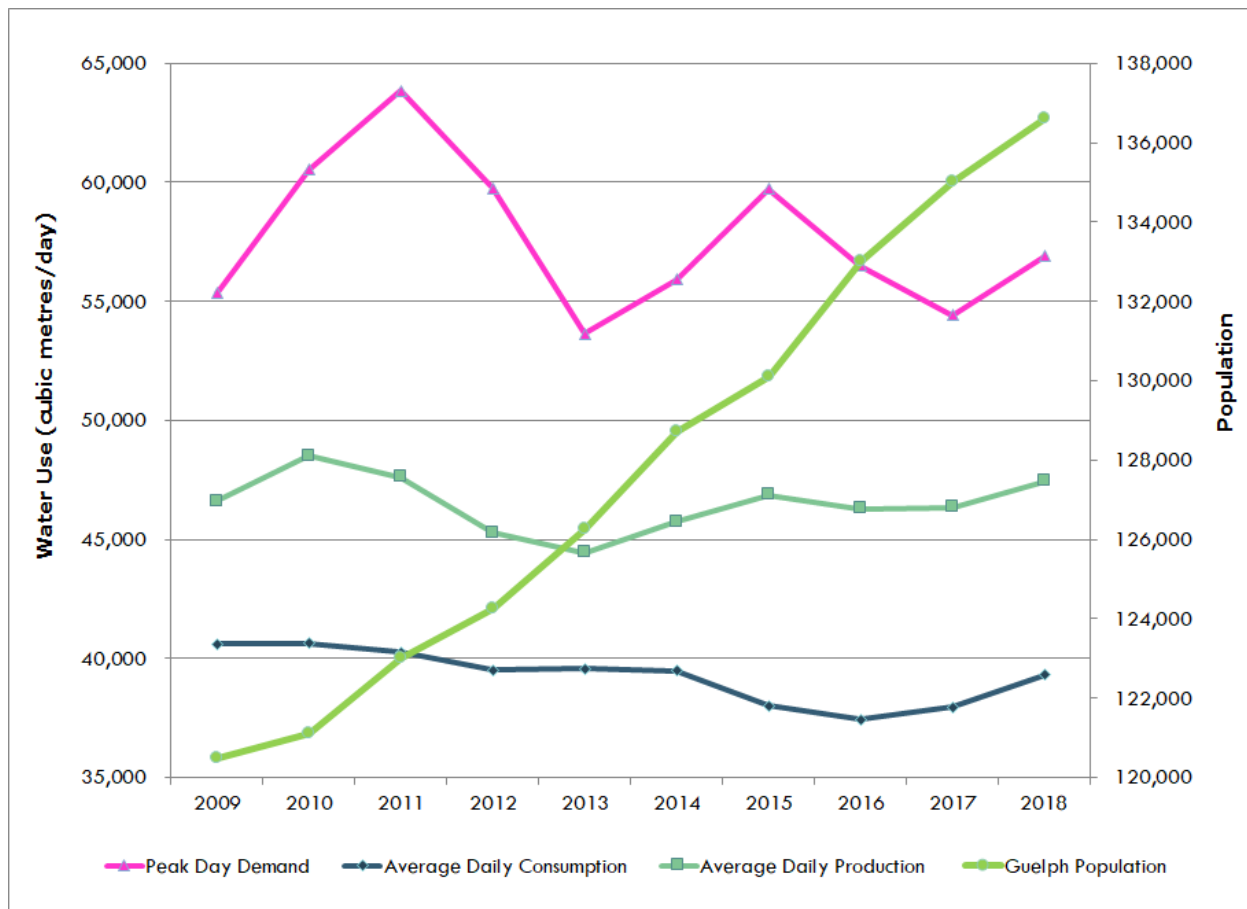
The average daily water demand was 47,015 cubic metres (47.0 million litres). The maximum day production of water in 2019 was 58,411 cubic metres (58.4 million litres) and occurred on November 30, 2019. The minimum day production of water in the same time period was 32,477 cubic metres (32.5 million litres) and occurred on December 26, 2019.

Water Production, Consumption and Population

Figure 4 below shows the City of Guelph's annual average daily water production, annual average daily consumption, annual peak day demand, and population from 2009 to 2018. Consumption data for 2019 was not available at the time of publication.

During this time, the City of Guelph's population increased 12 per cent while at the same time annual average daily water production and consumption demonstrate a downward trend (3 per cent) based on linear regression.

Fluctuation in water production and consumption is anticipated to occur, year to year, based on a number of factors, including seasonal temperatures and annual precipitation, system demands (including planned and unplanned maintenance) and steady population growth.

Figure 4: Guelph Water Production, Water Consumption, Population

Arkell Springs Glen Collector System Source Water

The Arkell Springs Glen Collector System (Collectors), one of Guelph's many water sources, consists of a gravity-fed, under-drain system that collects shallow overburden groundwater. This system has been in use since the early 1900's and can represent as much as 40 per cent of the total city-wide daily water production when in operation. When the output of this source is reduced, Water Services is required to make up the difference from other water supplies. Throughout the year, the production from this water supply varies from an approximate low of 4,000 cubic metres (4 million litres) up to an approximate high of 20,000 cubic metres (20 million litres) per day.

Seasonally, between April 15 and November 15, the City has a Permit-to-Take-Water that allows water to be pumped from the Eramosa River to a pond and trench-based Recharge System. In the Recharge System, the river water enters the trench where it filters through the ground and is later captured in the Arkell Springs Glen Collector System.

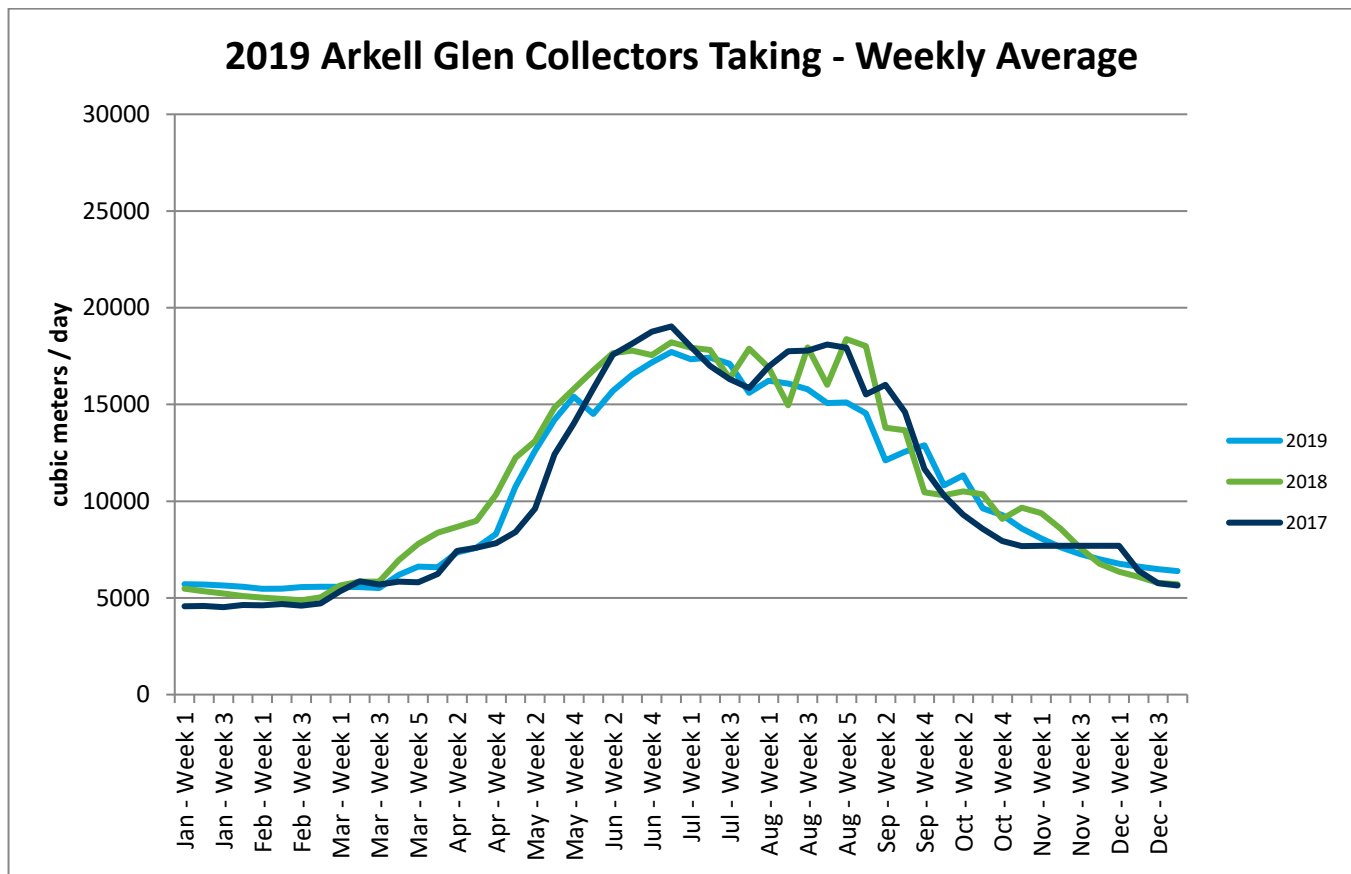
In 2016, the Recharge System was out of service to accommodate infrastructure improvements including an extension of the trench system in an effort to capture more water in the Collectors. The Recharge System was returned to service in May 2017 and tested during 2017 and 2018 to determine the impact of the extended trench on the Collector flows. In 2018, 1,368,766 m³ of raw water was pumped from the Eramosa River (from April through November) and 1,119,787 m³ of raw water was pumped from Arkell Well 7 (from March through September) to the Recharge System as part of a Collector System capacity test. Recent modelling showed that approximately 52 per cent of this volume was captured in the Collector system.

The productivity of the Collectors can be used as one of many predictive tools. If the production volume from the Collectors is low, then it can be assumed that other water supplies would be needed to make up the difference. This may alter how regular maintenance is performed as well as the urgency with which repairs are made to supplies that unexpectedly go off-line as they may be needed to supplement overall production for the City when the Collector System is unable to produce a sufficient supply.

The Collectors have produced 3,853,004 cubic metres (3.9 billion litres) of water in 2019, which is approximately 22 per cent of Guelph's total water production. This represents 4.2 per cent less water as compared to the same time period in 2018 and 1.4 per cent more water than in 2017.

For a visual representation, please refer to Figure 5, which depicts the Arkell Spring Grounds Collector flow volumes in cubic metres per day (m³/day) that is averaged each week.

Figure 5: 2019 Arkell Spring Grounds Glen Collector System Volumes



Please note: Arkell Well 7 contributed 1,119,787 m³ to the Recharge System (from March through September 2018) with approximately half (560,000 m³) captured in the Collector flow post filtration through the ground.

Water Supply Capacity

Pumping stations are typically rated on their firm capacity, which is defined by the Ministry of Environment, Conservation and Parks (MECP) Design Guidelines for the Design of Drinking Water Distribution Systems (2008) by the following criteria:

- Capacity of the pumping station with the largest unit out of service if the station supplies a pressure zone with adequate storage available for fire protection and balancing;
- Capacity of the pumping station with the two largest units out of service if the pumping station serves a pressure zone that does not have adequate floating storage available and is the sole source of supply in the area.

This approach however, does not address the “system” firm capacity. Neither is it directly applicable to a groundwater system with many sources. Firm Capacity assessment of a water supply system is essentially an exercise in risk assessment, such that a municipality will incorporate measures or strategies to minimize the risk of certain aspects of the system being off-line, and will accept a level of risk that a portion of the system will not be available due to maintenance, water quality issues or other.

A proposed approach to more accurately reflect system conditions for the City considers equipment reliability (i.e. assumptions for percentage of inoperable wells or pumps) and also potential future contamination issues. This will also take into consideration wells that are presently shut down for water quality reasons and whether it would be acceptable to bring these sources back online in emergency conditions.

Historically, City staff have assessed a safe, sustainable yield of existing groundwater supplies through hydrogeological assessments conducted mainly through quadrant studies, subsequent pumping tests and operational data. The groundwater flow model has also been used to confirm sustainable capacity, however both of these methods reflect permitted capacities, either takings allowed in the Permit to Take Water (PTTW) or those included in Environmental Certificates of Approval (ECA) for each well or pumping station.

In order to more accurately address the questions of system firm capacity, Water Services staff annually review the operational water demand data for water supply facilities under maximum demands. Values used for permitted pumping rate and firm capacity calculations by well are provided in Table 4. The permitted pumping rate is the rate of pumping allowed as identified in the Permits to Take Water. The firm capacity rate is the actual rate of pumping that can be achieved at each well.

Table 4: Permitted Rates and Point of Entry Firm Capacities of Water Supply Wells

Well Name	Permitted Daily Maximum (m³/day)	Permitted Rate (L/s)	Point of Entry Firm Capacity¹⁰ (m³/day)	Point of Entry Firm Capacity (L/s)
Arkell 1	3,273	37.9	1,640	19.0
Arkell Springs Wellfield ¹¹	28,800	333.3	28,800	333.3
Burke	6,546	75.8	5,790	67.0
Carter 1 and Carter 2	7,855	75.8	5,184	60.0
Membro	6,050	78.0	3,200	37.0
Water St.	3,400	44.4	2,500	28.9
Dean	2,300	34.6	1,500	17.4
University	3,300	38.2	2,400	27.8
Downey	5,237	60.6	5,000	57.9
Park 1 and Park 2	10,300	119.2	9,500	110.0
Emma	3,100	35.9	2,330	27.0
Helmar	3,273	37.9	1,300	15.0
Paisley	3,200	37.0	1,300	15.0
Calico	5,237	60.6	1,040	12.0
Queensdale	5,237	60.6	1,210	14.0

¹⁰ The firm capacity rate is the actual rate of pumping that can be achieved at each well.

¹¹ The Arkell Springs Wellfield consists of five (5) municipal drinking water production wells: Arkell 6, Arkell 7, Arkell 8, Arkell 14 and Arkell 15. All of the aforementioned Arkell Wells are contained within the same Permit to Take Water (No. 5061-9ZKKWV). Notwithstanding the specified maximum permitted taken per day, any combination of these wells can be used to obtain the permitted rate.

Water Services staff use the calculated firm capacity values in order to aid planning of scheduled shutdowns and maintenance of the water supply wells. Staff hold monthly meetings to review project statuses that affect firm capacity. At the meetings there are discussions related to the progress of maintenance and upgrade operations. The purpose of the monthly meeting is to ensure adequate servicing capacity is available to meet the City's water demands while maintenance and capital upgrades are undertaken to maintain the system in a fit state of repair.

System Maintenance and Updates

The tables that follow summarize Water Services' maintenance work – for Water Distribution (Table 5) and for Water Treatment (Table 6).

Table 5: Water Distribution Maintenance Activity

Job Type	2017 Total	2018 Total	2019 Total
Acoustic Leak – Dry	1	0	5
Blow Off Install	0	0	0
Dig to find leak	0	0	1
Hi/Low Jumper Install	0	0	0
Hydrant Install (WW)	0	0	1
Hydrant Remove	0	0	1
Hydrant Repair	35	6	301 ¹²
Hydrant Repair Hit	2	7	2
Hydrant Replace (WW)	2	2	9
Hydrant Replace Hit	2	1	1
Main Break	47	72	58

¹² Water Services has started tracking all repairs through a Work and Asset Management Program, resulting in a more detailed accounting of the number of repairs completed.

Job Type	2017 Total	2018 Total	2019 Total
Other (e.g. exploratory excavations, miscellaneous repairs, etc.)	2	11	1
Re-route Watermain	0	0	0
Sample Station Install	17	1	1
Sample Station Replace	10	0	1
Service Cut Off	3	5	3
Service Lowered	0	0	0
Service New Install	0	2	2
Service Repair	91	99	489 ¹³
Service Replace	7	11	14
Trench Repair	0	0	0
Valve Install (WW)	1	4	5
Valve Remove	0	0	0
Valve Repair	7	7	54
Valve Replace (WW)	22	25	20
Meters New	487	315	367
Meters Exchanged	712	950	4,612 ¹⁴
Watermains Cleaned (km)	150.65	225	15.6
Watermains Re-lined (m)	171	0	1,390

¹³ Water Services has started tracking all repairs through a Work and Asset Management Program, resulting in a more detailed accounting of the number of repairs completed.

¹⁴ 1,344 meters were exchanged by Water Services, 3,268 meters were exchanged through the Water Meter Replacement Program.

The next table (Table 6) includes Water Treatment-related maintenance activities and expenditures (may include programs that have a series of projects).

Table 6: Water Treatment Maintenance Activity, 2019

Maintenance Activity	Location
Below Grade Well Inspections	Arkell 15, Carter 1, Paisley, Park 1, and Queensdale
Clair/Zone 3 Booster Testing	Clair Booster Station
Contact Chamber/Reservoir Inspections	Downey, Paisley, Park, Queensdale and FM Woods Station
Electrical “as found” Drawings	Arkell
Electrical and Instrumentation Upgrades	Various Sites
Facility Lighting Upgrades	Various Sites
Facility Repairs and Maintenance	Various Sites
Fencing and Security Upgrades	Arkell
Process and Monitoring Equipment Upgrades	Various Sites
Process Piping Upgrades	Queensdale
Pump Replacements	Arkell 14, Park and Queensdale
Standby Power Generator Installation	Arkell Well 8
Turbidimeter Installations and Removals	Membro and Burke
Well Pump Discharge Pressure Transmitters	Various Sites
Well Rehabilitations	Paisley, Park 1 and Queensdale

SCADA System Improvements

The Supervisory Control and Data Acquisitions (SCADA) system is the computerized control system that monitors and automatically controls the pumps, valves, water towers and online instrumentation at the 25 water facilities located throughout the City and 8 water facilities

located in the Arkell Springs well field. SCADA also monitors 49 flowmeters and pressure transmitters located throughout the water distribution system.

The SCADA system performs the vital role of monitoring/logging process data to ensure regulatory compliance, and providing tools to the Operations team that enables them to run the City's water system in a consistent manner. Furthermore, the SCADA system is also configured to automatically shut down facilities and/or notify an on-call operator in the case of abnormal process conditions. The SCADA system also monitors the security systems at all water facilities. Lastly, the SCADA system also provides process data reports and queries that are used for compliance reporting, hydraulic system modelling, and long term planning.

In 2019, SCADA system uptime was over 99.995 per cent, due to SCADA network upgrades that were undertaken in 2017 to add redundant auto-failover backup SCADA network links to all facilities and due to SCADA backup system upgrades in 2018-2019.

Upgrades to the SCADA system in 2019 were focused around updating SCADA system programming standards, modernizing control system programming, and updating backup systems. In addition to incremental updates, all-new SCADA code and screens were deployed at 2 facilities in conjunction with capital projects.

Table 7 below, provides a summary of improvements to SCADA and Security undertaken in 2019.

Table 7: SCADA and Security - Maintenance and Improvement Activities, 2019

SCADA / Security Maintenance & Improvement Activities	Location(s)
Additional SCADA data-logging redundancy (with secondary data-loggers)	Various Sites
Process flow diagrams and piping & instrumentation diagrams (P&ID's) updates	All Sites
Equipment layout drawings updates	All Sites
Facility electrical drawings updates	Various Sites
SCADA Input / Output Lists and standardized connection diagram updates	Various Sites
SCADA backup server upgrades	Various Sites
New building temperature transmitters for facility monitoring	All Sites

SCADA / Security Maintenance & Improvement Activities	Location(s)
Updates to SCADA design and programming guidelines for capital projects	All Sites
SCADA programming standards updates	All Sites
SCADA software code updates (multi-year program)	Various Sites
New display screens to show current treatment chemical tank inventories in terms of level, percentage, tank capacity, and volume remaining	All Sites
Operator display screen updates to use high performance HMI concepts	Various Sites
Security systems upgrades	All Sites

Form 1s, Form 2s and Form 3s

Form 1s and 2s are required by the MECP to document significant changes to the drinking water system. Engineering Services staff complete the Form 1 – Record of Watermains Authorized as a Future Alteration. Water Services’ staff complete the Form 2- Record of Minor Modification or Replacements to the Drinking Water System. Form 3s are associated with the addition of Emergency Stand-by Power. Water Services’ staff complete the Form 3 – Record of Addition, Modification or Replacement of Equipment Discharging a Contaminant of Concern to the Atmosphere.

Table 8 below provides a summary of Form 1s, Form 2s and Form 3s completed over the course of 2019.

Table 8: Summary of Form 1s, Form 2s and Form 3s, 2019

Form Type	Total Number of Completed Forms
Form 1 – Record of Watermains Authorized as a Future Alteration	3
Form 2 – Record of Minor Modification or Replacements to the Drinking Water System	11
Form 3 – Record of Addition, Modification or Replacement of Equipment Discharging a Contaminant of Concern to the Atmosphere	1

Water Distribution Locates

In 2014, The City of Guelph registered its utility infrastructure with ON1Call, as mandated by the Ontario Underground Infrastructure Notification System Act, 2012.

Since registering, the City experienced a significant increase in locate request volumes. This increase in volume ensures that Water Services is notified of and attends all locate requests for every excavation in proximity to water infrastructure. This prevents damage to City infrastructure and protects the City's water quality and quantity.

In order to provide efficient locate services across the corporation, the City has transitioned all infrastructure locates into one corporate group which is housed at Water Services. This includes water, sanitary and storm sewers, traffic signals, and fibre optics. Utility locators now locate all infrastructure in one site visit rather than each department individually. Table 9 includes all water locate requests received and responded to in 2019 with a year to year comparison below in Table 10.

Table 9: Water Distribution Locates Requested and Responded to in 2019

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
289	382	538	837	1,408	925	862	952	818	842	546	198

Table 10: Historical Locate Requests Received

Year	Total
2019	8,597
2018	8,275
2017	8,622
2016	7,979
2015	9,255

Status of Ongoing and Emerging Water Quality, Supply and Distribution Initiatives

This includes summaries and updates related to the implementation of the:

- 2016 Water Efficiency Strategy;
- Arkell Springs Forest Stewardship Project,
- Source Water Protection Plan;
- Lead Reduction Plan; and
- Frozen Services Monitoring Program.

Water Efficiency Strategy

The City of Guelph strives to be a leader in water conservation and efficiency. As one of Canada's largest communities reliant on a finite groundwater source for drinking water supply, the City's ability to reclaim water and wastewater serving capacity through conservation and efficiency initiatives offers numerous benefits to our community and local ecosystem. Water Services continues to promote the ongoing sustainability of our finite water resources through active water conservation and efficiency programming to meet the water reduction targets as outlined in the 2014 Water Supply Master Plan.

Appendix I: Water Efficiency Program – 2019 Annual Progress Report presents the achievements and progress made for the period of January 1 to December 31, 2019 in the implementation of the 2016 Water Efficiency Strategy.

Source Water Protection Plan

The City of Guelph is committed to drinking water source protection and in 2016, Council appointed risk management staff to implement the Source Water Protection program.

The City of Guelph falls under the Grand River Source Protection Plan, which was approved by the MECP and became effective on July 1, 2016. Of the 72 policies identified in the Grand River Source Protection Plan, the City of Guelph is the primary implementing body for 48 of the 72 policies, with the remaining policies to be implemented by provincial ministries. As of December 31, 2019, 28 of the 48 policies have been fully implemented, based on priority basis or deadline.

Appendix K: Source Water Protection includes a highlight of the progress made for the period of January 1 to December 31, 2019 in the implementation of the City of Guelph's Source Water Protection program. This third annual report summarizes information requested from the Risk Management Official by the Source Protection Authorities, as required under Section 81 of the Clean Water Act, 2006 (CWA).

For more information on Guelph's Source Water Protection Program, visit guelph.ca/sourcewater.

Arkell Springs Forest Stewardship Project

The Arkell Spring Grounds cover an area of 804 acres. The area is comprised of old and new forested areas. The objective of the Arkell Springs Forest Stewardship Project has been to protect the drinking water source supply by monitoring general forest health, managing tree plantings and enhancing fallow areas with new plantings.

Managed forest stands require continued maintenance and observation to ensure the health of the forest and prevent any unnecessary losses. The many benefits of this long-standing Stewardship Project include:

- the creation and maintenance of a diverse and functioning forest cover;
- maintenance and re-generation of older forested areas on the property;
- protection and recharge of underground aquifers which supply the City's water;
- prevention of undesirable surface water runoff and flooding into local waterways;
- localized temperature stabilization;
- retain precipitation to enhance infiltration and improve supply; and
- regulating water flow.

This property management approach results in the highest possible quality of water to supply Guelph's drinking water system.

To improve the overall health of the property, a tree planting program for fallow farm fields has been ongoing since 2007. On a volunteer basis, the Community Environmental Leadership Program (CELP) with the Upper Grand District School Board has planted 28,500 trees on 18 acres, and Bartram Woodlands (on-site contractor) has planted 39,240 trees on another 16 acres.

In 2019, a five-year plan for forest management was developed to identify priorities at the Arkell Spring Grounds. The plan identifies tree planting, maintenance and invasive vegetation removal to ensure the health of this site. It further recommends a forest inventory plan to guide the management of this important source protection measure.

Arkell Springs Forest Stewardship Project is an important part of the Arkell and Carter Integrated Property Management Plan.

Lead Reduction Plan

The City has been working proactively to address the presence of lead service lines (LSLs) in Guelph since 2007 through identification and replacement of both the private and public portions of LSLs. Full LSL replacement has demonstrated to be effective in reducing lead concentrations and achieving regulatory compliance as measured at the point to water consumption.

The City of Guelph's Lead Reduction Plan (LRP) was developed in lieu of a Corrosion Control Plan (as outlined in Ontario Regulation 170/03 Schedule 15.1) and was formally approved by the MECP on March 21, 2012. The LRP focuses on physical lead service line replacement through verification sampling, financial incentives and public outreach.

As per the City of Guelph MDWL 017-101 - Schedule D, the City is required to submit all lead sampling data every 6 months and an annual Evaluation Report to assess the effectiveness of the Lead Reduction Plan.

Lead Sampling in the Guelph Drinking Water System

The following table presents summary results for lead sampling in the Guelph Drinking Water System as per Schedule D for the period of January 1 to December 31, 2019.

Table 11: Lead Reduction Plan Lead Sampling - Guelph Drinking Water System, 2019¹⁵

Number of Locations	Location Type	Number of Samples	Lead Range (mg/L)
95	Plumbing that Serves Private Property	110	0.0000 – 0.038
10	Distribution System	20	< 0.0005

Lead Sampling in the Gazer Mooney Subdivision Distribution System

In the Gazer Mooney Subdivision Distribution System, all samples were below the Ontario Drinking Water Quality Standards (ODWQS) for lead of 0.01 mg/L, as presented in the following table.

Table 12: Lead Reduction Plan – Gazer Mooney Subdivision Distribution System, 2019

Number of Locations	Location Type	Number of Samples	Lead Range (mg/L)	pH Range	Alkalinity Range (mg/L)
1	Distribution	2	<0.0005	7.78 – 7.88	260 – 270

Lead Sampling

Over 5,000 homes/businesses have been sampled for lead to identify the presence of LSLs and to monitor lead levels following a LSL replacement. For the period of January 1 to December 31, 2019, 90 private plumbing locations were sampled for the purposes of verifying the presence of a LSL. Of these locations, 11 locations were above 0.005 mg/L

¹⁵ Includes all samples as required by the MDWL or Lead Reduction Plan.

indicating presence of a lead service line and 4 also exceeded the ODWQS of 0.01 mg/L. Lead samples are collected before and after a LSL replacement has been undertaken. There were 5 locations resampled in order to monitor lead levels post-replacement. Based on sample results to date, regulatory compliance is expected at individual sites that have undergone a full LSL replacement or where there is no lead remaining in the service line.

Lead Service Line Replacements

Since 2007, there has been a total of 703 lead service lines replaced in the City. As a result, 91 per cent of these homes are now considered to be 'lead-free' service lines (i.e. either a full replacement or a partial replacement that connected to a non-lead material). There were 14 LSL replacements undertaken in the City between January 1 to December 31, 2019. Of these, there were 3 LSL replacements on City property and 2 LSLs were replaced on both City and private property by coordinating the work with the homeowner. An additional 9 LSL replacements were completed on private property by the homeowner.

Since 2010, the City initiated financial incentive programs to encourage replacement of privately-owned LSL by reducing the financial burden to property owners. The grants cover, on average, 75 per cent of the LSL replacement cost for homeowners. From 2010 to Dec. 31, 2019, 229 privately owned lead service lines were replaced through the grant program, as presented in Table 13.

Table 13: Private Lead Service Line Replacement Grant Programs (2010 – Dec. 31, 2019)

Year	Grant Program Total	Cumulative Total
2010	60	60
2011	62	122
2012	31	153
2013	20	173
2014	9	182
2015	12	194
2016	7	200
2017	13	213
2018	7	220
2019	9	229

Targeted outreach regarding the Grant Programs is directed at all properties with known or suspected privately-owned LSLs. The main barriers to privately owned LSL replacement for homeowners include financial costs, disruption to property, rental properties and people who are unconcerned about the health risks of lead in drinking water. Direct communications continued to be tailored to address these barriers.

Frozen Water Pipe Prevention and Monitoring Program

Water Services takes a proactive approach in monitoring and preventing frozen water pipes. The purpose of the 2015 Council-approved Frozen Water Pipe Policy is to prevent and manage interruptions to the City's supply of water, caused by the temporary freezing of City and/or customer water pipes, so that customers maintain reliable, continuous access to water.

Water Services monitors daily temperatures, frost levels, degree-days and water temperature in the water distribution system. When certain thresholds are reached, the freeze prevention program is initiated.

The Frozen Water Pipe Program requires customers to take specific actions to prevent the freezing of water pipes. Water Services has identified two tiers for their frozen water pipe prevention program. Tier 1 properties are most susceptible to freezing and have historically frozen every year or are properties where running water will ensure the water mains in the area do not freeze. Tier 2 properties are also at risk for freezing and have had frozen pipes in the past during prolonged periods of severe winter temperatures. Through communication with these customers, Water Services works hard to ensure that frozen water pipes are prevented. The customers in both of these Tiers are registered in our notification program.

For more information on the Frozen Water Pipe Program, visit guelph.ca/frozenpipes.

2019 Frozen Water Pipe Program Statistics

Through the winter of 2018/2019 Guelph experienced fluctuating temperatures throughout the early part of the winter (November and December). Early into 2019, nighttime temperatures consistently remained below -10°C, dropping below -20°C and remaining steady for over a week. The result of which pushed frost down into the ground creating a scenario with high probability of frozen water pipes.

By late January, 3.5 feet of frost was noted in the ground – the lowest frost depth for the season. With the addition in the cumulative mean daily temperature (i.e. the lower the temperature, the quicker the approach to the cumulative temperature trigger) it was decided to initiate the freeze prevention program.

On January 21, Tier 1 and Tier 2 customers began running water as per the actions set out in this program to prevent water pipes from freezing. As temperatures warmed up in February, the frost level in the ground rose and forecasted temperatures saw no return to cooler temperatures. By late February, all customers were contacted to cease running their water, as per the program.

Summary of 2018/2019 Winter Statistics

- Temperature hit cumulative low trigger amount of -400°C: February 19.
- Lowest temperature recorded for the season was on February 1: -25.58°C.
- Lowest frost depth recorded for the season was 3.5 feet was on January 29.
- No frozen calls were received during the season.

h) Raw and Treated Water Quality and Drinking Water Quality Trends

Guelph Drinking Water System

This section describes the water quality monitoring, both regulatory and operational, that has been completed in 2019.

Water Quality Review – Guelph Drinking Water System

Under the Safe Drinking Water Act, municipalities are required to monitor both the raw and treated quality of the source water supplied. This monitoring is performed for both regulatory compliance and due diligence and is expected to identify any changes within the treated water, as well as, in raw source waters.

A note about all tables included in this section

1. All regulated chemicals detected in the City of Guelph's treated water sources that are above the lab's MDL (minimum detection limit) are underlined indicating a hyperlink to an Excel Workbook in Guelph's electronic document management system (EDMS). The workbook contains a definition of the parameter and an Excel worksheet for each treated source where the parameter has been detected with values for all sample results from January 1, 2007 to December 31, 2019. This database is used to closely track the instances of the identified chemical parameters and therefore provide time for planning and budgeting if treatment or an alternative supply is eventually required due to the presence of a given parameter. The database is updated annually.
2. Tabulated data is from the best available information at the time of table creation.
3. If sampling for a particular schedule's parameters (e.g. Schedule 23 and 24) did not occur within the calendar year of the report, then the most recent values are included in the report for reference.
4. All acronyms and initials included in tables are described in Appendix L: Glossary.
5. Please note that some hyperlinks in the tables are linked to Guelph's electronic document management system (EDMS). Note: EDMS is available for internal use only.

The following section summarizes Distribution free chlorine residual test results (January 1 to December 31, 2019) required by O. Reg. 170/03 Schedule 7-2, where secondary disinfection is provided.

Please note that the City of Guelph takes additional operational daily Distribution samples and tests for free chlorine residual in order to better monitor the free residual in the Distribution System and respond accordingly. There was no instance of an adverse result in 2019 associated with these sampling sites, as presented in Table 14.

Table 14: O. Reg. 170/03 Schedule 7-2, City of Guelph - Distribution Manual Free Chlorine Residual Summary, 2019

Parameter	ODWQS Criteria	Total Analyses	Total Samples above Detection Limit	Total Outside ODWQS Criteria	Range (mg/L)
Free Chlorine Residual – Zone One	0.05 – 4.0	297	297	0	0.52 – 1.21
Free Chlorine Residual – Zone Two	0.05 – 4.0	297	297	0	0.35 – 1.03

Table 15 below summarizes raw bacteriological sampling and test results required by O. Reg. 170/03 Schedule 10-4 including investigative re-sampling for the period of January 1 to December 31, 2019. There were a total of 886 raw samples taken and 2,658 raw analyses conducted.

Table 15: O. Reg. 170/03 Schedule 10-4, City of Guelph - Raw Bacteriological Sampling Summary, 2019

Parameter	ODWQS Criteria	Total Analyses	Total Outside ODWQS Criteria	Range (cfu/100 mL)
Raw - E. coli	n/a	886	n/a	0 – 4
Raw - Total Coliform	n/a	886	n/a	0 – 78
Raw - Background	n/a	886	n/a	0 – 480

Table 16 summarizes treated bacteriological sampling and test results required by O. Reg. 170/03 Schedule 10-3 and 6-3 including investigative re-sampling for 2019.

- Number of POE¹⁶ samples taken: 554
- Number of POE analyses: 2,209
- Number of Distribution samples taken: 1,534
- Number of Distribution analyses: 7,693

Table 16: O. Reg. 170/03 Schedule 10-2, 10-3 and 6-3, City of Guelph - Treated Bacteriological Sampling Summary, 2019

Parameter	ODWQS Criteria	Total Analyses	Total Outside ODWQS Criteria	Range	Units
POE - E. coli	0	554	0	0	cfu /100 mL
POE - Total Coliform	0	554	0	0	cfu /100 mL
POE – HPC	n/a	547	n/a	0 – 1300	cfu /mL
POE – Background	n/a	554	n/a	0 – 9	cfu /100 mL
POE – Free Chlorine Residual	0.05 - 4.0	549 ¹⁷	0	0.53 – 1.44	mg/L
Distribution - E. coli	0	1,578	0	0	cfu /100 mL
Distribution - Total Coliform	0	1,578	0	0	cfu /100 mL
Distribution – HPC	n/a	703	n/a	0 – 280	cfu /mL
Distribution – Background	n/a	1,578	n/a	0 – 380	cfu /100 mL
Distribution – Free Chlorine Residual	0.05 - 4.0	1,914	0	0.30 – 1.30	mg/L

¹⁶ Point of Entry - the point at or near which treated water enters the distribution system.

¹⁷ Total number of samples used specifically to satisfy the requirements of O. Reg. 170/03 Schedule 10-3 and 6-3 (Treated Source samples taken for Operational purposes are not included).

Table 17 summarizes raw source turbidity sampling and test results required by O. Reg. 170/03 Schedule 7-3 for the period of January 1 to December 31, 2019. Schedule 7-3 requires monthly raw source turbidity sampling, but the City of Guelph samples all raw sources and tests for turbidity on a weekly basis to better monitor this aspect of raw water quality.

Table 17: O. Reg. 170/03 Schedule 7-3, City of Guelph - Raw Source Turbidity Sampling Summary, 2019

Parameter	ODWQS Criteria	Total Analyses	Total Outside ODWQS Criteria	Range (ntu)
Raw Source Turbidity	n/a	1036	n/a	0.05– 1.00

Table 18 summarizes raw source Ultraviolet Transmittance (UVT) sampling and test results required by the City's Municipal Drinking Water Licence (MDWL), where UV for primary disinfection is used for the period of January 1 to December 31, 2019. The MDWL requires a UVT test to be conducted and recorded on a weekly sampling schedule.

Table 18: O. Reg. 170/03 Schedule 7-3, City of Guelph - Raw Ultraviolet Transmittance Sampling Summary, 2019

Parameter	MDWL Criteria (% UVT)	Total Analyses	Total Outside MDWL Criteria	Range (% UVT)
Raw UVT F.M. Woods Station	93.5	58	0	94.6 - 100
Raw UVT Membro Well	90.0	102	0	90.0 – 99.8
Raw UVT Water St. Well	87.0	52	0	88.1 – 98.1

Microparticulate Analysis

As a part of the Guelph Drinking Water System's Municipal Drinking Water Licence, Guelph Water Services is required, twice annually, to assess the Arkell Springs Glen Collector System which is characterized as groundwater under the influence of surface water with effective in situ filtration (GUDI-WEF). The purpose of the assessment is to ensure that the source continues to meet the GUDI-WEF source water characteristics as outlined by the MECP. Sampling was performed on this water source in the spring and fall of 2019. The source continues to meet the GUDI-WEF source water characteristics.

Treated Water Quality Statistics – Guelph Drinking Water System

O. Reg. 170/03 Schedule 6-5 - Continuous Monitoring Results Summary

Water Services utilizes over forty regulatory and operational continuous monitoring devices to measure water quality. Each regulatory device has controls associated with it such that in the event that the device detects that a measured value is outside the acceptable parameters for that location, the device causes an alarm to be sent to an Operator for immediate response (24 hours per day, seven days per week) and either automatically shuts down the station or activates a second alarm for immediate Operator response.

Both the minimum allowable levels (if applicable) and the target values for Water Services regulatory continuous monitoring devices are listed in Table 19. The target values represent a safety margin to ensure that regulatory requirements are satisfied at all times. Please note that, continuous monitoring values all fell within acceptable regulatory standards in 2019.

Table 19: O. Reg. 170/03 Schedule 6-5, Continuous Monitoring Results Summary, 2019

Parameter	ODWQS or Regulatory Minimum	Target Range	Units
Point of Entry Free Chlorine Residual	0.05 mg/L	Greater than 0.4	mg/L
UV Dose F.M. Woods Station	24 mJ/cm ²	Greater than 40	mJ/cm ²
UV Dose Water St. Well	40 mJ/cm ²	Greater than 45	mJ/cm ²
UV Dose Membro Well	20 mJ/cm ²	Greater than 40	mJ/cm ²

O. Reg. 170/03 Schedule 13-6 and 13-7, "Three Month" Sampling Results Summary

In 2019, all operational Treated Sources were sampled and analyzed for Schedule 13-6, 13-16.1 and 13-7 parameters as per O. Reg. 170/03.

Regulation 170/03, Schedule 13-6 requires a minimum of one distribution sample taken from the Distribution System where THM's (trihalomethanes) are most likely to develop (locations with high retention times). Water Services uses the Speedvale, Clair and Verney Elevated Tanks for this purpose in the Guelph Drinking Water System. The Maximum Allowable Concentration (MAC) for THM's is 0.1 mg/L. However, for this parameter, the MAC uses a running annual average of quarterly samples.

The results of the running annual average value for THMs for all related Distribution System samples in each quarter of 2019 (Jan. 01 to Dec. 31) is below the half of the maximum allowable concentration ($\frac{1}{2}$ MAC): Q1 = 0.023 mg/L; Q2 = 0.028 mg/L; Q3 = 0.034 mg/L and Q4 = 0.039 mg/L.

Regulation 170/03, Schedule 13-6.1 requires a minimum of one distribution sample taken from the Distribution System where HAAs (haloacetic acids) are most likely to develop. Water Services uses Woods Sample Station, Ptarmigan Sample Station, Clair Tower Sample Tap and Edinburgh South Sample Station for this purpose in the Guelph Drinking Water System. The Maximum Allowable Concentration (MAC) for HAAs is 0.08 mg/L. However, for this parameter, the MAC uses a running annual average of quarterly samples.

The results of the running annual average value for HAAs for all related Distribution System samples in each quarter of 2019 (Jan. 01 to Dec. 31) is below the half of the maximum allowable concentration ($\frac{1}{2}$ MAC): Q1 = 0.024 mg/L; Q2 = 0.021 mg/L; Q3 = 0.027 mg/L and Q4 = 0.025 mg/L.

All operational Treated Sources were sampled and analyzed for Nitrates and Nitrites as per Regulation 170/03, Schedule 13-7. There was no instance of an adverse result in 2019. Raw sampling results are also presented in Table 20.

Table 20: O. Reg. 170/03 Schedule 13-6 and 13-7, City of Guelph – “Three Month” Sampling Results Summary, 2019

Parameter	ODWQS MAC	½ MAC	Total Samples	Samples Above MDL	Total Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average ¹⁸ (mg/L)
Trihalomethanes	0.100 ¹⁹	n/a	23	23	0	0.0125	0.0712	0.0363
Haloacetic Acids	0.08 ²⁰	n/a	14	12	0	< 0.005	.040	0.025
Nitrate + Nitrite (as nitrogen)	10	5	47	33	0	< 0.10	2.14	1.08
Nitrate + Nitrite (as nitrogen) - Woods' Raw Sources (Operational Sampling)	n/a	n/a	35	35	n/a	0.36	4.65	1.29
Nitrate + Nitrite (as nitrogen) - University Raw Source (MDWL Sampling)	10	5	5	5	0	0.35	0.62	0.41
Nitrate + Nitrite (as nitrogen) - Paisley Raw Source (MDWL Sampling)	10	5	5	5	0	1.99	2.14	2.05

¹⁸ This is the average of values above the lab detection limit.¹⁹ This standard is expressed as a running annual average.²⁰ This standard is expressed as a running annual average.

Operational VOC Scan Results Summary

Please note that Schedule 13-6, 13-6.1 and Schedule 24 parameters are also part of the “Operational VOC Sampling Regime” and therefore the values in the “Operational VOC Scan Results Summary” in Appendix D: Treated Water Quality Statistics include a repetition of the relevant data from the Schedule 13-6, 13-6.1 and Schedule 24 tables. The “Operational VOC Scan Results Summary” lists the total number of samples analyzed for these parameters in 2019 (January 1 to December 31, 2019). Table 21 (below), highlights specific VOC parameters due to their presence / significance within the water supply. There was no instance of an adverse result in 2019.

Table 21: City of Guelph Operational VOC Scan Selected Results Summary, 2019

Parameter	ODWQS MAC	½ MAC	Total Samples	Samples Above MDL	Total Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
Trichloroethylene	0.005	0.0025	148	54	0	< 0.0001	0.00199	0.00063
Trihalomethanes	0.100 ²¹	n/a	135	58	0	< 0.0002	0.0365	0.00835

²¹ This standard is expressed as a running annual average.

O. Reg. 170/03 Schedule 23 Results Summary

In 2019, all operational treated sources were sampled and analyzed for Schedule 23 parameters as per O. Reg. 170/03. All of the City of Guelph's treated ground water sources are on a three year sampling schedule. F.M. Woods' Station is the exception and is sampled on the annual surface water schedule due to the fact that five of the nine sources that supply F.M. Woods are GUDI-WEF sources (the Carter Well 1 and 2, Arkell 1, Arkell 15 and the Arkell Springs Glen Collectors).

The results of the Schedule 23 inorganic parameter analysis in 2019 were all under half of the maximum allowable concentration ($\frac{1}{2}$ MAC) and the majority were under the laboratory's MDL (minimum detection level). Please refer to the section titled "O. Reg. 170/03 Schedule 23 Results Summary" included in Appendix D: Treated Water Quality Statistics for more information.

Table 22: O. Reg. 170/03 Schedule 23, 13-2a, City of Guelph - Annual Schedule 23 Sampling Results Summary, 2019

Parameter	ODWQS MAC	½ MAC	Total Samples	Samples Above MDL	Total Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
<u>Antimony</u>	0.014	0.007	24	5	0	< 0.0001	0.00092	0.00065
<u>Arsenic</u>	0.025	0.0125	24	5	0	< 0.0002	0.0043	0.002
<u>Barium</u>	1.0	0.5	24	24	0	0.035	0.11	0.0672
<u>Boron</u>	5.0	2.5	24	24	0	0.014	0.043	0.028
<u>Cadmium</u>	0.005	0.0025	24	5	0	0.00009	0.00013	0.00011
Chromium	0.05	0.025	24	2	0	0.008	0.015	0.0079
Mercury	0.001	0.0005	12	0	0	< 0.0001	< 0.0001	n/a
Selenium	0.01	0.005	24	0	0	< 0.002	< 0.002	n/a
<u>Uranium</u>	0.02	0.01	24	22	0	< 0.00010	0.0017	0.00107

O. Reg. 170/03 Schedule 24 Results Summary

In 2019, all operational Treated Sources were sampled and analyzed for Schedule 24 parameters as per O. Reg. 170/03. All of the City of Guelph's treated ground water sources are on a three year sampling schedule. F.M. Woods' Station is the exception and is sampled on the annual surface water schedule due to the fact that five of the nine sources that supply F.M. Woods' are GUDI-WEF sources (the Carter Well field, Arkell 1, Arkell 14 and the Arkell Springs Glen Collectors).

The results of the Schedule 24 organic parameter analysis in 2019 were all under half of the maximum allowable concentration ($\frac{1}{2}$ MAC) and the majority were under the laboratory's MDL (minimum detection level). Please refer to the section entitled "O. Reg. 170/03 Schedule 24 Results Summary" included in Appendix D: Treated Water Quality Statistics for more information.

It should be noted that, before 2012, values for TCE (trichloroethylene) at Membro and Emma occasionally crested the $\frac{1}{2}$ MAC value of 0.0025 mg/L and as a result Water Services moved to an "Increased Frequency Sampling Plan" as required by Regulation 170/03 - 13-5 which requires that sampling for this parameter be sampled every "three months" until two consecutive sample results are below the $\frac{1}{2}$ MAC value. As a precautionary measure, Water Services samples on a monthly schedule at Membro and Emma wells. All other sources, are sampled annually (minimally) for VOC's (Volatile Organic Carbons) through a "Guelph VOC Scan" in order to better track parameters such as TCE via more data. Currently, TCE is above the MDL but below the $\frac{1}{2}$ MAC at Membro, Water Street, Emma and Park treated water samples.

Table 23: O. Reg. 170/03 Schedule 24, 13-4a, City of Guelph - Annual Schedule 24 Sampling Results Summary, 2019

Parameter	ODWQS MAC	½ MAC	Total Samples	Samples Above MDL	Total Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
Alachlor	0.005	0.0025	12	0	0	< 0.0005	< 0.0005	n/a
Atrazine + N-dealkylated metabolites	0.005	0.0025	12	0	0	< 0.001	< 0.001	n/a
Azinphos-methyl	0.02	0.01	12	0	0	< 0.002	< 0.002	n/a
Benzene	0.005	0.0025	66	0	0	< 0.0001	< 0.0001	n/a
Benzo(a)pyrene	0.00001	0.000005	12	0	0	< 0.000005	< 0.000005	n/a
Bromoxynil	0.005	0.0025	12	0	0	< 0.0005	< 0.0005	n/a
Carbaryl	0.09	0.045	12	0	0	< 0.005	< 0.005	n/a
Carbofuran	0.09	0.045	12	0	0	< 0.005	< 0.005	n/a
Carbon Tetrachloride	0.005	0.0025	66	0	0	< 0.0001	< 0.0001	n/a
Chlorpyrifos	0.09	0.045	12	0	0	< 0.001	< 0.001	n/a
Diazinon	0.02	0.01	12	0	0	< 0.001	< 0.001	n/a

Parameter	ODWQS MAC	½ MAC	Total Samples	Samples Above MDL	Total Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
Dicamba	0.12	0.06	12	0	0	< 0.001	< 0.001	n/a
1,2-Dichlorobenzene	0.2	0.1	66	0	0	< 0.0002	< 0.0002	n/a
1,4-Dichlorobenzene	0.005	0.0025	66	0	0	< 0.0002	< 0.0002	n/a
1,2-Dichloroethane	0.005	0.0025	66	0	0	< 0.0002	< 0.0002	n/a
1,1-Dichloroethylene	0.014	0.007	66	0	0	< 0.0001	< 0.0001	n/a
<u>Dichloromethane</u>	0.05	0.025	66	0	0	< 0.0005	< 0.0005	n/a
2,4-Dichlorophenol	0.9	0.45	12	0	0	< 0.00025	< 0.00025	n/a
2,4-Dichlorophenoxy- acetic acid (2,4-D)	0.1	0.05	12	0	0	< 0.0001	< 0.0001	n/a
Diclofop-methyl	0.009	0.0045	12	0	0	< 0.0009	< 0.0009	n/a
Dimethoate	0.02	0.01	12	0	0	< 0.0025	< 0.0025	n/a
Diquat	0.07	0.0035	12	0	0	< 0.007	< 0.007	n/a
Diuron	0.15	0.075	12	0	0	< 0.01	< 0.01	n/a
Glyphosate	0.28	0.14	12	0	0	< 0.01	< 0.01	n/a

Parameter	ODWQS MAC	½ MAC	Total Samples	Samples Above MDL	Total Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
Malathion	0.19	0.095	12	0	0	< 0.005	< 0.005	n/a
2-Methyl-4-chlorophenoxyacetic acid	0.1	0.05	12	0	0	< 0.00012	< 0.00012	n/a
Metolachlor	0.05	0.025	12	0	0	< 0.0005	< 0.0005	n/a
Metribuzin	0.08	0.04	12	0	0	< 0.005	< 0.005	n/a
Chlorobenzene	0.08	0.04	66	0	0	< 0.0001	< 0.0001	n/a
Paraquat	0.01	0.005	12	0	0	< 0.001	< 0.001	n/a
Pentachlorophenol (PCP)	0.06	0.03	12	0	0	< 0.0005	< 0.0005	n/a
Phorate	0.002	0.001	12	0	0	< 0.0005	< 0.0005	n/a
Picloram	0.19	0.095	12	0	0	< 0.005	< 0.005	n/a
Polychlorinated Biphenyls (PCB)	0.003	0.0015	12	0	0	< 0.00005	< 0.00005	n/a
Prometryn	0.001	0.0005	12	0	0	< 0.00025	< 0.00025	n/a
Simazine	0.01	0.005	12	0	0	< 0.001	< 0.001	n/a
Terbufos	0.001	0.0005	12	0	0	< 0.0005	< 0.0005	n/a

Parameter	ODWQS MAC	½ MAC	Total Samples	Samples Above MDL	Total Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
<u>Tetrachloroethylene (PCE)</u>	0.03	0.015	66	0	0	< 0.0001	< 0.0001	n/a
2,3,4,6-Tetrachlorophenol	0.1	0.05	12	0	0	< 0.0005	< 0.0005	n/a
Triallate	0.23	0.115	12	0	0	< 0.001	< 0.001	n/a
<u>Trichloroethylene</u>	0.005	0.0025	66	24	0	< 0.0001	0.00167	0.00046
2,4,6-Trichlorophenol	0.005	0.0025	12	0	0	< 0.0005	< 0.0005	n/a
Trifluralin	0.045	0.0225	12	0	0	< 0.001	< 0.001	n/a
Vinyl Chloride	0.002	0.001	66	0	0	< 0.0002	< 0.0002	n/a

O. Reg. 170/03 Schedule 13-8 and 13-9, “Five Year” Sampling Results Summary

In 2019, all operational Treated Sources were sampled and analyzed for the Schedule 13-9 Fluoride parameter as per O. Reg. 170/03. In 2019, Fluoride (naturally present and not added as part of the treatment process) was detected at all treated sources; the analytical results were all under the maximum allowable concentration (MAC). The values in Table 24 reflect the 2019, Schedule 13-9 sampling regime.

Sodium, however, is sampled on a more frequent basis (annually) than the Schedule 13-8 requirement due to the fact that at every treated source, sodium levels are above the lower reportable limit of 20 mg/L.

The increased frequency of sampling provides more data in order to better establish sodium value trends. Sodium results for 2019 can be referenced in Table 24. This data is provided to Wellington-Dufferin-Guelph Public Health, as required.

Table 24: O. Reg. 170/03 Schedule 13-8 and 13-9, City of Guelph – “Five Year” Sampling Results Summary

Parameter	ODWQS MAC	½ MAC	Total Samples	Samples Above MDL	Total Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
Sodium	20 and 200 ²²	n/a	32	32	32	23	170	88.9
Fluoride	1.5 and 2.4 ²³	n/a	10	10	0	0.12	0.73	0.30

²² The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

²³ Where supplies contain naturally occurring fluoride at levels higher than 1.5 mg/L but less than 2.4 mg/L, the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources.

General Chemistry Results Summary

Water Services has initiated an “Annual General Chemistry” sampling event through RCap (Rapid Chemical Analysis Package). This body of data can be used to answer customer inquiries, as well as, inquiries from Water Services staff and consultants in terms of treatment upgrades.

Please note that Schedule 23 parameters are also part of the “Annual General Chemistry Sampling Regime” and therefore the values in the “General Chemistry Results Summary” section in Appendix D: Treated Water Quality Statistics include a repetition of the relevant data from the Schedule 23 Table. The “General Chemistry Results Summary” lists the total number of samples analyzed for these parameters in 2019.

In 2019, all operational Treated Sources were sampled and analyzed for general chemistry parameters. Please refer to the “General Chemistry Results Summary” in Appendix D: Treated Water Quality Statistics for the full list of parameters.

Table 25 highlights specific parameters due to their presence / significance within the water supply.

Table 25: City of Guelph General Chemistry Selected Results Summary, 2019

Parameter	ODWQS MAC	ODWQS AO	ODWQS OG	Total Samples	Samples Above MDL	Total Above Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
Ammonia-N	n/a	n/a	n/a	12	2	n/a	< 0.05	0.18	0.16
<u>Chloride</u>	n/a	250	n/a	12	12	n/a	39	280	160
<u>Hardness</u> (Calculated as CaCO ₃)	n/a	n/a	80-100	12	12	12	330	570	448
<u>Iron</u>	n/a	0.3	n/a	24	6	2	< 0.005	1.8	0.56
Lead	0.01	n/a	n/a	23	2	0	<0.0005	0.0014	<0.00073
<u>Manganese</u>	n/a	0.05	n/a	24	19	0	<0.002	0.037	0.0088
<u>Sodium</u>	n/a	20 and 200	n/a	38	38	38	23	170	91

Gazer Mooney Subdivision Distribution System

This section describes the regulatory water quality monitoring that has been collected in the Gazer Mooney Subdivision Distribution System in 2019. For regulatory sampling schedules that do not occur in 2019 related to the Gazer Mooney System, the most recent historical data is listed.

Water Quality Review - Gazer Mooney Subdivision Distribution System

Under the Safe Drinking Water Act, municipalities are required to monitor both the raw and treated quality of the source water supplied. This monitoring is performed for both regulatory compliance and due diligence and is expected to identify any changes within the treated water as well as in the raw source waters.

A note about all tables included in this section

1. All regulated chemical parameters where values above the lab's MDL (minimum detection limit) have been detected in the City of Guelph's treated water sources are underlined indicating a hyperlink to an Excel Workbook in Guelph's EDMS. The workbook contains a definition of the parameter, an Excel worksheet for each treated source where the parameter has been detected with values for all sample results from January 1, 2007 to December 31, 2019. This database is used to closely track the instances of the identified chemical parameters and therefore provide time for planning and budgeting if treatment or an alternative supply is eventually required due to the presence of a given parameter. The database is updated quarterly.
2. Tabulated values are from best available information at the time of table creation. While the values documented here satisfy the regulatory minimum regulatory requirements, Water Services performs many additional operational tests not listed in this report.
3. All acronyms and initialisms included in tables are described in Appendix L: Glossary.
4. Please note that some hyperlinks in the tables are linked to Guelph's electronic document management system (EDMS) which is available for internal City use only.

Table 26 summarizes daily Distribution free chlorine residual test results required by O. Reg. 170/03 Schedule 7-2 for the period of January 1 to December 31, 2019. There was no instance of an adverse result in 2019.

Table 26: O. Reg. 170/03 Schedule 7-2, Gazer Mooney - Distribution Manual Free Chlorine Residual Summary, 2019

Parameter	ODWQS Range	Total Samples	Total Samples Outside of ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
Free Chlorine Residual	0.05 – 4.0	105	0	0.49	1.07	0.92

Table 27 summarizes bacteriological sampling and test results required by O. Reg. 170/03 Schedule 10 for the period of January 1 to December 31, 2019. There was no instance of an exceedance for a Regulatory microbiological parameter in 2019. There were 52 Distribution samples taken and 573 Distribution analyses completed in 2019.

Table 27: O. Reg. 170/03 Schedule 10-2, Gazer Mooney Treated Bacteriological Sampling Summary, 2019

Parameter	ODWQS Criteria	Total Analyses	Total Outside ODWQS Criteria	Range	Units
Distribution - E. coli	0	52	0	0	cfu/100 mL
Distribution - Total Coliform	0	52	0	0	cfu/100 mL
Distribution – HPC	n/a	52	n/a	0 - 3	cfu/mL
Distribution – Background	n/a	52	n/a	0 - 3	cfu/100 mL
Distribution– Free Chlorine Residual	0.05 – 4.0	105	0	0.49 – 1.07	mg/L

Treated Water Quality Statistics – Gazer Mooney Subdivision Distribution System

O. Reg. 170/03 Schedule 13-6, “Three Month” Sampling Results Summary

In 2019, Gazer Mooney Subdivision Distribution System was sampled and analyzed for Schedule 13-6 and 13-6.1 parameters as per O. Reg. 170/03. Regulation 170/03, Schedule 13-6 requires a minimum of one distribution sample taken from the Distribution System where THMs (trihalomethanes) are most likely to develop (points with high retention times). The MAC for THMs is 0.1 mg/L. However, for this parameter the MAC uses a running annual average of quarterly samples. These results are presented in Table 28.

The results of the running annual average value for THMs in the Gazer Mooney Subdivision Distribution System samples in 2019 were below the half maximum allowable concentration ($\frac{1}{2}$ MAC): Q1 = 0.020 mg/L; Q2 = 0.018 mg/L; Q3 = 0.018 mg/L and Q4 = 0.019 mg/L.

Regulation 170/03, Schedule 13-6.1 requires a minimum of one distribution sample taken from the Distribution System where HAAs (haloacetic acids) are most likely to develop. The MAC for HAAs is 0.08 mg/L. However, for this parameter the MAC uses a running annual average of quarterly samples.

The results of the running annual average value for HAAs in the Gazer Mooney Subdivision Distribution System samples in 2019 is below the half maximum allowable concentration ($\frac{1}{2}$ MAC): Q1 = not detected; Q2 = not detected; Q3 = not detected and Q4 = not detected.

Table 28: O. Reg. 170/03 Schedule 13-6, Gazer Mooney - "Three Month" Sampling Results Summary, 2019

Parameter	ODWQS MAC mg/L	½ MAC mg/L	Total Samples	Samples Above MDL	# Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
Trihalomethanes	0.100 ²⁴	n/a	4	4	0	0.013	0.020	0.019
Haloacetic Acids	0.08 ²⁵	n/a	4	0	0	<0.005	<0.005	n/a

O. Reg. 170/03 Schedule 13-8 and 13-9, "Five Year" Sampling Results Summary

In 2019, Gazer Mooney Subdivision Distribution System was sampled and analyzed for the Schedule 13-9 Fluoride parameter as per O. Reg. 170/03. In 2019, Fluoride (naturally present and not added as part of the treatment process) was detected; the analytical result was under the maximum allowable concentration (MAC). The values in Table 29 reflect the 2019, Schedule 13-9 sampling regime.

Sodium, however, is sampled on a more frequent basis (annually) than the Schedule 13-8 requirement due to the fact that at every treated source, sodium levels are above the lower reportable limit of 20 mg/L. The increased frequency of sampling provides more data in order to better establish sodium value trends. Sodium results for 2019 can be referenced in Table 29. This data is provided to Wellington-Dufferin-Guelph Public Health, as required.

²⁴ This standard is expressed as a running annual average.

²⁵ This standard is expressed as a running annual average.

Table 29: O. Reg. 170/03 Schedule 13-8 and 13-9, Gazer Mooney - "Five Year" Sampling Results Summary

Parameter	ODWQS MAC	½ MAC	Total Samples	Samples Above MDL	Total Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
<u>Sodium</u>	20 and 200 ²⁶	n/a	2	2	2	24	26	25
Fluoride	1.5 and 2.4 ²⁷	n/a	1	1	0	0.17	0.17	0.17

General Chemistry Results Summary

In addition to the regulatory sampling and analysis required for the operation of the Gazer Mooney Subdivision, Water Services samples for parameters as listed in Table 30 in order to gather additional data and answer common inquiries from the public.

²⁶ The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

²⁷ Where supplies contain naturally occurring fluoride at levels higher than 1.5 mg/L but less than 2.4 mg/L, the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources.

Table 30: Gazer Mooney General Chemistry Results Summary, 2019

Parameter	ODWQS MAC mg/L	ODWQS AO	½ MAC mg/L	Total Samples	Samples Above MDL	Total Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
<u>Sodium</u>	20 and 200 ²⁸	n/a	n/a	3	3	3	24	26	25
Chloride	n/a	250	n/a	1	1	0	40	40	40

²⁸ The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

i) Follow-up on Action Items from Previous Management Reviews

A Management Review meeting was held on January 25, 2019 and January 29, 2020. The following is a summary of results of the management review. Appendix F: Action Items from Management Review includes the action items from the meetings. Items 1-12 are from the January 25, 2019 Management Review meeting and items 13-17 are from the January 30, 2020 Management Review Meeting.

Results of the Management Review, the identified deficiencies, decisions and action items

The summary below includes identified deficiencies and decisions from the meeting held on January 30, 2020.

Deficiencies

- There were four identified non-compliance issues identified in the 2018-2019 Ministry of the Environment, Conservation and Parks inspection. Through the Root-Cause Analysis program, Water Services has worked to implement policies and procedures to reduce the likelihood of these non-compliances re-occurring in the future.
- Three AWQI's occurred in 2019 in the Guelph Drinking Water System and one in the Gazer Mooney Subdivision Distribution System. Three of the AWQIs were related to sodium exceedances and one related to an incident where the chlorine residual in a dead-end watermain was found to be below 0.05mg/L.
- There was one deviation from a Critical Control Point relating to the low distribution system (secondary) chlorine residual found in a dead-end section of watermain. Corrective and preventive actions have been taken to prevent this from re-occurring in the future.
- There were two minor non-conformance issues identified in the 2019 accreditation (external) audit. A corrective action plan was sent to the accreditation body and was accepted on December 15, 2019.

Decisions

- See section d) The Effectiveness of the Risk Assessment Process regarding decisions made in the Risk Assessment process on September 24, 2019.
- Investigate using J-Plugs on the drop tubes in the production wells.
- Consider adding water loss data to the Annual and Summary Report for 2020.

- Perform additional analysis on the frozen services program, specifically the running tap program, and how it relates to water consumption and water production.
- Look at adding a line for performance testing to Table 6 for next year's annual report.
- Have the SCADA group provide C3 Water with copies of facility P&ID, PFD and equipment layout drawings so that the hydraulic model can be adjusted to take into account pipe friction factors within treatment facilities.

j) The Status of Management Action Items Identified Between Management Reviews

Water Services is very committed to continually improving the drinking water system, including improving on existing programs and processes. Throughout the year, continual improvement suggestions (management action items) can be presented throughout many different activities, such as: emergency tests, audits, staff suggestions, debrief sessions, root-cause analysis meetings, etc. These items are logged into Water Services' Continual Improvement Database and the appropriate teams meet every other month to update on the status of these items.

Appendix G: Status of Management Action Items Identified between Reviews is a list of continual improvement items identified in 2019 for management follow-up.

k) Changes that Could Affect the Drinking Water System and the Quality Management System

Appendix E: Legal and Other Requirements Table includes a summary of legislative and regulatory updates from January 1 to December 31, 2019 that could affect the Drinking Water System and/or the Quality Management System.

Changes Affecting the Drinking Water System (DWS) - Licence Approvals and Amendments

Municipal Drinking Water Licence (MDWL) Renewal

The Municipal Drinking Water Licence was renewed in 2019 and expires in 2024. Table 31 below includes Licence documents' dates of issue and expiry. Copies of the documents listed in Table 31 are available by contacting Water Services at waterservices@guelph.ca or calling 519-837-5627.

As part of the MDWL renewal, the updated Financial Plan was submitted to Council for approval in March 2019 and the Operational Plan was endorsed by Council in January 2019.

Table 31: Municipal Drinking Water Licensing Documents

Document	Issue Date (yyyy-mm-dd)	Expiry (yyyy-mm-dd)
<u>Municipal Drinking Water Licence (#017-101)</u>	2019-07-26	2024-07-24
<u>Drinking Water Works Permit (#017-201)</u>	2019-07-26	2024-07-24
<u>Municipal Long Range Financial Plan (#017-301)</u>	2019-02	2024-07-24
<u>DWQMS Certificate of Registration - Guelph Drinking Water System (017-OA1)</u>	2018-12-20	2021-11-25
<u>Operational Plan Re-endorsement Guelph Drinking Water System (resolution)</u>	2019-01-14	2023-10-31
<u>Agreement Regarding Water Services for the Gazer-Mooney Subdivision</u>	2019-03-01	2029-02-28
<u>Gazer Mooney Municipal Drinking Water Licence (#104-103)</u>	2016-01-28	2021-01-26
<u>Gazer Mooney Drinking Water Works Permit (#017-203)</u>	2016-01-28	2021-01-26
<u>Operational Plan Re-endorsement Gazer Mooney Subdivision Dist. System (resolution)</u>	2019-09-16	2023-10-31
<u>DWQMS Certificate of Registration - Gazer Mooney (104-OA2)</u>	2018-12-20	2021-11-25

Permits to Take Water (PTTW) Renewals

The Water St. Wellfield PTTW and the Downey PTTW were both renewed in 2019 and expire in 2029.

One PTTW is scheduled for renewal in 2020. The Arkell Bedrock PTTW expires on May 31, 2020.

Sentry Monitoring Wells

A consultant was retained in 2015 to develop a groundwater monitoring network in the area of the Membro and Emma Production Wells. These particular wells were categorized as having a drinking water quality issue for Trichloroethylene (TCE), a volatile organic compound (VOC) under the Clean Water Act. The source(s) of the VOCs is (are) unknown but there are potential sources in the vicinity of each well. The main objective of this project was to review the potential contaminant sources and install monitoring wells (i.e. Sentry Wells) between the potential VOC sources and the municipal wells that will be monitored and used to document changes in groundwater quality. These wells can provide an early warning of potential contamination moving toward the production well and also track changes in existing groundwater quality.

As such, a sampling plan has been created to regularly collect water quality samples from each of the eight (8) Sentry Wells, within their respective vertically discrete sampling intervals. Review of the data collected thus far is ongoing and the retained consultant is expected to deliver a final report on the status of this project in early 2020.

Carter Monitoring Program – Operational Testing

The Permit to Take Water for Carter Well 1 and 2 requires that the Carter Wells be operated at increased levels in conjunction with monitoring in the Torrence Creek Subwatershed. This monitoring was completed via consultant in 2019. The purpose of the monitoring is to quantify impacts within this subwatershed.

Staff Certification

The following tables (Table 32, Table 33 and Table 34) describes all Operators and Management staff with various classes of provincial Drinking Water Operator Certificates and years' experience, as of December 31, 2019. Due to the system reclassification in late 2018, there was an increase in Class I operators in 2019 to meet the new certification requirements.

Table 32: Water Services Employees (Operators and Management Staff) with Drinking Water Operator Certificates

Certificate Class	Number of Certified Employees		
	2017	2018	2019
Operator-In-Training	3	7	8
Class I	0	1	11
Class II	3	3	2
Class III	8	7	5
Class IV	19	19	7
Total Certified Employees	33	37	33

Table 33: Competency and Years of Experience for Certified Management Staff

Role	Minimum Competency Required ²⁹	Competency Achieved	Years' Experience
Manager of Operations / ORO -Overall Responsible Operator	Class IV Certificate	Class IV Certificate	30+
Supervisor of Distribution - Construction	Class I Certificate or higher	Class IV Certificate	23
Supervisor of Distribution	Class I Certificate or higher	Class IV Certificate	20
Supervisor Water Treatment and Maintenance	Class I Certificate or higher	Class IV Certificate	10
Supervisor Meters and Locates	n/a	Class IV Certificate	19

Table 34: Years of Experience of Certified Operational Staff

Role	<5 years	5-9 years	10-14 years	15-19 years	20-24 years	25+ years
Distribution Operators	5	3	6	1	0	2
Water Treatment Operators	4	0	1	4	1	1

²⁹ Minimum competency includes the certification requirements listed here, plus the completion of ongoing training requirements of O. Reg. 128/04.

Changes Affecting the Quality Management System (QMS)

Ontario's updated Drinking Water Quality Management Standard (DWQMS) Version 2.0

Guelph Water Services implemented the requirements of the updated DWQMS Version 2.0, released in February 2017, in its quality management system. Water Services was accredited to DWQMS Version 2.0 in the 2018 external audit and maintained accreditation in the 2019 audit.

Quality Management System Implementation

Guelph Water Services strives for continual improvement in all of its programs and processes. Improvements made to the drinking water system and its process are evaluated through: internal and external audits; staff suggestions; risk assessments; emergency training and testing; consumer feedback and through the management review process.

Water Services at the City of Guelph is committed to providing consumers with a safe, consistent supply of high quality drinking water while meeting or exceeding, and continually improving on legal, operational and quality management system requirements.

Throughout 2020, we will continue with a proactive approach to the DWQMS by:

- Maintaining accreditation to the DWQMS 2.0;
- Identifying ways to improve the drinking water system and its related processes;
- Expanding knowledge and involvement of staff for collaboration and integration of the quality management system;
- Ensuring that any deficiencies identified are responded to and corrected quickly and efforts are taken to ensure that the problem does not reoccur;
- Collaborating with other municipalities to ensure that we are enhancing our performance standards and operating practices; and
- Continuing advancements to emergency prevention and preparedness, including the risk assessment process.

I) Consumer Feedback

Table 35 below represents the number of all customer calls received, but do not necessarily reflect the number of individual issues (as more than one call could relate to a single issue).

Table 35: Number of Customer Calls Received, 2017-2019

Type of Call	# Calls 2017	# Calls 2018	# Calls 2019
Discoloured Water	106	116	132
Distribution	54	21	14
Flushing	13	5	2
Frozen	3	51	54
Hydrant - Accident Report	5	5	1
Hydrant – Investigation	35	25	27
Hydrant Out-of-Service	137	98	133
Leak	83	73	57
Meter	8	9	29
Other	33	43	24
Pressure	92	102	74
Private Issue	5	12	14
Service Box Repairs	194	212	220
Swabbing	16	39	2
Trench Investigation	4	9	N/A ³⁰
Valve	19	28	26
Water Quality / Appearance	39	62	36
Watermain	6	5	3
Watermain Break Investigation	96	107	93
Well Interference Inquiries	3	5	0

³⁰ As of 2019, trenches are maintained by the Operations Department.

m) The Resources Needed to Maintain the Drinking Water System and Quality Management System

Water Services currently has one full-time Quality Management Specialist, who is also the Quality Management System Representative. Everyone at Water Services plays a role in ensuring the success of the Quality Management System. Beyond the work of all staff, the Quality Management Specialist has access to a Water Compliance Specialist; five Water Services Technicians; a Customer Service Clerk; and a seasonal Records Management Assistant to ensure that reporting and documentation requirements of the QMS are met.

Operational challenges in the drinking water system continue to drive the need for additional resources, such as:

- A changing staff profile, with experienced staff that have retired or are due to retire in the next few years;
- Aging city infrastructure requiring increased capital budget considerations;
- Potential source water supply shortfall (e.g. current supplies not meeting future demand, drought, contamination and demands of future growth) requiring increased capital project and budget considerations;
- Distribution system issues (e.g. dead ends in the distribution system, frozen city-side infrastructure, larger infrastructure failures and aging water meter infrastructure, aging watermains, watermains located on easements); and
- Private property issues (e.g. substandard water services).

n) Results of Infrastructure Review

The identification of water infrastructure requirements are achieved by reviewing the needs of existing and new infrastructure through the completion of asset management plans both at Water Services and corporately.

Distribution Infrastructure Needs

Distribution infrastructure needs are outlined in the corporate Asset Management Plan, which is developed using industry best management practices and completed by the Corporate Asset Management group in the Engineering and Transportation Service Division (Engineering Services). This linear plan is reviewed by Water Services who then assists in developing a priority sequence for project completion.

During the annual budget preparation process, Engineering and Water Services review infrastructure conditions, inventory age, CAPS (capital asset prioritisation system), and system criticality. From this evaluation, Engineering and Water Services finalize the list of priority projects that also considers the priorities of wastewater and road reconstruction projects so that these projects can share the costs of excavation and rehabilitation. New linear infrastructure reviews are primarily driven by Engineering Services.

Annual summaries of road reconstruction, sewer and watermain projects are identified on a capital project infrastructure map that is released by Engineering and Transportation Services early spring each year.

Water Supply and Treatment Facilities Infrastructure Needs

On July 28, 2014 Guelph City Council unanimously approved the Water Supply Master Plan update, defining preferred water supply servicing alternatives in meeting the needs of existing customers and future community growth.

In concert with the Water Supply Master Plan Update, the City's Engineering and Transportation Services Division completed an update to the linear water distribution network model as part of the 2014 Development Charges Background Study to define water distribution improvements needed for growth servicing.

As part of the above mentioned studies, a number of system upgrades have been identified including: additional water supply sources; new pumping stations; storage facilities; and new water distribution mains. To help integrate these complex works, the City completed the Pressure Zone 1 and 2 studies in 2015 and 2017, respectively. These studies support the implementation of capital projects as outlined in the Water and Wastewater Capital Budget deliberations.

In 2017, Water Services completed the Water Facility and Property Asset Management Plan. This Plan identifies and prioritizes capital projects and land acquisitions required to maintain and renew its existing facility assets and associated operations over a 25 year planning horizon in accordance with asset management industry best management practices as well as current codes, guidelines and standards. A 10-year capital forecast for Facility and Water Plant Upgrades was presented to and endorsed by Council as part of the 2020 Capital Budget deliberations to address a backlog in infrastructure investment required to sustain operation of the City's critical water supply facilities and processes.

As a result of the above noted studies, key capital projects have been initiated/completed in 2019. The following provides the project name with a brief description of these key projects.

Upgrades

F.M. Woods Station Upgrades and Engine House and Pumping Station Building (Heritage Building) Retrofit

In 2019, works were initiated on the F.M Woods Station Upgrades to address critical infrastructure upgrades and retrofit of the Engine House and Pumping Station Building (Heritage Building) to provide office space for staff, respectively. 2019 works included the completion of architectural design of new office space for the Heritage Building, tendering for consultant selection for the F.M. Woods Upgrades and completion of the reservoir inspections. The Heritage Building is scheduled for completion in Q4 2020, with the F.M. Woods Upgrades being completed in 2023.

Burke Well Station Upgrades

Originally built in 1975, Burke well is one of the largest individual wells in the City pumping about six million litres of water and supplies about 13,000 Guelph households with water each day. This water treatment plant, completed in Q2 2019, is the first of its kind for the City, and was constructed to remove iron and manganese from groundwater. Removal of these metals allow our pipes to stay cleaner longer; therefore, prolonging the life of this important City asset while also reducing the need for flushing programs and conserving water. For the community, this new treatment plant will improve overall water quality and service delivery.

The upgrades include construction of a building to house a pressure filtration system. The upgrades resulted in a reclassification of the Water System by the MECP for both treatment and distribution on December 20, 2018. The Guelph Drinking Water System is now classified as a Class 2 Water Treatment System and a Class 4 Water Distribution System.

Clythe Well Treatment Upgrades and Zone 2 Environmental Assessment

The Environmental Assessment (EA) was completed for the Clythe Well station in 2018. As a result, the City purchased a parcel of land in their preferred location, which will house the new Water Treatment Plant. Design of this treatment plant is anticipated to be initiated in 2020 after the completion of the Zone 2 EA. The Zone 2 EA will determine the need for future water storage requirements on the East Side of the City which may impact the design

criteria for the new Clythe Well station. The Zone 2 EA is anticipated to be completed in 2020.

Paisley Pumping Station Upgrades

Upgrades to the Paisley Pumping Station were initiated in 2018 and will be completed in 2021 to ensure asset life is maintained. The scope of this project includes assessment of the reservoirs, re-alignment of the pipes to accommodate a new watermain connection from Paisley Road, upgrades to ensure electrical efficiencies and upgrades to the SCADA and MCC (electrical system). Work is also being completed in preparation for the new Paisley Road Feeder Main Engineering Project, which will promote redundancy in water distribution to the west side of the City. In 2019, design of the new pumping station was almost completed with construction starting in 2020.

Middle Reach of the Aqueduct

In 2018, preliminary projects were completed in preparation for the condition assessment and potential maintenance of the middle reach of the aqueduct. Studies included completion of an Environmental Impact Study and key contingency planning for unplanned changes in water quality including operational responses. Meetings were also held with various stakeholders including the Township of Puslinch, site neighbours, the Health Unit and the MECP. It is anticipated that inspection will occur in the summer/fall of 2020 to inform future capital needs for aqueduct maintenance and renewal. A new laneway will be constructed to provide operational access to the middle reach in early 2020.

Calico Well Upgrades

Calico Well was taken out of service in August 2018 for scheduled contact chamber cleaning and inspection. During the cleaning process, the well casing that extends through the contact chamber was found to be damaged due to material corrosion. The site remains non-operational as consultant reports and recommendations are being reviewed to determine the best approach to deal with several process and building related issues. As a result of this supply being off-line, the section of the feedermain between the station and the City's distribution system has been isolated and taken out of service.

Membro Well Upgrades

Upgrades to the Membro Well station were initiated in 2019 to bring the new replacement well online after receiving the final Permit to Take Water from the Ministry of the Environment, Conservation and Parks in October 2019. Design of the upgraded facility was initiated in late 2019 with completion in Q1 2020. Upgrades, in addition to the addition of the new replacement well, may include the realignment of the UV system and energy upgrades such as VFDs and lighting. The main upgrades will include the building of an addition to the existing well house, pumps and piping to connect the new well to the distribution system and SCADA programming modifications.

In Q1 2020, a pumping test will be completed at the replacement well to confirm pumping capacity. This is required to inform the upgrades as noted above. During this test, dye tracer testing from the nearby sewage lift station will also be completed to determine a potential bacteria source pathway. This testing will occur for the duration of the pumping test which is anticipated to be completed in Q2 2020. If the dye is detected before Q2 2020, the pumping test will continue to determine the influence of this increased water taking on nearby wells.

Guelph South Feasibility Study

In 2019, the City initiated the feasibility study at the Guelph South test well in order to evaluate the potential availability of new water supply for future use, as per the Water Supply Master Plan. Further, the City has also partnered with the University of Guelph on this project to better understand interactions between the shallow groundwater and surface water in the area. Works include the installation of a new well in the proximity of the test well, pumping tests and installation of groundwater and surface water monitoring equipment. The majority of the work will be completed in 2020.

Logan Well Feasibility Study

In 2019 the City initiated the feasibility study at the Logan well in order to evaluate the potential availability of new water supply for future use, as per the Water Supply Master Plan. Works included tree clearing and maintenance of the access laneway in 2019. Preliminary tests of the well were conducted to determine the condition of the well. The full work plan will be implemented in 2020 which includes rehabilitation of the well and pumping tests.

Backflow Prevention Program

Preservation of drinking water quality within Guelph's infrastructure is supported by the City of Guelph's Building Services Division through administration of the Guelph Backflow Prevention Program and By-law (By-law Number 2016 - 20028). As defined under the By-law, Backflow means the flowing back of or reversal of the normal direction of flow of water. The By-law requires that no connections are made to the City's water supply where a private premise risk may exist without the installation of an approved backflow prevention device to isolate premises, sources, and zones to prevent cross-connections in every building or structure where a City water supply or other potable water supply exists.

Annually, Building Services provides a Backflow Report, included in Table 36 below, that tracks the number of letters sent out regarding backflow device annual testing and re-surveying requirements of the By-law. In accordance with the by-law, failure by property owners to maintain or replace the backflow prevention would result in the shut-off of water servicing to the premise to protect the integrity of the City's water supply.

Table 36: 2019 Backflow Report - Number of Letters Sent out for Annual Testing and Re-survey

Letter Type	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL
1st Letter Annual Testing	147	159	177	210	273	185	143	172	120	135	164	118	2003
2nd Letter Annual Testing	60	85	114	109	128	138	133	97	125	41	93	98	1221
Disconnect Letter Annual Testing	68	33	44	39	53	63	67	72	49	36	37	60	621
1st Letter re-survey	34	30	39	36	32	25	30	22	18	5	41	7	319
2nd Letter re-survey	14	23	14	24	28	22	20	24	16	16	4	18	223

Letter Type	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL
Disconnect Letter re-survey	12	7	12	10	15	15	16	15	20	11	7	4	144
Water service disconnected	0	0	0	0	0	0	0	0	0	0	0	0	0

As presented in Table 37, the City of Guelph has a total of 2,879 properties (2,734 active and 145 inactive properties) that have a total of 6,790 backflow prevention devices installed. Of the total, 1,708 buildings have premise isolation and 1,026 buildings are without premise isolation (e.g. residential irrigation systems, plaza facility – plaza owner has premise isolation). From January 1 to December 31, 2019, of the 31 new properties that have a backflow prevention device, 12 are with premise and 19 are without premise isolation.

Table 37: Backflow Devices Installed by Type in 2019

Devices Installed by Type	# of Devices
New Backflow Permits	43
Total Number of New Devices Installed	125
New Properties	31
Active Properties	2,734
Inactive Properties	145
Total Properties with Backflow Prevention Devices	2,879
Active Buildings with Premise Isolation	1,708
Active Buildings without Premise Isolation	1,026
Total Active Backflow Prevention Devices	6,790

o) Operational Plan Currency, Content and Updates

On an ongoing basis, the Operational Plan is updated by the Quality Management Specialist with the help of additional Water Services Staff. The Operational Plan was presented to Council on January 14, 2019 for endorsement. Updates to the Operational Plan were communicated to Water Services management and staff via email on September 10, 2019.

Notable updates include:

- Element 2 – Quality Management System Policy
 - Added the new Supervisor of Distribution.
- Element 3 – Commitment and Endorsement
 - Added the new Supervisor of Distribution.
- Element 5 – Document and Records Control
 - QMS 05: Added “T” for Water Treatment and “SW” for Source Water to the list of the naming conventions used for our procedures.
 - QMS 05-01: Added the water bylaw and backflow bylaws to QMS 05-01 Document Master List.
 - QMS 05-02: Added the online retention time for the Annual & Summary Report, as per discussions with the MECP.
 - QMS 05-04: Updated the hyperlinks to the following new documents: lab agreement, meter agreement, DWWP, MDWL, Membro Raw Water Assessment, Operational Plan Endorsement, Downey PTTW, and chemical contract.
- QMS 06 – Drinking Water System
 - QMS 06: Updated the Burke Section, distribution section and added Clair Booster Station to Table 1.
 - QMS 06-01: Added the schematics for the new Burke Treatment facility. Added information about utilizing one or multiple cells in reservoirs and the reservoirs at Woods, Park, University and Paisley. Updated the treated sample locations at Water and Emma. Changed the title from "Sample Process Schematics" to "Treatment System Process Schematics".
 - QMS 06-03: Added the section on the responsibilities of Water Services as per the Gazer Mooney Agreement.
- QMS 07 – Risk Assessment
 - QMS 07: Updated the control & response measures section.
 - QMS 07-01: Updated the Consequence section to include the affect on fire flow capabilities based on the amount of water loss in each section.
 - QMS 07-02: Added rationale sections to each risk score. Separated into 2 sections: contributing factors of the hazard event occurring and possible

consequences if the hazardous event occurred. Added fire flow impact to the consequence section. Added additional control measures and response measures.

- QMS 08 – Risk Assessment Outcome
 - QMS 08-02: Added the corresponding risk numbers to the critical control points.
 - QMS 08-03: Revised the control measures and their descriptions to match our current programs and processes.
- QMS 09 – Organizational Structure, Roles, Responsibilities and Authorities
 - QMS 09-01: The organizational structure was updated to more clearly define Owner, Owner Representative and Top Management Responsibilities.
 - City Council is defined as the Owner of the Guelph Drinking Water System. The CAO, DCAO, General Manager of Engineering and Transportation Services and General Manager of Environmental Services form the Senior Management Team. Water Services Managers and Supervisors (the Management Team) and the General Manager Environmental Services make up Top Management.
- QMS 10 – Competencies
 - Revised licence requirements for treatment operators, distribution operators, the ORO and acting ORO to reflect requirements based on our new system classification.
 - Removed the separate on-the-job training form for Maintenance as they are now classified as Treatment Operators as well.
 - Created 10-04 Administration On-the-Job Training Form.
- QMS 11 – Personnel Coverage
 - Updated the section for licence requirements for the ORO now that we are classified as a Class 2 Treatment and a Class 4 Distribution system.
- QMS 12 – Communications
 - QMS 12: Revised section 2 to better describe the current practices.
 - QMS 12-01: Updated the A&S Report section to match the 2018 A&S Report. Added section 4 Operational Plan.
 - QMS 12-03: Updated meeting information for the functional areas. Deleted the section on Procedure Review Meetings as these are often done alone by staff and not in a meeting format.
 - QMS 12-04: Updated Appendix A, removed names and only listed positions.
 - QMS 12-05: Added more information around the Financial Plan requirements and council endorsement process for both the Financial Plan and Operational Plan. Updated the next renewal date.

- QMS 13 – Essential Supplies and Services
 - QMS 13: Updated the Gazer-Mooney Agreement (March 1, 2019)
 - QMS 13-01: Added: Tower climbs, confined space, valves.
- QMS 14 – Review and Provision of Infrastructure
 - QMS 14: Updated Gazer Mooney agreement date.
- QMS 15 – Infrastructure Maintenance, Rehabilitation and Renewal
 - QMS 15: Updated the table to list the priority capital projects for 2019-2020.
- QMS 16 – Sampling, Testing and Monitoring
 - QMS 16: Updated the section about sampling the Glen as per the MDWL.
 - QMS 16-01: Updated to include latest sample map from August 2019. Includes new sample location in Zone 3.
- QMS 17 – Measurement and Recording Equipment Calibration and Maintenance
 - Updated Operational Checks section to reflect current colorimeter verification schedule.
- QMS 18 – Emergency Management
 - QMS 18-01: Added "cannot utilize GUDI-wef sources" as a disadvantage in Appendix B.
- QMS 21 – Continual Improvement
 - Rearranged the order of the steps so that Root-Cause Analysis is before other OFIs. Added "debriefs" to section 2. Added that root cause analysis' will be scheduled at least 10 working days after the incident.

p) Staff Suggestions

Staff suggestions are identified during: staff and operational meetings; internal and external audits; debriefs and are taken into account during annual budget processes and continual improvement meetings.

Appendix H: Summary of Staff Suggestions includes a listing of various improvement items that were presented by staff from January 1 to December 31, 2019.

q) New or Other Business

There is no further new or other business to report in 2019.

r) Next Meeting Dates

The Management Review Meeting scheduled to review the updated 2019 Annual and Summary Water Services Report was held on January 29, 2020. Review of the Internal Audit findings will take place in March 2020, review of the Risk Assessment outcomes in September 2020 and review of the External Audit findings in November 2020. Monthly QMS updates are scheduled with the management team and the Quality Management Specialist. Monthly QMS updates are communicated to all staff at scheduled staff meetings.

Appendix A: Summary of Critical Control Points and Critical Control Limits

Table 38: Summary of Critical Control Points and Critical Control Limits

Critical Control Point (CCP)	Hazard Description	Critical Control Limit (CCL)	Monitoring Process and/or Procedures	Response Procedures
Multi-Barrier Primary Disinfection To remove or inactivate pathogens potentially present in the source water.	Low Chlorine Dosage <ul style="list-style-type: none">Chlorination system failure (e.g. pump, line, fitting, power, PLC, flow meter)Failure of analyzers (POE or process) to alarmPoor chemical quality	<u>Free Chlorine</u> <ul style="list-style-type: none">Low Low and High High alarm limit range for all stations:<ul style="list-style-type: none">0.40 to 1.9 mg/LProgrammed Auto Shutdown range for all stations:<ul style="list-style-type: none">0.40 to 2.5 mg/L	<ul style="list-style-type: none">Certified and competent operatorsContinuous monitoring of control limits through SCADADaily operational sampling, testing and monitoring of control limits by OperatorsRedundancy of system components (including equipment) & monitoring (operators, instruments); stand-by powerMonitoring and alarming of control limitsCalibration, maintenance and preventive maintenance – equipmentRobust communication systemsReceiving process for chemicals<ul style="list-style-type: none">Certificates of Analysis required for essential chemicalsFree Chlorine Analyzer auto well shut off limits:<ul style="list-style-type: none">Programmed lowProgrammed highAnalog signal errorPower lossAnalyzer malfunction	<ul style="list-style-type: none">Supply Standard Operating ProceduresWater Services Emergency Plan proceduresFacility Setpoint Labels (identify specific ranges and shutdowns for each station)
	High Turbidity <ul style="list-style-type: none">Sudden changes to raw water quality characteristicsFailure of aqueduct infrastructure	<u>Turbidity</u> <ul style="list-style-type: none">Turbidity alarm ranges for all stations that monitor turbidity:<ul style="list-style-type: none">0.3 to 0.8 ntuAuto diversion at the Glen Diversion Chamber based on turbidity<ul style="list-style-type: none">0.2 ntu		
	Inadequate UV Dosage <ul style="list-style-type: none">UV Treatment system failure (e.g. UV, UVT and Turbidity analyzers, high flow, reactor, PLC, power, flow meters)High turbidity event	<u>UV Dose</u> UV Dose auto shutdown alarm setpoints: <ul style="list-style-type: none">FM Woods<ul style="list-style-type: none"><30 mJ/cm² (Trojan controller programmed low)Water Street well<ul style="list-style-type: none"><45 mJ/cm² (Trojan controller programmed low)42 mJ/cm² (redundant PLC programmed low)		

Critical Control Point (CCP)	Hazard Description	Critical Control Limit (CCL)	Monitoring Process and/or Procedures	Response Procedures
		<ul style="list-style-type: none"> Membro <ul style="list-style-type: none"> <25 mJ/cm² (Trojan controller programmed low) <22 mJ/cm² (redundant PLC programmed) 	<ul style="list-style-type: none"> Chlorine Pump alarms <ul style="list-style-type: none"> Tube leak detection Low speed feedback Motor run/fail Each station has the identified reservoir level, POE flow rate and minimum chlorine needed to meet CT Manual CT calculations 	
	Operating a Station in Manual <ul style="list-style-type: none"> Inadequate CT (Concentration x Time) <ul style="list-style-type: none"> Low reservoir level Insufficient chlorine residual Low contact time due to POE pump flow rate 	<u>CT Calculations</u> <ul style="list-style-type: none"> Manual calculations must show that the minimum CT achieved is 4 		
Secondary Disinfection To ensure the maintenance of a disinfectant residual throughout the distribution system.	Deterioration of Chlorine Residual <ul style="list-style-type: none"> Reduced water flows based on demand, pipe size, etc. Occurrence of dead ends and District Metered Areas Increased water temperature (temporary mains) Reaction with organic matter in watermains Water age in the distribution system Water age in storage facilities 	<u>Free Chlorine</u> Target Residual in the Distribution System: <ul style="list-style-type: none"> >0.20 mg/L (operational minimum) Reportable under the SDWA: <ul style="list-style-type: none"> 0.05 mg/L <u>Customer Complaints</u> <ul style="list-style-type: none"> Related to water quality characteristics (taste, odour, colour, other) 	<ul style="list-style-type: none"> Certified and competent operators Sampling, testing and monitoring of control limits, as applicable Watermain flushing and swabbing programs Installation of blow-offs in dead ends Regular samples taken and analyzed for chlorine residual Rechlorination at booster stations Mixing systems in Speedvale and Clair Towers 	<ul style="list-style-type: none"> Supply Standard Operating Procedures Distribution Standard Operating Procedures Response to customer calls Service Request tracking and monitoring Repair and system rehabilitation Use of appropriately certified and competent contractors and suppliers

Critical Control Point (CCP)	Hazard Description	Critical Control Limit (CCL)	Monitoring Process and/or Procedures	Response Procedures
Backflow Prevention To prevent cross-contamination that can result from the flowing back of or reversal of the normal direction of flow of water.	System contamination from negative or reduced pressure <ul style="list-style-type: none">Lack of backflow prevention deviceMain breaks or blow-outsLarge servicesTemporary connectionsFirefighting drawdownDepressurization from residential usagePipe failure (deterioration)	<u>System pressure</u> Alarm setpoint ranges for pressure: <ul style="list-style-type: none">210 to 900 kPa <u>Consumer complaints</u> <ul style="list-style-type: none">Related to system pressure or water characteristics (taste, odour, colour, other)	<ul style="list-style-type: none">Backflow Prevention programWhere possible, implementation of backflow prevention devices and small mainsProactive Watermain and substandard service replacement programPressure monitoring through pressure transmitters on hydrants and at stations	<ul style="list-style-type: none">Distribution Standard Operating ProceduresResponse to customer callsService Request tracking and monitoringWater Services Emergency Plan procedures

Appendix B: Summary of Internal and External Audit Plans

Table 39: Summary of Internal and External Audit Plans, 2018-2020

Guelph Water Services Process or Program	2018 Audit Plan		2019 Audit Plan		2020 Audit Plan	
	I ³¹	E ³²	I	E	I	E
Source Water – Source Water Protection Program			X	X		
Source Water – Outdoor Water Use Program	X	X				
Source Water – Tap Water Promotion, Education & Outreach				X		
Source Water – Water Smart Business Program		X			X	
Water Supply – Source & Treated Water Sampling, Testing, Monitoring	X	X		X	X	X
Water Supply – Operational Control: Disinfection, Minimum Storage, SCADA / Security	X		X			X
Water Supply – SCADA Design, Maintenance & Upgrades		X			X	X
Water Supply – Water Supply Master Plan Program (new water sources)			X			
Maintenance – Instrumentation Calibration / Verification	X	X	X	X		X
Maintenance – Well Inspection & Rehabilitation Program	X	X			X	X

³¹ I = Internal Audit

³² E = External Audit

Guelph Water Services Process or Program	2018 Audit Plan		2019 Audit Plan		2020 Audit Plan	
	I ³¹	E ³²	I	E	I	E
Maintenance – Preventative & Reactive Maintenance Program			X	X		
Maintenance – Infrastructure (facility and tower) Inspections Program		X			X	X
Distribution Construction – Watermain Maintenance & Service Connections Improvement	X			X		
Distribution Construction – Leak Detection & Water Loss Management	X			X		
Distribution Construction – No Water Response (e.g. frozen pipes)		X				X
Distribution Construction – New Watermain Construction & Reconstruction			X	X		
Distribution Construction – Temporary Watermains & Service Connections	X	X				
Distribution Appurtenance Maintenance – Hydrant Inspection Program	X			X		
Distribution Appurtenance Maintenance – Watermain Flushing & Swabbing Program	X	X			X	X
Distribution Appurtenance Maintenance – Valve Turning Program			X	X		
Distribution Appurtenance Maintenance – DMAs	X			X		
Distribution Appurtenance Maintenance – Water Meter Program		X			X	X
Distribution Appurtenance Maintenance – Infrastructure Locates Program			X	X		

Guelph Water Services Process or Program	2018 Audit Plan		2019 Audit Plan		2020 Audit Plan	
	I ³¹	E ³²	I	E	I	E
Infrastructure Programs – Tech Services: New Facility Construction	X	X				
Infrastructure Programs – Tech Services: Major Facility Upgrades	X	X			X	X
Infrastructure Programs – Engineering: Infrastructure Planning	X					X
Infrastructure Programs – Engineering: Water Asset Planning & Condition Assessments		X				
Infrastructure Programs – Engineering/Water: Review of Infrastructure and Specifications	X			X		
Infrastructure Programs – Engineering: Infrastructure Reconstruction & Planning	X		X	X	X	
Infrastructure Programs – Engineering: New Construction (new subdivisions)				X		
Infrastructure Programs – Building Services: Backflow Prevention Program						X
Management – Compliance Program		X			X	X
Management – Certification Program	X			X	X	
Management – Owner Standard of Care	X			X		
Management – Customer Services (Administration, Distribution & Supply)			X	X		
Management – Human Resources & Supplier		X		X		X
Management – Communications	X	X		X		X
Management – Review and Provision of Infrastructure	X	X		X		X

Guelph Water Services Process or Program	2018 Audit Plan		2019 Audit Plan		2020 Audit Plan	
	I ³¹	E ³²	I	E	I	E
QMS – Internal Audit Program	X	X	X	X		X
QMS – Risk Assessments	X	X	X	X	X	X
QMS – Continual Improvement	X	X	X	X	X	X
QMS – Emergency Management	X	X	X	X	X	X
QMS – Management Review	X	X	X	X		X
QMS – Document & Records Control	X	X	X	X	X	X
QMS – Drinking Water System	X	X				X

Appendix C: Total Water Pumped and Instantaneous Flows

This section summarizes the amount of water pumped and instantaneous flows in 2019.

Capacity is calculated by comparing the average pumped or flow value against the MDWL allowable volume or PTTW flow. Capacity is representative of the conditions of pumping for that year which may be influenced by other testing programs, maintenance or special operational conditions. Additionally, the actual capacity of the source may not be achievable with current infrastructure. Optimization efforts are included as a component of the Water Supply Master Plan with the intent to match the actual capacity of the water source with the appropriate infrastructure. Section g) Water Supply Capacity describes capacity in further detail.

City of Guelph Water Services – Pumpages to System, January 1 – December 31, 2019

Table 40 below shows the amount of water pumped to system from each facility in 2019 in cubic meters.

Table 40: Pumpages (Discharge) to System, January 1 to December 31, 2019

Facility		Burke	Calico	Dean	Downey	Emma	Helmar	Membro	Paisley Net	Park	Queensdale	University Net	Water Street	F.M. Woods	Total System Discharge
Units		m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³
Regulatory Limit		6,546	5,237	2,300	5,237	3,100	3,273	6,050	13,738	10,300	5,273	5,108	3,400	65,000	n/a
Jan	Average	0	0	1,347	4,593	2,405	792	2,183	861	4,230	0	1,522	1,872	25,750	46,297
	Maximum	0	0	1,350	4,670	2,520	800	2,337	864	5,075	752	2,323	1,915	29,066	49,815
	Total	0	0	41,764	142,383	74,556	24,549	67,678	26,695	131,126	23,008	47,170	58,027	798,249	1,435,204
Feb	Average	51	0	1,348	4,442	2,365	789	1,962	854	4,398	722	1,403	1,884	26,392	46,611
	Maximum	577	0	1,352	4,654	2,436	794	2,060	859	5,088	736	2,351	1,934	29,805	49,237
	Total	1,428	0	37,748	124,388	66,229	22,088	54,947	23,920	123,132	20,220	39,296	52,750	738,963	1,305,109
Mar	Average	5,216	0	1,392	4,427	2,400	779	1,424	843	3,530	439	1,206	1,804	24,282	47,741
	Maximum	6,243	0	1,438	4,466	2,536	790	2,252	848	4,991	897	2,368	1,940	28,582	51,438
	Total	161,684	0	43,154	137,222	74,390	24,149	44,156	26,122	109,429	13,610	37,398	55,916	752,736	1,479,966
Apr	Average	6,120	0	1,408	4,414	2,485	737	0	416	3,203	0	1,654	1,893	23,586	45,917
	Maximum	6,236	0	1,429	4,448	2,564	776	0	883	3,438	0	2,386	1,971	28,652	50,526
	Total	183,606	0	42,239	132,415	74,563	22,099	0	12,473	96,101	0	49,633	56,802	707,579	1,377,510
May	Average	6,117	0	1,406	4,392	2,391	792	0	0	2,150	384	1,414	1,686	26,173	46,905
	Maximum	6,234	0	1,430	4,432	2,610	797	0	0	3,539	674	2,381	1,971	30,992	52,991
	Total	189,618	0	43,591	136,161	74,108	24,550	0	0	66,649	11,911	43,831	52,277	811,353	1,454,048
Jun	Average	6,092	0	4,336	4,336	4,336	740	0	325	1,867	652	1,578	1,567	27,035	52,863
	Maximum	6,220	0	4,424	4,424	4,424	816	0	833	5,750	693	2,360	1,965	32,296	57,804
	Total	182,775	0	130,066	130,066	130,066	22,185	0	9,758	56,004	19,569	47,330	47,021	811,047	1,585,886
Jul	Average	6,022	0	1,121	3,772	2,546	794	0	808	1,881	565	1,554	1,565	29,566	50,194
	Maximum	6,289	0	1,439	4,439	2,619	816	0	1,090	3,545	704	2,000	1,917	32,772	54,193
	Total	186,695	0	34,762	116,937	78,919	24,607	0	25,042	58,316	17,509	48,165	48,519	916,552	1,556,023
Aug	Average	5,767	0	1,299	3,616	2,540	662	0	965	1,899	0	1,374	1,535	28,924	48,580
	Maximum	6,284	0	1,432	4,466	2,580	803	0	1,057	6,193	0	2,298	1,904	35,817	53,634
	Total	178,775	0	40,265	112,090	78,731	20,524	0	29,914	58,855	0	42,601	47,586	896,643	1,505,984

Facility		Burke	Calico	Dean	Downey	Emma	Helmar	Membro	Paisley Net	Park	Queensdale	University Net	Water Street	F.M. Woods	Total System Discharge
Units		m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³
Regulatory Limit		6,546	5,237	2,300	5,237	3,100	3,273	6,050	13,738	10,300	5,273	5,108	3,400	65,000	n/a
Sept	Average	6,221	0	1,679	2,977	2,192	757	0	1,053	2,296	0	1,355	1,833	27,550	47,913
	Maximum	6,274	0	1,988	3,379	2,615	784	0	1,055	7,944	0	2,319	1,868	31,221	52,743
	Total	186,634	0	50,369	89,309	65,766	22,721	0	31,594	68,867	0	40,646	54,995	826,495	1,437,396
Oct	Average	6,157	0	1,256	3,186	2,481	752	0	1,049	1,773	0	580	1,842	25,530	44,607
	Maximum	6,272	0	1,407	4,274	2,600	767	0	1,054	6,529	0	2,374	1,886	32,882	55,452
	Total	190,872	0	38,926	98,779	76,923	23,299	0	32,514	54,970	0	17,994	57,107	791,423	1,382,806
Nov	Average	6,195	0	1,235	3,084	2,572	726	0	1,044	839	111	1,732	1,810	26,064	45,413
	Maximum	6,267	0	1,402	4,012	2,707	783	0	1,093	5,841	736	2,361	1,933	34,903	58,441
	Total	185,862	0	37,053	92,524	77,148	21,782	0	31,323	25,177	3,342	51,958	54,296	781,924	1,362,390
Dec	Average	6,185	0	1,387	2,783	2,494	739	0	1,046	1,481	673	927	1,861	21,659	41,236
	Maximum	6,254	0	1,397	3,244	2,596	747	0	1,055	5,997	706	2,352	1,921	26,766	46,749
	Total	191,726	0	42,993	86,278	77,308	22,911	0	32,435	45,922	20,865	28,748	57,706	671,438	1,278,330
2019 Year	Average	5,012	0	1,601	3,835	2,600	755	464	772	2,462	357	1,358	1,763	26,043	47,023
	Maximum	6,289	0	4,424	4,670	4,424	816	2,337	1,093	7,944	897	2,386	1,971	35,817	58,441
	Total	1,839,674	0	582,930	1,398,552	948,705	275,464	166,781	281,792	894,547	130,035	494,769	643,003	9,504,401	17,160,654
	Average Process Capacity	77%	0%	69%	73%	84%	23%	8%	n/a	24%	7%	n/a	52%	40%	n/a

City of Guelph Water Services – Permit to Take Water Pumpages, January 1 – December 31, 2019

Table 41 and Table 42 presented below, outline the Permit to Take Water Pumpages for 2019. Table 41 includes the following sources: Admiral Well, Arkell Well 1, Arkell Well 6, Arkell Well 7, Arkell Well 8, Arkell Well 14, Arkell Well 15, Arkell Recharge Pump, Arkell Springs Glen Collector System, Burke Well, Calico Well, Carter Well 1 and 2 and Clythe Well. Table 42 includes the following sources: Dean Well, Downey Well, Edinburgh Well, Emma Well, Helmar Well, Membro Well, Paisley Well, Park Wells 1 and 2, Queensdale Well, Sacco Well, Smallfield Well, University Well and Water Street Well.

Table 41: City of Guelph Permit to Take Water Pumpages, 2019

Facility		Admiral Well	Arkell Well #1	Arkell Well #6	Arkell Well #7	Arkell Well #8	Arkell Well #14	Arkell Well #15	Arkell Wellfield (#6,7,8,14,15) Total	Arkell - Recharge Pump	Arkell Springs Glen Collector System	Burke Well	Calico Well	Carter Wells #1and #2	Clythe Well
Units		m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³
Regulatory Limit		N/O ³³	3,273	9,600	9,600	9,600	9,600	9,600	28,800	9,092	25,000	6,546	5,237	6,547	N/O
January	Average	N/O	95	3,587	7,478	1,799	2,776	4,529	20,171	0	5,604	0	0	0	N/O
	Maximum	N/O	706	5,543	7,610	5,371	6,722	6,398	23,166	0	5,725	0	0	0	N/O
	Total	N/O	2,941	111,207	231,832	55,778	86,064	140,408	625,289	0	173,712	0	0	0	N/O
February	Average	N/O	41	3,585	7,450	780	6,102	2,974	20,890	0	5,547	63	0	0	N/O
	Maximum	N/O	356	5,636	7,537	3,847	7,439	5,934	24,401	0	5,591	657	0	0	N/O
	Total	N/O	1,157	100,376	208,591	21,829	170,866	83,262	584,922	0	155,319	1,754	0	0	N/O
March	Average	N/O	79	3,371	7,498	853	5,683	951	18,356	0	6,059	5,328	0	0	N/O
	Maximum	N/O	663	5,259	7,602	3,333	6,780	3,014	21,769	0	7,221	6,364	0	0	N/O
	Total	N/O	2,463	104,509	232,428	26,452	176,168	29,466	569,022	0	187,833	165,182	0	0	N/O
April	Average	N/O	96	1,987	7,592	300	4,431	1,099	15,409	1,791	8,132	6,252	0	0	N/O
	Maximum	N/O	499	4,737	7,678	2,160	6,631	5,491	20,936	8,364	11,126	6,368	0	0	N/O
	Total	N/O	2,876	59,624	227,751	9,014	132,920	32,969	462,278	53,718	243,972	187,558	0	0	N/O

³³ N/O – not operational

Facility		Admiral Well	Arkell Well #1	Arkell Well #6	Arkell Well #7	Arkell Well #8	Arkell Well #14	Arkell Well #15	Arkell Wellfield (#6,7,8,14,15) Total	Arkell - Recharge Pump	Arkell Springs Glen Collector System	Burke Well	Calico Well	Carter Wells #1and #2	Clythe Well
Units		m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³
Regulatory Limit		N/O ³³	3,273	9,600	9,600	9,600	9,600	9,600	28,800	9,092	25,000	6,546	5,237	6,547	N/O
May	Average	N/O	96	1,153	7,685	9	2,193	1,098	12,138	8,184	14,496	6,254	0	0	N/O
	Maximum	N/O	722	3,565	7,834	150	5,889	3,476	17,926	8,350	16,673	6,364	0	0	N/O
	Total	N/O	2,974	35,731	238,239	294	67,981	34,026	376,272	253,705	449,372	193,874	0	0	N/O
June	Average	N/O	108	7,720	664	36	587	1,322	10,330	7,691	17,384	6,239	0	0	N/O
	Maximum	N/O	763	7,873	2,596	815	4,133	4,668	14,435	7,947	17,760	6,364	0	0	N/O
	Total	N/O	3,254	231,613	19,929	1,086	17,616	39,646	309,890	230,734	521,512	187,167	0	0	N/O
July	Average	N/O	1,113	388	7,114	665	2,387	1,503	12,058	7,316	16,873	6,176	0	1,330	N/O
	Maximum	N/O	1,203	7,665	7,907	4,020	7,495	4,099	15,647	7,627	17,685	6,440	0	6,275	N/O
	Total	N/O	34,511	12,043	220,524	20,629	74,006	46,608	373,810	226,781	523,051	191,468	0	41,229	N/O
August	Average	N/O	844	7,034	1,054	945	2,747	1,057	12,837	6,919	15,493	5,918	0	6,504	N/O
	Maximum	N/O	1,193	7,860	7,448	3,213	5,672	7,793	20,921	7,358	16,153	6,440	0	7,793	N/O
	Total	N/O	26,175	218,054	32,681	29,305	85,149	32,759	397,949	214,496	480,277	183,445	0	201,632	N/O
September	Average	N/O	66	5,607	5,327	1,331	2,692	0	14,957	4,172	12,676	6,386	0	6,852	N/O
	Maximum	N/O	346	7,830	7,596	3,694	6,079	0	18,805	7,282	14,974	6,440	0	7,759	N/O
	Total	N/O	1,967	168,196	159,822	39,939	80,752	0	448,709	125,147	380,293	191,574	0	205,553	N/O
October	Average	N/O	63	6,209	4,939	2,134	2,777	275	16,335	2,234	9,950	6,324	0	1,757	N/O
	Maximum	N/O	751	7,678	7,536	5,392	7,128	3,028	23,674	7,475	11,599	6,440	0	6,333	N/O
	Total	N/O	1,962	192,481	153,113	66,166	86,084	8,531	506,375	69,266	308,453	196,059	0	54,458	N/O

Facility		Admiral Well	Arkell Well #1	Arkell Well #6	Arkell Well #7	Arkell Well #8	Arkell Well #14	Arkell Well #15	Arkell Wellfield (#6,7,8,14,15) Total	Arkell - Recharge Pump	Arkell Springs Glen Collector System	Burke Well	Calico Well	Carter Wells #1and #2	Clythe Well
Units		m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³
Regulatory Limit		N/O ³³	3,273	9,600	9,600	9,600	9,600	9,600	28,800	9,092	25,000	6,546	5,237	6,547	N/O
November	Average	N/O	37	5,066	6,010	3,197	3,507	965	18,745	0	7,549	6,364	0	0	N/O
	Maximum	N/O	333	8,017	7,517	5,897	6,417	5,341	28,272	0	8,595	6,439	0	0	N/O
	Total	N/O	1,099	151,980	180,294	95,921	105,209	28,956	562,360	0	226,478	190,927	0	0	N/O
December	Average	N/O	61	4,346	7,585	887	2,362	990	16,170	0	6,540	6,356	0	0	N/O
	Maximum	N/O	359	6,824	7,820	5,100	5,900	5,039	21,177	0	6,811	6,427	0	0	N/O
	Total	N/O	1,893	134,724	235,127	27,502	73,229	30,695	501,278	0	202,733	197,032	0	0	N/O
2019 Year	Average	N/O	225	4,171	5,866	1,078	3,187	1,397	15,700	3,192	10,525	5,138	0	1,370	N/O
	Maximum	N/O	1,203	8,017	7,907	5,897	7,495	7,793	28,272	8,364	17,760	6,440	0	7,793	N/O
	Total	N/O	83,271	1,520,537	2,140,330	393,915	1,156,045	507,326	5,718,153	1,173,847	3,853,004	1,886,039	0	502,871	N/O
	Average Pumped	N/O	7%	43%	61%	11%	33%	14%	54%	11%	37%	79%	0%	21%	N/O

Table 42: City of Guelph Permit to Take Water Pumpages, 2019 - Continued

Facility		Dean Well	Downey Well	Edinburgh Well	Emma Well	Helmar Well	Membro Well	Paisley Well	Park Wells #1 and #2	Queensdale Well	Sacco Well	Smallfield Well	University Well	Water Street Well
Units		m3	m3	m3	m3	m3	m3	m3	m3	m3	m3	m3	m3	m3
January	Regulatory Limit	2,300	5,273	N/O	3,100	3,273	6,050	3,200	10,300	5,237	N/O	N/O	3,300	3,400
	Average	1,338	4,705	N/O	2,405	772	2,156	861	4,189	744	N/O	N/O	1,522	1,872
	Maximum	1,374	4,780	N/O	2,520	795	2,315	864	5,063	782	N/O	N/O	2,323	1,915
	Total	41,482	145,855	N/O	74,556	23,942	66,837	26,695	129,847	23,079	N/O	N/O	47,170	58,027
February	Average	1,339	4,551	N/O	2,365	770	1,939	854	4,356	725	N/O	N/O	1,403	1,884
	Maximum	1,388	4,765	N/O	2,436	782	2,037	859	5,064	747	N/O	N/O	2,351	1,934
	Total	37,500	127,419	N/O	66,229	21,572	54,295	23,920	121,960	20,293	N/O	N/O	39,296	52,750
March	Average	1,383	4,533	N/O	2,400	760	2,120	843	3,499	438	N/O	N/O	1,206	1,804
	Maximum	1,460	4,572	N/O	2,536	780	2,432	848	4,955	936	N/O	N/O	2,368	1,940
	Total	42,878	140,514	N/O	74,390	23,559	65,720	26,122	108,464	13,570	N/O	N/O	37,398	55,916
April	Average	1,403	4,522	N/O	2,485	737	2,321	416	3,181	0	N/O	N/O	1,654	1,893
	Maximum	1,471	4,559	N/O	2,564	776	2,369	883	3,425	0	N/O	N/O	2,386	1,971
	Total	42,102	135,672	N/O	74,563	22,099	69,630	12,473	95,443	0	N/O	N/O	49,633	56,802
May	Average	1,419	4,503	N/O	2,391	774	2,343	0	2,129	385	N/O	N/O	1,414	1,686
	Maximum	1,470	4,543	N/O	2,610	791	2,370	0	3,496	700	N/O	N/O	2,381	1,971
	Total	43,986	139,592	N/O	74,108	23,986	72,625	0	65,996	11,948	N/O	N/O	43,831	52,277

Facility		Dean Well	Downey Well	Edinburgh Well	Emma Well	Helmar Well	Membro Well	Paisley Well	Park Wells #1 and #2	Queensdale Well	Sacco Well	Smallfield Well	University Well	Water Street Well
Units		m3	m3	m3	m3	m3	m3	m3	m3	m3	m3	m3	m3	m3
Regulatory Limit		2,300	5,273	N/O	3,100	3,273	6,050	3,200	10,300	5,237	N/O	N/O	3,300	3,400
June	Average	1,349	4,445	N/O	2,418	726	2,297	325	1,859	650	N/O	N/O	1,578	1,567
	Maximum	1,453	4,536	N/O	2,644	795	2,343	833	5,712	700	N/O	N/O	2,360	1,965
	Total	40,456	133,338	N/O	72,532	21,773	68,908	9,758	55,766	19,489	N/O	N/O	47,330	47,021
July	Average	1,119	3,867	N/O	2,546	776	2,253	808	1,860	560	N/O	N/O	1,173	1,565
	Maximum	1,460	4,554	N/O	2,619	807	2,306	1,090	3,496	697	N/O	N/O	2,404	1,917
	Total	34,687	119,868	N/O	78,919	24,067	69,858	25,042	57,663	17,345	N/O	N/O	36,352	48,519
August	Average	1,307	3,709	N/O	2,540	646	2,216	965	1,881	0	N/O	N/O	1,374	1,535
	Maximum	1,450	4,583	N/O	2,580	792	2,274	1,057	6,008	0	N/O	N/O	2,298	1,904
	Total	40,509	114,968	N/O	78,731	20,019	68,685	29,914	58,303	0	N/O	N/O	42,601	47,586
September	Average	1,380	3,062	N/O	2,192	739	2,186	1,053	2,283	0	N/O	N/O	1,355	1,833
	Maximum	1,418	3,469	N/O	2,615	779	2,192	1,055	7,879	0	N/O	N/O	2,319	1,868
	Total	41,400	91,858	N/O	65,766	22,179	65,594	31,594	68,483	0	N/O	N/O	40,646	54,995
October	Average	1,275	3,295	N/O	2,481	734	2,182	1,049	1,759	0	N/O	N/O	580	1,842
	Maximum	1,433	4,418	N/O	2,600	755	2,190	1,054	6,346	0	N/O	N/O	2,374	1,886
	Total	39,515	102,148	N/O	76,923	22,761	67,627	32,514	54,544	0	N/O	N/O	17,994	57,107

Facility		Dean Well	Downey Well	Edinburgh Well	Emma Well	Helmar Well	Membro Well	Paisley Well	Park Wells #1 and #2	Queensdale Well	Sacco Well	Smallfield Well	University Well	Water Street Well
Units		m3	m3	m3	m3	m3	m3	m3	m3	m3	m3	m3	m3	m3
Regulatory Limit		2,300	5,273	N/O	3,100	3,273	6,050	3,200	10,300	5,237	N/O	N/O	3,300	3,400
November	Average	1,251	3,192	N/O	2,572	709	2,188	1,044	829	116	N/O	N/O	1,732	1,810
	Maximum	1,428	4,150	N/O	2,707	768	2,289	1,093	5,662	737	N/O	N/O	2,361	1,933
	Total	37,532	95,757	N/O	77,172	21,275	65,644	31,323	24,867	3,482	N/O	N/O	51,958	54,296
December	Average	1,409	2,879	N/O	2,494	722	1,156	1,046	1,474	673	N/O	N/O	927	1,861
	Maximum	1,438	3,355	N/O	2,596	739	2,197	1,055	6,098	724	N/O	N/O	2,352	1,921
	Total	43,668	89,244	N/O	77,308	22,372	35,823	32,435	45,684	20,867	N/O	N/O	28,748	57,706
2019 Year	Average	1,331	3,938	N/O	2,441	739	2,113	772	2,442	358	N/O	N/O	1,327	1,763
	Maximum	1,471	4,780	N/O	2,707	807	2,432	1,093	7,879	936	N/O	N/O	2,404	1,971
	Total	485,715	1,436,233	N/O	891,195	269,604	771,245	281,792	887,019	130,073	N/O	N/O	482,956	643,003
	Average Pumped	58%	75%	N/O	79%	23%	35%	24%	24%	7%	N/O	N/O	40%	52%

City of Guelph Water Services – Instantaneous Flows Summary (PTTW), January 1 – December 31, 2019

Table 43 and Table 44 presented below, outline the Instantaneous Flow Summary for 2019. Table 43 includes the following sources: Admiral Well, Arkell Well 1, Arkell Well 6, Arkell Well 7, Arkell Well 8, Arkell Well 14, Arkell Well 15, Arkell Recharge Pump, Arkell Springs Glen Collector System, Burke Well, Calico Well, Carter Well 1 and 2 and Clythe Well. Table 44 includes the following sources: Dean Well, Downey Well, Edinburgh Well, Emma Well, Helmar Well, Membro Well, Paisley Well, Park Wells 1 and 2, Queensdale Well, Sacco Well, Smallfield Well, University Well and Water Street Well.

Table 43: City of Guelph - Instantaneous Flow Summary, 2019

Facility		Admiral Well	Arkell Well #1	Arkell Well #6	Arkell Well #7	Arkell Well #8	Arkell Well #14	Arkell Well #15	Arkell Wellfield (#6,7,8,14,15)	Arkell -Recharge System	Arkell Springs Glen Collector System	Burke Well	Calico Well	Carter Wells	Clythe Well
Units		L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s
Regulatory Limit		n/a	37.9	111.0	111.0	111.0	111.0	111.0	n/a	157.8	290.0	83.7	60.6	90.9	n/a
January	Average	N/O	1.1	41.6	86.4	20.8	32.1	52.4	234.5	0.0	0.3	0.0	0.0	0.0	N/O
	Maximum	N/O	13.1	91.2	89.5	86.2	92.5	93.6	466.0	0.0	64.1	0.0	0.0	0.0	N/O
February	Average	N/O	0.5	41.4	86.1	9.1	70.6	34.5	242.1	0.0	64.2	1.2	0.0	0.0	N/O
	Maximum	N/O	12.9	89.9	89.4	84.9	93.2	93.1	463.5	0.0	66.4	69.6	0.0	0.0	N/O
March	Average	N/O	0.9	87.0	39.2	9.9	65.8	11.0	213.8	0.0	68.8	61.7	0.0	0.0	0.9
	Maximum	N/O	12.9	90.0	90.1	84.8	94.0	92.7	464.5	0.0	85.6	75.5	0.0	0.0	12.9
April	Average	N/O	1.1	23.0	88.3	3.5	51.3	12.7	180.1	20.7	94.1	72.3	0.0	0.0	N/O
	Maximum	N/O	13.0	91.3	90.2	87.2	94.8	94.3	470.9	115.8	132.6	74.3	0.0	0.0	N/O
May	Average	N/O	1.1	13.4	89.3	0.1	25.4	12.7	142.0	94.8	163.9	72.4	0.0	0.0	N/O
	Maximum	N/O	14.6	96.9	90.4	86.4	93.6	94.6	476.5	97.3	197.0	75.7	0.0	0.0	N/O

Facility		Admiral Well	Arkell Well #1	Arkell Well #6	Arkell Well #7	Arkell Well #8	Arkell Well #14	Arkell Well #15	Arkell Wellfield (#6,7,8,14,15)	Arkell -Recharge System	Arkell Springs Glen Collector System	Burke Well	Calico Well	Carter Wells	Clythe Well
Units		L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s
Regulatory Limit		n/a	37.9	111.0	111.0	111.0	111.0	111.0	n/a	157.8	290.0	83.7	60.6	90.9	n/a
June	Average	N/O	1.3	7.7	89.5	0.4	6.8	15.3	121.0	89.0	195.3	72.2	0.0	0.0	N/O
	Maximum	N/O	14.5	91.2	90.3	86.4	92.1	94.0	468.6	92.7	211.5	74.4	0.0	0.0	N/O
July	Average	N/O	12.6	82.5	4.5	7.5	27.6	17.4	152.2	84.7	193.0	71.5	0.0	15.4	N/O
	Maximum	N/O	14.3	92.3	91.0	86.1	91.5	93.3	468.5	89.0	208.8	75.2	0.0	75.8	N/O
August	Average	N/O	9.8	81.8	12.2	10.9	31.8	12.3	158.7	80.1	179.3	68.5	0.0	75.3	N/O
	Maximum	N/O	14.1	91.3	92.1	85.9	90.9	92.2	466.6	85.8	191.1	75.3	0.0	90.7	N/O
September	Average	N/O	0.8	65.2	61.8	15.4	31.1	0.0	174.3	48.3	146.7	73.9	0.0	79.3	N/O
	Maximum	N/O	19.6	91.4	91.4	85.5	88.7	0.0	376.7	85.6	177.6	75.2	0.0	92.2	N/O
October	Average	N/O	0.7	72.0	56.7	24.7	32.1	3.2	189.4	24.8	107.4	73.2	0.0	20.3	N/O
	Maximum	N/O	13.7	91.9	91.5	86.8	89.3	85.6	458.8	87.6	136.6	75.6	0.0	73.5	N/O
November	Average	N/O	0.4	58.5	69.4	37.1	40.5	11.1	217.0	0.0	85.7	73.7	0.0	0.0	N/O
	Maximum	N/O	13.5	91.7	92.5	88.9	88.4	87.1	462.0	0.0	102.3	75.3	0.0	0.0	N/O
December	Average	N/O	0.7	50.4	88.1	10.3	27.3	11.5	188.3	0.0	63.6	73.5	0.0	0.0	N/O
	Maximum	N/O	13.4	91.0	91.0	85.9	86.5	86.4	454.1	0.0	81.4	75.3	0.0	0.0	N/O

Table 44: Instantaneous Flow Summary, 2019 - Continued

Facility		Dean Well	Downey Well	Edinburgh Well	Emma Well	Helmar Well	Membro Well	Paisley Well	Park Wells	Queensdale Well	Sacco Well	Smallfield Well	University Well	Water Street Well
Units		L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s
Regulatory Limit		39.9	90.9	n/a	40.9	37.9	105.0	42.0	127.2	60.6	n/a	n/a	57.3	59.0
January	Average	15.6	55.6	N/O	27.9	9.1	24.9	10.0	48.4	10.9	N/O	N/O	17.6	21.7
	Maximum	19.3	61.0	N/O	27.5	9.1	22.4	9.9	50.4	10.5	N/O	N/O	27.9	26.7
February	Average	15.6	53.8	N/O	30.4	12.9	30.2	10.0	60.5	13.0	N/O	N/O	16.2	21.9
	Maximum	19.3	61.6	N/O	37.5	14.0	0.0	10.0	111.3	17.6	N/O	N/O	28.6	25.5
March	Average	16.1	53.7	N/O	27.9	8.9	24.6	9.8	40.7	6.4	N/O	N/O	14.0	20.9
	Maximum	20.9	59.0	N/O	30.2	12.9	29.8	10.2	61.8	16.0	N/O	N/O	28.2	28.4
April	Average	16.3	53.5	N/O	28.9	8.7	26.9	4.7	36.9	0.0	N/O	N/O	19.2	21.9
	Maximum	20.0	55.7	N/O	31.1	15.6	28.8	10.3	62.3	0.0	N/O	N/O	28.6	26.9
May	Average	16.3	53.3	N/O	27.9	9.1	27.1	0.0	24.7	5.6	N/O	N/O	16.4	22.1
	Maximum	20.2	60.2	N/O	32.4	12.7	28.7	0.0	82.8	14.9	N/O	N/O	28.8	37.6
June	Average	15.6	52.6	N/O	28.1	8.5	26.6	3.8	21.5	9.5	N/O	N/O	19.0	18.1
	Maximum	20.1	54.9	N/O	32.5	12.7	27.2	10.1	119.5	12.7	N/O	N/O	28.5	31.3
July	Average	12.9	45.8	N/O	29.5	9.1	26.1	9.3	21.5	8.2	N/O	N/O	13.6	18.1
	Maximum	20.2	60.6	N/O	31.8	12.6	26.8	13.2	118.6	15.0	N/O	N/O	28.7	31.0
August	Average	15.1	44.0	N/O	29.5	7.6	25.6	11.2	21.8	0.0	N/O	N/O	15.9	17.8
	Maximum	29.1	60.1	N/O	31.3	13.2	26.9	13.2	117.7	0.0	N/O	N/O	29.0	29.2

Facility		Dean Well	Downey Well	Edinburgh Well	Emma Well	Helmar Well	Membro Well	Paisley Well	Park Wells	Queensdale Well	Sacco Well	Smallfield Well	University Well	Water Street Well
Units		L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s
Regulatory Limit		39.9	90.9	n/a	40.9	37.9	105.0	42.0	127.2	60.6	n/a	n/a	57.3	59.0
September	Average	15.9	36.3	N/O	25.5	8.7	25.3	12.2	26.4	0.0	N/O	N/O	15.7	21.3
	Maximum	19.0	59.5	N/O	32.1	11.8	25.4	13.0	118.2	0.0	N/O	N/O	28.8	24.7
October	Average	14.7	39.0	N/O	28.9	8.6	25.2	12.1	20.2	0.0	N/O	N/O	20.2	21.4
	Maximum	18.4	61.8	N/O	31.7	11.7	25.5	12.3	117.6	0.0	N/O	N/O	28.5	29.9
November	Average	14.4	37.9	N/O	29.9	8.3	25.3	12.1	9.6	1.7	N/O	N/O	15.9	21.0
	Maximum	27.5	56.6	N/O	32.1	11.8	25.7	12.9	118.8	30.6	N/O	N/O	27.7	25.5
December	Average	16.3	34.1	N/O	29.0	8.5	13.4	12.1	17.0	9.9	N/O	N/O	10.7	21.6
	Maximum	20.1	60.7	N/O	32.2	11.7	25.6	13.4	117.8	13.7	N/O	N/O	28.4	25.5

Appendix D: Treated Water Quality Statistics

O. Reg. 170/03 Schedule 23, 13-2b – “Three Year” Results Summary (Jan. 1 – Dec. 31, 2019)

Table 45: O. Reg. 170/03 Schedule 23, 13-2b - "Three Year" Results Summary

Parameter	ODWQS MAC mg/L	½ MAC mg/L	Total Samples	Samples Above MDL	# Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
<u>Antimony</u>	0.014	0.007	24	5	0	< 0.0001	0.00092	0.00065
<u>Arsenic</u>	0.025	0.0125	24	5	0	< 0.0002	0.0043	0.002
<u>Barium</u>	1.0	0.5	24	24	0	0.035	0.11	0.0672
<u>Boron</u>	5.0	2.5	24	24	0	0.014	0.043	0.028
<u>Cadmium</u>	0.005	0.0025	24	5	0	0.00009	0.00013	0.00011
<u>Chromium</u>	0.05	0.025	24	2	0	0.008	0.015	0.0079
<u>Mercury</u>	0.001	0.0005	12	0	0	< 0.0001	< 0.0001	n/a
<u>Selenium</u>	0.01	0.005	24	0	0	< 0.002	< 0.002	n/a
<u>Uranium</u>	0.02	0.01	24	22	0	< 0.00010	0.0017	0.00107

O. Reg. 170/03 Schedule 24, 13-4b – “Three Year” Results Summary (Jan. 1 – Dec. 31, 2019)

Table 46: O. Reg. 170/03 Schedule 24, 13-4b - "Three Year" Results Summary

Parameter	ODWQS MAC mg/L	½ MAC mg/L	Total Samples	Samples Above MDL	# Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
Alachlor	0.005	0.0025	12	0	0	< 0.0005	< 0.0005	n/a
Atrazine + N-dealkylated metabolites	0.005	0.0025	12	0	0	< 0.001	< 0.001	n/a
Azinphos-methyl	0.02	0.01	12	0	0	< 0.002	< 0.002	n/a
Benzene	0.005	0.0025	66	0	0	< 0.0001	< 0.0001	n/a
Benzo(a)pyrene	0.00001	0.000005	12	0	0	< 0.000005	< 0.000005	n/a
Bromoxynil	0.005	0.0025	12	0	0	< 0.0005	< 0.0005	n/a
Carbaryl	0.09	0.045	12	0	0	< 0.005	< 0.005	n/a
Carbofuran	0.09	0.045	12	0	0	< 0.005	< 0.005	n/a
Carbon Tetrachloride	0.005	0.0025	66	0	0	< 0.0001	< 0.0001	n/a
Chlorpyrifos	0.09	0.045	12	0	0	< 0.001	< 0.001	n/a
Diazinon	0.02	0.01	12	0	0	< 0.001	< 0.001	n/a

Parameter	ODWQS MAC mg/L	½ MAC mg/L	Total Samples	Samples Above MDL	# Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
Dicamba	0.12	0.06	12	0	0	< 0.001	< 0.001	n/a
1,2-Dichlorobenzene	0.2	0.1	66	0	0	< 0.0002	< 0.0002	n/a
1,4-Dichlorobenzene	0.005	0.0025	66	0	0	< 0.0002	< 0.0002	n/a
1,2-Dichloroethane	0.005	0.0025	66	0	0	< 0.0002	< 0.0002	n/a
1,1-Dichloroethylene	0.014	0.007	66	0	0	< 0.0001	< 0.0001	n/a
Dichloromethane	0.05	0.025	66	0	0	< 0.0005	< 0.0005	n/a
2,4-Dichlorophenol	0.9	0.45	12	0	0	< 0.00025	< 0.00025	n/a
2,4-Dichlorophenoxy- acetic acid (2,4-D)	0.1	0.05	12	0	0	< 0.0001	< 0.0001	n/a
Diclofop-methyl	0.009	0.0045	12	0	0	< 0.0009	< 0.0009	n/a
Dimethoate	0.02	0.01	12	0	0	< 0.0025	< 0.0025	n/a
Diquat	0.07	0.0035	12	0	0	< 0.007	< 0.007	n/a
Diuron	0.15	0.075	12	0	0	< 0.01	< 0.01	n/a
Glyphosate	0.28	0.14	12	0	0	< 0.01	< 0.01	n/a
Malathion	0.19	0.095	12	0	0	< 0.005	< 0.005	n/a

Parameter	ODWQS MAC mg/L	½ MAC mg/L	Total Samples	Samples Above MDL	# Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
2-Methyl-4-chlorophenoxyacetic acid	0.1	0.05	12	0	0	< 0.00012	< 0.00012	n/a
Metolachlor	0.05	0.025	12	0	0	< 0.0005	< 0.0005	n/a
Metribuzin	0.08	0.04	12	0	0	< 0.005	< 0.005	n/a
Chlorobenzene	0.08	0.04	66	0	0	< 0.0001	< 0.0001	n/a
Paraquat	0.01	0.005	12	0	0	< 0.001	< 0.001	n/a
Pentachlorophenol (PCP)	0.06	0.03	12	0	0	< 0.0005	< 0.0005	n/a
Phorate	0.002	0.001	12	0	0	< 0.0005	< 0.0005	n/a
Picloram	0.19	0.095	12	0	0	< 0.005	< 0.005	n/a
Polychlorinated Biphenyls (PCB)	0.003	0.0015	12	0	0	< 0.00005	< 0.00005	n/a
Prometryn	0.001	0.0005	12	0	0	< 0.00025	< 0.00025	n/a
Simazine	0.01	0.005	12	0	0	< 0.001	< 0.001	n/a
Terbufos	0.001	0.0005	12	0	0	< 0.0005	< 0.0005	n/a

Parameter	ODWQS MAC mg/L	½ MAC mg/L	Total Samples	Samples Above MDL	# Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
<u>Tetrachloroethylene</u> (PCE)	0.03	0.015	66	0	0	< 0.0001	< 0.0001	n/a
2,3,4,6- Tetrachlorophenol	0.1	0.05	12	0	0	< 0.0005	< 0.0005	n/a
Triallate	0.23	0.115	12	0	0	< 0.001	< 0.001	n/a
<u>Trichloroethylene</u>	0.005	0.0025	66	24	0	< 0.0001	0.00167	0.00046
2,4,6-Trichlorophenol	0.005	0.0025	12	0	0	< 0.0005	< 0.0005	n/a
Trifluralin	0.045	0.0225	12	0	0	< 0.001	< 0.001	n/a
Vinyl Chloride	0.002	0.001	66	0	0	< 0.0002	< 0.0002	n/a

Operational VOC Scan Results Summary (Jan. 1 – Dec. 31, 2019)

Table 47: Operational VOC Scan Results Summary

Parameter	ODWQS MAC mg/L	½ MAC mg/L	Total Samples	Samples Above MDL	# Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
1,1-Dichloroethane	n/a	n/a	135	0	n/a	< 0.0001	< 0.0001	n/a
1,1-Dichloroethylene	0.014	0.007	148	0	0	< 0.0001	< 0.0001	n/a
1,1,1-Trichloroethane	n/a	n/a	135	0	n/a	< 0.0001	< 0.0001	n/a
1,1,2-Trichloroethane	n/a	n/a	135	0	n/a	< 0.0002	< 0.0002	n/a
1,1,2,2-Tetrachloroethane	n/a	n/a	135	0	n/a	< 0.0001	< 0.0001	n/a
Ethylene Dibromide	n/a	n/a	135	0	n/a	< 0.0002	< 0.0002	n/a
1,2-Dichlorobenzene	0.2	0.1	148	0	0	< 0.0002	< 0.0002	n/a
Cis-1,2-Dichloroethylene	n/a	n/a	135	54	n/a	< 0.0001	0.00361	0.00162
Trans-1,2-Dichloroethylene	n/a	n/a	135	0	n/a	< 0.0001	< 0.0001	n/a

Parameter	ODWQS MAC mg/L	½ MAC mg/L	Total Samples	Samples Above MDL	# Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
1,2-Dichloropropane	n/a	n/a	135	0	n/a	< 0.0001	< 0.0001	n/a
1,3-Dichlorobenzene	n/a	n/a	135	0	n/a	< 0.0002	< 0.0002	n/a
1,4-Dichlorobenzene	0.005	0.0025	148	0	0	< 0.0002	< 0.0002	n/a
Acetone	n/a	n/a	135	0	n/a	< 0. 01	< 0. 01	n/a
Benzene	0.005	0.0025	148	0	0	< 0.0001	< 0.0001	n/a
Bromodichloromethane	0.1	0.05	135	47	0	< 0.0001	0.0103	0.00283
Bromoform	0.1	0.05	135	45	0	< 0.0002	0.00484	0.00119
Carbon Tetrachloride	0.005	0.0025	148	0	0	< 0.0001	< 0.0001	n/a
Chloroethane	n/a	n/a	135	0	n/a	< 0.0002	< 0.0002	n/a
Chloroform	0.1	0.05	135	65	0	< 0.0001	0.0143	0.00266
Dibromochloromethane	0.1	0.05	135	49	0	< 0.0002	0.0103	0.00328

Parameter	ODWQS MAC mg/L	½ MAC mg/L	Total Samples	Samples Above MDL	# Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
Dichloromethane	0.05	0.025	148	0	0	< 0.0005	< 0.0005	n/a
Ethylbenzene	0.0024	n/a	148	2	0	< 0.0001	< 0.00035	0.00029
Methyl Ethyl Ketone	n/a	n/a	135	0	n/a	< 0.0005	< 0.0005	n/a
Styrene	n/a	n/a	135	0	n/a	< 0.0002	< 0.0002	n/a
<u>Tetrachloroethylene (PCE)</u>	0.03	0.015	148	0	0	< 0.0001	< 0.0001	n/a
Tolulene	0.024	n/a	148	0	0	< 0.0002	< 0.0002	n/a
<u>Trichloroethylene</u>	0.005	0.0025	148	54	0	< 0.0001	0.00199	0.00063
Trichlorofluoromethane	n/a	n/a	135	0	0	< 0.0002	< 0.0002	n/a
Vinyl Chloride	n/a	n/a	148	0	0	< 0.0002	< 0.0002	n/a
o-Xylene	n/a	n/a	148	3	0	< 0.0001	0.00051	0.00033
m- + p- Xylene	n/a	n/a	148	3	0	< 0.0001	0.00144	0.00090

Parameter	ODWQS MAC mg/L	½ MAC mg/L	Total Samples	Samples Above MDL	# Above ODWQS Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
Total Xylene	0.09	n/a	147	2	0	<0.0001	0.00195	0.00126
<u>Trihalomethanes</u>	0.100	n/a	135	58	0	< 0.0002	0.0365	0.00835

General Chemistry Results Summary (Jan. 1 – Dec. 31, 2019)

Table 48: General Chemistry Results Summary

Parameter	ODWQS MAC	ODWQS AO	ODWQS OG	Total Samples	Samples Above MDL	# Above Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
Aluminum	n/a	n/a	0.1	14	0	0	< 0.005	< 0.005	n/a
Alkalinity (as CaCO ₃)	n/a	n/a	30-500	12	12	0	250	330	286
Ammonia-N	n/a	n/a	n/a	12	2	n/a	< 0.05	0.18	0.16
Anion Sum	n/a	n/a	n/a	12	12	n/a	7.02 ³⁴	16.1 ²⁴	12.4 ²⁴
<u>Antimony</u>	0.014	n/a	n/a	24	5	0	<0.0001	0.00092	0.00065

³⁴ Units in Milliequivalents Per Litre (mEq/L)

Parameter	ODWQS MAC	ODWQS AO	ODWQS OG	Total Samples	Samples Above MDL	# Above Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
<u>Arsenic</u>	0.025	n/a	n/a	24	5	0	<0.001	0.002	0.0043
<u>Barium</u>	1.0	n/a	n/a	24	24	0	0.035	0.11	0.0672
Beryllium	n/a	n/a	n/a	23	0	n/a	<0.0005	<0.0005	n/a
<u>Boron</u>	5.0	n/a	n/a	24	24	0	0.014	0.043	0.028
<u>Cadmium</u>	0.005	n/a	n/a	24	5	0	0.00009	0.00013	0.00011
Calcium	n/a	n/a	n/a	23	23	n/a	90	160	120.9
Cation Sum	n/a	n/a	n/a	12	12	n/a	7.24 ²¹	16.1 ²¹	12.4 ²¹
<u>Chloride</u>	n/a	250	n/a	12	12	0	39	280	160
Chromium	0.05	n/a	n/a	24	2	0	0.0008	0.015	0.0079
Cobalt	n/a	n/a	n/a	23	12	n/a	<0.0005	0.0023	0.00145
Copper	n/a	1	n/a	23	11	0	< 0.001	0.2	0.0470
Dissolved Organic Carbon (DOC)	n/a	5	n/a	12	12	0	0.65	2.9	1.36
<u>1,4 Dioxane</u>	n/a	n/a	n/a	12	0	n/a	<0.0001	<0.0001	n/a
<u>Hardness (Calculated as CaCO₃)</u>	n/a	n/a	80-100	12	12	12	330	570	448

Parameter	ODWQS MAC	ODWQS AO	ODWQS OG	Total Samples	Samples Above MDL	# Above Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
Ion Balance (% difference)	n/a	n/a	n/a	12	12	n/a	0.12 ³⁵	3.13 ²⁵	1.634 ²⁵
<u>Iron</u>	n/a	0.3	n/a	24	6	6	< 0.005	1.8	0.56
Langelier's Index at 4°C	n/a	n/a	n/a	12	12	n/a	0.391 ³⁶	0.894 ²⁶	0.623 ²⁶
Langelier's Index at 20°C	n/a	n/a	n/a	12	12	n/a	0.639 ²⁶	1.14 ²⁶	0.87 ²⁶
Lead	0.01	n/a	n/a	23	2	0	0.00006	0.0014	0.00073
Magnesium	n/a	n/a	n/a	23	23	n/a	26	48	39.196
<u>Manganese</u>	n/a	0.05	n/a	24	19	0	0.0006	0.037	0.0088
Molybdenum	n/a	n/a	n/a	23	21	n/a	<0.0005	0.0039	0.00189
Nickel	n/a	n/a	n/a	23	21	n/a	<0.001	0.013	0.0056
o-Phosphate	n/a	n/a	n/a	12	0	n/a	<0.01	<0.01	n/a
pH	n/a	n/a	6.5-8.5	12	12	0	7.69	8.20	7.85

³⁵ Units in %³⁶ Units in Langelier's Index

Parameter	ODWQS MAC	ODWQS AO	ODWQS OG	Total Samples	Samples Above MDL	# Above Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
Phosphorus	n/a	n/a	n/a	22	0	n/a	<0.1	<0.1	n/a
Potassium	n/a	n/a	n/a	23	23	n/a	1.5	3.1	2.130
Saturation pH at 4°C	n/a	n/a	n/a	12	12	n/a	7.13	7.33	7.22
Saturation pH at 20°C	n/a	n/a	n/a	12	12	n/a	6.88	7.08	6.98
Selenium	0.01	n/a	n/a	24	1	0	<0.002	0.002	0.002
Silicon	n/a	n/a	n/a	14	14	n/a	3.7	8.8	5.2
Silver	n/a	n/a	n/a	23	0	n/a	<0.0001	<0.0001	n/a
<u>Sodium</u>	n/a	20 and 200	n/a	38	38	14	23	170	91
Strontium	n/a	n/a	n/a	23	23	n/a	0.178	5.2	2.657
Sulphate	n/a	550	n/a	12	12	0	43	220	102
Thallium	n/a	n/a	n/a	23	5	n/a	<0.00005	0.000068	0.000064
Titanium	n/a	n/a	n/a	23	0	n/a	<0.005	<0.005	n/a
Total Dissolved Solids	n/a	n/a	n/a	12	12	n/a	390	920	692
<u>Uranium</u>	0.02	n/a	n/a	24	22	0	<0.0001	0.0017	0.00107

Parameter	ODWQS MAC	ODWQS AO	ODWQS OG	Total Samples	Samples Above MDL	# Above Criteria	Min (mg/L)	Max (mg/L)	Average (mg/L)
Vanadium	n/a	n/a	n/a	23	0	n/a	<0.0005	<0.0005	n/a
Zinc	n/a	5	n/a	23	21	0	<0.005	0.15	0.0675

Appendix E: Legal and Other Requirements Table

Table 49: Legal and Other Updates that Could Affect the Drinking Water System or the Quality Management System, 2019

Date - 2019	Source	Title of Legal & Other Requirement Highlights of posting	Action and Status Update
Jan. 21	MECP Email	<p>2015 Watermain Disinfection Procedure</p> <p>The first regulation proposal (ERO #013-1840) is being made under the Safe Drinking Water Act, 2002.</p> <p>A second proposal (ERO #013-1839) outlines proposed amendments to the 2015 Watermain Disinfection Procedure are due by January 24, 2019.</p>	Email sent to the Supervisors of Distribution, Water Compliance Specialist, Manager of Operations and distribution staff.
Jan. 21	City of Guelph News Release	<p>The City has received silver level recognition from the Alliance for Water Efficiency (AWE) for its water efficiency programs. Guelph is the first Canadian municipality to achieve such recognition.</p>	No action required.
Feb. 1	MECP Email	<p>The Ministry released the draft Terms of Reference: Determination of Minimum Treatment for Residential Drinking Water Systems using Subsurface Raw Water Supplies for comments. If adopted, this will replace the 2001 GUDI Terms of Reference document. Comments are due by April 3, 2019.</p>	Email sent to Water Services Management team.

Feb. 19	Guelph Today.com	<u>Schreiner to table Guelph drinking water protection as first-ever Green legislation in Ontario.</u>	The news story was sent to Water Services Management.
Mar. 8	Gov't of Canada	Based on the latest science, Health Canada has updated the <u>drinking water guideline</u> to reduce the maximum acceptable concentration of lead from 0.01 mg/L, which was set in 1992, to 0.005 mg/L. The guideline was updated in collaboration with the provinces, territories and other federal departments.	Guideline sent to the Water Services Management team and the Water Supply Technician.
Mar. 22	Ontario News	<u>Ontario Convening Leaders to Discuss Great Lakes, Water Protection.</u>	No action required.
Apr. 2	City of Guelph News Release	The City of Guelph has won an <u>Exemplary Source Water Protection Award</u> from the <u>American Water Works Association</u> (AWWA). The City received this award for its excellent work to protect local water sources. The AWWA will present the award to the City at this year's AWWA Annual Conference and Exposition in Denver, Colorado in June.	No action required.
Apr. 5	ERO	The <u>MECP is proposing to introduce amendments to the <i>Conservation Authorities Act</i></u> , which if passed, would help conservation authorities focus and deliver on their core mandate, and to improve governance.	Sent the EBR posting to the Source Water Protection Program Manager and Manager of Technical Services.

Apr. 25	Ontario News email	The government has released a <u>discussion paper</u> that outlines a more modern environmental assessment process, including <u>immediate, short-term fixes</u> to reduce burden and serve the interest of Ontario families and communities.	Email sent to Project Managers and Manager of Technical Services.
Apr. 29	Guelph.ca	The City has hired Neptune Technology Group Inc. to complete mandatory replacements of residential water meters in about 8,000 homes. Water meter replacements begin May 6, 2019.	No action required.
Apr. 29	Guelph.ca	The City has announced that Jennifer Rose is the new General Manager of Environmental Services, replacing Peter Busatto who is retiring after 35 years with the City.	No action required.
May 2	Ontario News email	Ontario is proposing to introduce changes that will make it safer and easier for more excess soil to be reused locally. This will be achieved through a new excess soil regulation and consequential amendments to O. Reg. 153/04 (Record of Site Condition Regulation) and Regulation 347 (General - Waste Management) under the Environmental Protection Act (EPA). Ontario is also introducing changes O. Reg. 153/04 under the EPA to clarify rules and remove unnecessary barriers to redevelopment and revitalization of historically contaminated lands.	Email sent to Water Compliance Specialist, Supervisor of Distribution, Distribution Technician and the Manager of Operations.
May 10	Health Canada	Health Canada has released the <u>Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – Manganese</u> . The maximum acceptable concentration (MAC) for total manganese in drinking water is 0.12 mg/L (120 µg/L). The aesthetic objective (AO) for total manganese in drinking water is 0.02 mg/L (20 µg/L).	New guideline sent to the Management Team, the Water Compliance Specialist and the Water Supply Technician.

May 15	Guelph.ca	<p><u>Security upgrades at Arkell Spring grounds begin May 20</u></p> <p>The City is making security upgrades at the Arkell Spring grounds to enhance the protection of Guelph's drinking water source and to improve public safety.</p>	No action required.
May 16	MECP	<p>The Ministry of the Environment, Conservation and Parks has recently released an updated version of "<u>Taking Care of Your Drinking Water": A Guide for Members of Municipal Councils</u>".</p>	Updated Guide was sent to Members of Guelph Council.
June 5	OMWA Newswire	<p><u>'Lackadaisical,' 'Inefficient' Vaughan water services uncovered by city auditor</u></p> <p>32 recommendations cite poor oversight, lack of accountability but city says water is safe.</p>	Report sent to Management Team for information. Quality Management Specialist incorporated relevant recommendations as a Best Management Practice for Guelph Water Services.
June 5	Guelph.ca	<p><u>Burke well upgrades improve water service to 13,000 homes</u></p> <p>City staff and council celebrated the opening of the upgraded Burke well house last week. The City made upgrades to remove iron and manganese from the water, and to improve service delivery and reliability of the 44-year-old well located on the north side of Arkell Road near Summerfield Drive.</p>	No action required.

July 5	Guelph.ca	<u>Sleeman Saves Over 5,000 Kegs Worth of Water a Day with Upgrades</u> The Sleeman Brewery in Guelph is saving about 298,000 litres, or over 5,000 kegs worth of water every day, thanks to the results of a Water Smart Business audit from the City of Guelph.	No action required.
July 30	Guelph.ca	<u>Dry conditions move outside water use level up to yellow</u> The City is enforcing watering restrictions for <u>level 1 yellow</u> of the outside water use program because a sustained period of no steady rain and little relief is anticipated in the forecast ahead.	No action required.
Aug. 2	Guelph.ca	The City of Guelph is offering rebates to help property owners decommission (permanently remove and seal) unused, private water wells and septic systems on residential and agricultural lands in Guelph. Property owners can apply for rebates that would include \$1,500 per private well (to a maximum of two per property) and \$15,000 per septic system decommissioned.	No action required.
Aug. 23	TheRecord.com	<u>New drinking water protections in place for Grand River watershed</u> The updated Grand River Source Protection Plan was approved by Environment Minister Jeff Yurek on Aug. 16 and took effect that day.	No action required.

Sept. 20	ERO	The Ministry of Natural Resources and Forestry is proposing changes to <u>the Aggregate Resources Act</u> , which would strengthen protection of water resources by creating a more robust application process for existing operators that want to expand to extract aggregate within the water table, allowing for increased public engagement on applications that may impact water resources. This would allow municipalities and others to officially object to an application and provide the opportunity to have their concerns heard by the Local Planning Appeal Tribunal.	ERO posting sent to the Water Supply Program Manager, Manager of Technical Services and Hydrogeologist.
Sept. 23	Guelph.ca	The <u>inspection and maintenance of the Arkell aqueduct</u> , where 60 to 80 per cent of Guelph's water comes from, is underway.	No action required.
Oct. 1	Guelph.ca	<u>City and Dolime Quarry owners reach proposal to protect Guelph's drinking water.</u> Proposed solution would replace quarry with residential neighbourhood.	No action required.
Oct. 3	Wellington Advertiser	<u>Puslinch Township is considering options to provide water and wastewater services to residents in Aberfoyle.</u> One of the options is to connect to the Guelph Water System.	News article forwarded to top management for information.
Oct. 7	Guelph.ca	The City has initiated a Schedule B Municipal Class Environmental Assessment (EA) for <u>Robertson booster pump station</u> (Robertson station) upgrades. As part of the <u>2008 Water and Wastewater Servicing Master Plan</u> , upgrades are required to bring the station to current standards and increase the pump's capacity in anticipation of future demands.	No action required.

Oct. 8	CBC	<u>Dolime Quarry in Guelph may close early, become residential neighbourhood.</u> The city says the quarry uses roughly 11 million litres of water on a daily basis. It says it would build a system to protect the groundwater from exposure to surface water contamination that could damage the aquitard.	No action required.
Oct. 24	Orangeville Today	<u>Orangeville to explore water softener rebate to cut salt discharge into the Credit River.</u>	News story forwarded to the Manager of Technical Services, Supervisor of Water Efficiency, Source Water Protection Program Manager and Coordinator.
Oct. 31	Ontario News email	<u>Ontario taking action to protect the environment and hold polluters accountable</u> Environmental violations where administrative monetary penalties may be used under the new proposal include illegal sewage discharges into waterways, selling pesticides without a permit, failing to have a certified operator when operating a drinking water system, or violating terms of a permit to take water.	News release sent to the GM Environmental Services, Manager of Operations, Manager of Technical Services and Water Compliance Specialist.
Oct. 31	Guelph.ca	<u>Notice of study commencement: City of Guelph Municipal Class Environmental Assessment for the Water Supply Master Plan Update.</u> The City of Guelph is updating the <u>2014 Water Supply Master Plan</u> (WSMP) to review our municipal water supply sources and identify priorities, including sustainable water supply options from now until 2041.	No action required.

Nov. 7	ERO	This <u>proposal</u> is to renew Permit To Take Water No. 5142-AQ2L8Q for Victoria Park Village Inc. for dewatering purposes in Guelph, Ontario.	Link sent to the Manager of Technical Services, Water Supply Program Manager and Hydrogeologist.
Nov. 14	Canadian Council of Ministers of the Environ. email	Draft <u>Canadian Groundwater Quality Guidelines for the Protection of Environmental and Human Health</u> for 101 contaminants of concern are available for public review and comment until January 10, 2020.	Email forwarded by the Manager of Technical Services to the Water Compliance Specialist, Quality Management Specialist, Supervisor of Water Treatment, Water Supply Program Manager.
Dec. 4	ERO	<u>Excess Soil Management Regulatory Proposal</u> Ontario has finalized and is implementing new regulatory changes that will make it safer and easier for more excess soil to be reused locally and will reduce barriers to revitalize historically contaminated lands.	Link sent to the Supervisors of Distribution, Distribution Technician, Hydrogeologist and Water Compliance Specialist.
Dec. 9	ERO	<u>Amendment to the Record of Site Condition (Brownfields) Regulation related to the Requirement to Sample Ground Water</u> Ontario is proposing changes to <i>O. Reg. 153/04</i> that would provide flexibility for a qualified person (a licensed professional engineer or geoscientist) to exercise professional judgement regarding the need for ground water testing where there is no soil and under key conditions.	Link sent to the Manager of Technical Services, Hydrogeologist and Source Water Protection Program Manager.

Dec. 19	ERO	Final Decision: <u>Ministry is holding polluters accountable by expanding the use of administrative monetary penalties for environmental contraventions.</u>	Link sent to Management Team.
Dec. 20	MECP Email	Today, the Ministry of the Environment, Conservation and Parks released the <u>Minister's Annual Report on Drinking Water 2019</u> and the <u>2018-2019 Chief Drinking Water Inspector Annual Report</u> .	Report emailed to the Water Services Management Team.
Dec. 20	ERO	<u>Amendments to the Wells Regulation to come in effect January 1, 2020.</u>	Updates forwarded to Supervisor of Water Treatment, Hydrogeologist and Water Compliance Specialist.

Appendix F: Action Items from Management Review

Table 50: Action Items from the 2019 (Items 1-12) and 2020 (Items 13-17) Management Review Meetings

Item #	Status	Description
1	CIR #878 Closed: 2019-03-28	For the A&S Report: Include 2018 consumption data in Figure 4 when it is available.
2	CIR # 879 Closed: 2019-01-25	For the A&S Report: Consider well field permits for Arkell in Table 3 (as we often pump more than 66l/s).
3	CIR #880 Closed: 2019-01-25	For the A&S Report: For the Table 5, remove Logan and Speedvale should be Verney.
4	CIR #881 Closed: 2019-01-25	For the A&S Report: Add Calico work to the infrastructure section.
5	CIR #882 Closed: 2019-05-22	For the A&S Report: Review if we should add information describing that the water quality values may be an average and can depend on the location of the sample.
6	CIR #883	The procedure for documenting calls needs to be reviewed as a lot of calls aren't being logged properly.
7	CIR #884 Closed: 2019-01-25	For the A&S Report: Add Arkell 14 generator section to section n.
8	CIR #885 Closed: 2019-01-25	For the A&S Report: Add Emma and Water contact chamber projects to the infrastructure section.

Item #	Status	Description
9	CIR #886 Closed: 2019-11-22	For the A&S Report: Add Energy work being done in 2019 report (reported in 2020).
10	CIR #887 Closed: 2019-01-25	For the A&S Report: Confirm the backflow numbers are accurate.
11	CIR #888 Closed: 2019-01-25	Put the Water Efficiency Communications Strategy on EDMS.
12	CIR #889 Closed: 2019-01-25	For the A&S Report: Change the picture of the water wagon picture frame to one with people in it.
13	CIR #1089	Investigate using J-Plugs on the drop tubes in the production wells.
14	CIR #1090	Consider adding water loss data to the Annual and Summary Report for 2020.
15	CIR #1091	Perform additional analysis on the frozen services program, specifically the running tap program, and how it relates to water consumption and water production.
16	CIR #1092	Look at adding a line for performance testing to Table 6 for next year's annual report.
17	CIR #1093	Have the SCADA group provide C3 Water with copies of facility P&ID, PFD and equipment layout drawings so that the hydraulic model can be adjusted to take into account pipe friction factors within treatment facilities.

Appendix G: Status of Management Action Items Identified between Reviews

Action items identified through internal audits, external audits, emergency debriefs and root-cause analysis meetings are described below.

Table 51: Management Action Items Identified Between Management Review Meetings, 2019

Item #	Status	Description
1	CIR #895 Closed: 2019-05-22	Look at the minimum UVT value at Woods – is it really 93.5% or could it be lower? Verify the setpoints for UVT on SCADA.
2	CIR #894 Closed: 2019-07-25	Consider adding more of the “whys” to SOPs to link the relationships for example, the relationship between UV dosage, UVT, etc.
3	CIR #893	Consider prioritizing SOPs (for example all SOPs for disinfection get more attention). Consider adding a physical component to the review of Priority SOPs (i.e. go to the stations and see how the work is done).
4	CIR #892 Closed: 2019-11-28	Review with the Management Team the need for an annual SOP review. Could we review priority SOPs every year and go to a less frequent schedule for the other SOPs, WIs, Reference Documents?
5	CIR #891 Closed: 2019-05-22	Put the UVT values on the station tags and taped onto the UVT meter. (UVT value requirements have already been added to the logbooks and WaterTrax.)

Item #	Status	Description
6	CIR #890	Consider having more technical training for Operators from internal staff. For example, have the Hydrogeologist give a presentation on Membro and talks with the Ministry, etc. and the importance of the data that is being collected by Operators. Have the Water Compliance Specialist give training on compliance requirements for primary disinfection. Consider developing an annual training session on primary disinfection and how the Operator's duties relate to achieving primary disinfection. Include on-site manual operations in this training.
7	CIR #925 Closed: 2019-03-25	The well level low shutdown interlock for Queensdale is set too low.
8	CIR #942 Closed: 2019-05-22	In order to ensure that records are easily accessible and protected, consider adding the Reference Document: "Supply Maintenance Critical Equipment Inventory" to EDMS. Consideration could be given to combining the information from the draft "Standardized Equipment List" on what supplier is used to obtain each part listed in the RD. Consider removing the "available stock" section to a working document for inventory tracking.
9	CIR #941	With the implementation and increased use of WAM in both Maintenance and Distribution, consideration could be given to looking at increasing staff support to help with the implementation and development of the program for the whole department.
10	CIR #940 Closed: 2019-10-03	Consider reviewing the process for prioritizing SCADA Work Orders to include Operational staff in determining the priority.
11	CIR #939 Closed: 2019-05-22	Consideration should be given to determine the need for the date field on each training topic on the Operator On-the-Job training record as it is not being consistently recorded.

Item #	Status	Description
12	CIR #938 Closed: 2019-05-22	The training program for new Operators as identified in QMS 10-03 should include training on chemical receiving as it is a high risk activity from both a treatment perspective and a health and safety perspective.
13	CIR #937 Closed: 2019-07-19	In order to ensure that documents are properly stored and easily accessible, consider putting the Source Water Protection Risk Management Plans on EDMS. This will also help with version control.
14	CIR #936	Conduct an assessment (gap analysis) of the Emergency Plan to ensure that it is up-to-date and captures all of the potential emergencies that could impact Water Services.
15	CIR #935	In order to ensure that Water Services maintains a state of emergency preparedness at all times, consideration should be given to conducting an annual review and update (if necessary) of the Emergency Plan. This review schedule should be captured in the QMS 18 document of the Operational Plan. This is a best management practice as recommended by Emergency Management Ontario.
16	CIR #934 Closed: 2019-12-12	When the External Auditor arrives on site to perform the annual audit, past OFIs are reviewed to determine if they have been implemented or are on their way to implementation. If they have not, it generally leads to a non-conformance. As identified as an OFI in the 2017 Internal Audit and as an OFI in the 2018 External Audit, Meter Shop SOPs and WIs need to be finalized from draft form, properly stored in EDMS and reviewed by staff. The development of a formalized SOP for installation of backflow devices used at hydrants was also identified in the 2018 External Audit. This has yet to be completed.

Item #	Status	Description
17	CIR #933	If there is a deviation to an already approved construction plan, the changes to the plan need to be properly reviewed and approved by Water Services staff to ensure that risks are identified and monitored throughout the construction project. Consider developing a communication plan with Engineering so that Water Services staff are kept aware of the changes to plans. For example, on Starwood Drive, the location of the dig changed and contractors were digging dangerously close to a 12" watermain requiring an emergency response from a Distribution Operator.
18	CIR #932 Closed: 2019-11-28	Standardize a commissioning plan for all contractors to use. Detail out the procedure for disinfection and commissioning and what is required by the contractor. Include in this a requirement of tracking and/or measuring wasted water. This will ensure disinfection and commissioning consistency among contractors and will benefit Water Services staff to confirm that everything has been done properly.
19	CIR #931 Closed: 2019-07-25	A concern was expressed to determine if hydrants should be used to feed temporary watermain in reconstruction projects. If the drain holes in a hydrant aren't sealed properly, and if there was a low pressure event causing a backflow/back-siphonage, it may be possible that contaminants (groundwater) could enter the distribution system from the drain holes in the hydrant. It is suggested that a review of using hydrants to supply water to temporary watermain is conducted to determine the risk to water quality.
20	CIR #930	Consider modifying the warranty checklist for new construction so that it includes locate verification of tracer wire. Currently a checklist exists for valves, hydrants, etc. The Locate department can perform Continuity Testing and sign off at the same time that Distribution Operators complete the warranty inspections on new infrastructure.

Item #	Status	Description
21	CIR #929 Closed: 2019-07-25	Consider upgrading the quality of service boxes specified (i.e. stainless steel) for new construction and service line maintenance. They will last longer and reduce maintenance requirements on broken infrastructure.
22	CIR #928 Closed: 2019-12-09	To ensure that customer service training for new administration employees is consistent amongst all employees and covers all pertinent work instructions and procedures, consider creating an on-the-job training checklist similar to what exists for Operators, Locators and Meter Installers, which is documented in QMS 10 - Competencies.
23	CIR #927 Closed: 2019-09-27	To improve communications between administration staff and other Water Services work areas, the "on-call" phone for each work area (Distribution, Meters and Locates) should assigned during normal business hours to ensure that someone can always be easily reached. This would also help with the facilitation of work requests, or general inquiries within the department. For example, the "treatment on-call" phone number is answered 24/7, so if someone from Water Services needs help from a Water Treatment Operator, they will be assured that they will always reach someone when they call that number regardless of who is on vacation, away at training, or out of the office.
24	CIR #1007 Closed: 2019-07-16	From the Emergency Evacuation Debrief: Investigate the possibility of having an emergency beacon somewhere on site.
25	CIR #1006 Closed: 2019-11-22	From the Emergency Evacuation Debrief: Add the org chart to the emergency binder and keep it updated.
26	CIR #1005 Closed: 2019-12-12	From the Emergency Evacuation Debrief: Determine what supplies and equipment are needed for the sheds. Put all required supplies and information in the sheds for Marshalling Areas A and B. Add a flashlight/chem line and safety vest to the box, or some other location.

Item #	Status	Description
27	CIR #1004 Closed: 2019-07-23	From the Emergency Evacuation Debrief: Add our safety and evacuation procedures to the Safety Meetings with contractors pre-construction. Provide them with a printed copy. Have a "safety minute" at ongoing meetings during construction. This will be added to the kick-off meeting agenda templates.
28	CIR #1003 Closed: 2019-12-12	From the Emergency Evacuation Debrief: Add transit information to the plan to get a bus to use as shelter.
29	CIR #999 Closed: 2019-12-12	From the Emergency Evacuation Debrief: Add TSSA, Spills Action, Owens Corning, Utilities, Outdoor School, Lyon's Pool contact information to the Emergency Evacuation (Fire) Plan.
30	CIR #1011 Closed: 2019-09-26	Verify each reservoir/tower's overflow elevation and communicate to the SCADA Specialist to update the iFix screens.
31	CIR #1009 Closed: 2019-05-27	Modify the T-RD Reservoir Cleaning Form to detail out a protocol for filling a reservoir/elevated tank to overflow.
32	CIR #1000 Closed: 2019-10-03	From the Emergency Evacuation Debrief: Add the process to transfer the phones to Extend to the Emergency Binders.
33	CIR #1036 Closed: 2019-07-25	Supervisor of Water Treatment needs to review the S-SOP Procedure for Returning Wells to Service with the Treatment Operators at a morning meeting.
34	CIR #1035 Closed: 2019-09-26	Add to the S-SOP Procedure for Returning Wells to Service a box to ensure that the sampling record has been updated to reflect when samples were taken when a well is being put back into service.

Item #	Status	Description
35	CIR #1034 Closed: 2019-09-26	Separate out the tasks in Section 7 of the S-SOP Procedure for Returning Wells to Service so each task has its own box and sign off.
36	CIR #1033 Closed: 2019-09-26	Add the Water Compliance Specialist to the S-SOP Procedure for Returning Wells to Service for final review and sign off.
37	CIR #1032 Closed: 2019-07-25	Look at eliminating reminder WaterTrax alerts, as there are WOs that are generated as well to remind operators to take samples.
38	CIR #1031 Closed: 2019-09-26	Explore other (better) software options to replace WaterTrax that has better solutions for sampling schedules, possibly alerts before we're out of compliance.
39	CIR #1029 Closed: 2019-09-26	Ensure that the WaterTrax response process is being followed consistently by reviewing the process and updating. Consider looking at the type of alert and what response that generates. Also, look at how many alerts are being received.
40	CIR #1028 Closed 2019-07-25	Separate the raw and treated samples onto their own Chains of Custodies.
41	CIR #1038 Closed: 2019-09-26	Add information to the Woods Generator SOP that details out the procedure if the generator is not working, is in fault mode, etc. as this is deemed an emergency and requires immediate response.
42	CIR #1041 Closed: 2019-09-26	Update the job planning form to include a new checkbox if there was a new valve installation or watermain re-route and that a Form 2 needs to be filled out.
43	CIR #1052	Work with the Health unit to come up with a communications plan for emergencies.

Item #	Status	Description
44	CIR #1051	Have an identified plan for setting up temporary water lines in an emergency. Work with customers so they have their own plans for these situations (may include having an emergency waterline setup inside their business).
45	CIR #1050	Identify the most critical mains in the system to ensure we are prepared if they fail.
46	CIR #1049 Closed: 2019-09-27	Have a meeting before major works like this to go over the plan, ensuring staff are trained in the plan, emergency contingencies, etc. and ensure that all appropriate staff are included from treatment, distribution, compliance, etc. Consideration should also be given to staffing (extra on-call staff) during the works.
47	CIR #1047 Closed: 2019-10-02	Review the M-SOP Incident Notification Procedure to determine if it will be used in incidents like the Silvercreek main breaks.
48	CIR #1046 Closed: 2019-11-27	Update after-hours contact information (home phone numbers, personal cell numbers) for all staff. Ensure that all management staff know where to find the information.
49	CIR #1045	Consider installing soft-starts on the Paisley ATL pumps
50	CIR #1044	Add to the SOP for Operating Zone 2 as a closed pressure system: Check that the DMAs are open prior to taking the Speedvale Tower offline.
51	CIR #1073	Sampling and monitoring processes were found to be effectively implemented. An opportunity exists to clarify the required sampling in the event of a category 2 watermain break, i.e.: <ul style="list-style-type: none"> - D-SOP Watermain Disinfection (Rev. 2019-11-08) - states 3 samples required - S-WI Category 2 Watermain Repair Sampling (Rev. 2018-07-24) - states 2 samples required. (See also OFI relating to document linkages.)

Item #	Status	Description
52	CIR #1071	Processes to record watermain breaks were found to be generally effective. An opportunity exists to review the use of multiple watermain break forms to track operator hours and materials. E.g. September 13-16, 2019 - Silvercreek.
53	CIR #1067	Consideration could be given to: 1) referencing EDMS Document numbers within controlled documents 2) clearly linking related documents (e.g. Operation Plan - element 12 reference to "Administration's instructions" - could specify "SD-104165 To Monitor and Close Calls in Access") 3) clearly indicating / highlighting details of most recent revision within controlled documents
54	CIR #1064	Customer complaint / response processes were found to be generally effective. An opportunity exists to ensure follow-up activities are promptly recorded in the Service Request (SR) database. E.g.: SR 10162 - September 19, 2019 SR 10183 - September 24, 2019
55	CIR #1063	The continual improvement process was found to be effectively implemented. An opportunity exists to expedite closure of Continual Improvement Reports (CIRs). At the time of the audit, there were more than 30 CIRs which have been open for more than one year.
56	CIR #1070 Closed: 2019-12-10	T-WI Treatment Chemical Delivery (Rev. October 3, 2019) "Receiving Sodium Hypochlorite at Woods Station from Flo-Chem...The Operator is to: - Confirm on the paperwork provided by the driver that the delivery is for 12% sodium hypochlorite. - CONFIRM THERE IS A CERTIFICATE OF ANALYSIS provided by the driver and verify that the lot numbers are the same; sign the lot number on the bill of lading. - Confirm the NSF Certification; sign the NSF indication on the bill of lading..." Processes to ensure the quality of essential supplies are not fully effective.

Item #	Status	Description
57	CIR #1069 Closed: 2019-12-10	An obsolete version of "Region of Waterloo and Area Municipalities - Design Guidelines and Supplemental Specifications for Municipal Services" was available for use by operators (Revision January 2017 - hardcopy binder); current version is January 2019 (updated annually).
58	CIR #1068 Closed: 2019-12-10	S-WI - Calibration / Verification of Colorimeters (rev. 2016-05-16) does not reflect current practices, e.g. references "Tested" sticker which is no longer used.
59	CIR #1066 Closed: 2019-12-10	Hand-held colorimeters in the stations have old green verification tags on them (from 2017). Recommend removing all old tags from all hand-held colorimeters.
60	CIR #1065	The Standby Power Generator Maintenance Log sheet was found to be out of date. The generator ranges were from 2012 and it was questioned what the ranges are for the new Burkes generator and the Downey generator was not listed.
61	CIR #1055	Update the D-WI Hydrant-Checking to include the WAM process.
62	CIR #1056	Complete the Draft Valve Truck Operation WI.
63	CIR #1053	Add a revision date to the Training Handbook. Add page # of page # as well.
64	CIR #1086	Add to the WS-SOP Procedure Creation, Update, Review that Technicians will check for edits required on the review sheets prior to uploading them to EDMS annually.
65	CIR #1083 Closed: 2019-12-10	Have an on-the-job training session during the next chlorine delivery (Wednesday Dec. 4, 2019).
66	CIR #1082 Closed: 2019-12-10	Post the chemical receiving reference document on the wall in the hypo receiving area.

Item #	Status	Description
67	CIR #1081 Closed: 2019-12-10	Separate the Chemical Receiving WI into a SOP and a posted reference document. Ensure the instructions are more clear and easier to follow. Paperwork will be handed into the supervisor for review and then to the technician for payment and filing. Add this to the WI.
68	CIR #1080 Closed: 2019-12-10	Add an Outlook appointment requirement to the QMS 05-04 Table of Essential Documents for the Design Specifications (Regional and City). Include in this the requirement for upload onto EDMS.
69	CIR #1078 Closed: 2019-11-29	Put Design Specifications in EDMS (maybe in a folio), filed by year and have the title page indicate that they are for projects for that year.
70	CIR #1077 Closed: 2019-12-10	Operators will use/reference the digital (online) copy of the Design Specifications and will dispose of the 2017 printed copy. There is no need to have a printed copy.
71	CIR #1076 Closed: 2019-12-10	The Revision Log that is located at the bottom of our procedures is not working. Transcription errors have been noted and there are times when the revision log is missed during updates. Recommend removing the revision log from the procedures as the log is kept on EDMS as part of the version control.
72	CIR #1075	Should the analyzer at Burkes and Clair Booster Station have a tag that outlines the alarm setpoints?
73	CIR #1074	The Turbidimeter Maintenance Kit at Burkes has expired calibration vials.

Appendix H: Summary of Staff Suggestions

Table 52: Suggestions Provided by Staff, 2019

Item #	Status	Description of Staff Suggestion
1	CIR #998 Closed: 2019-05-16	For the Procedure Review Form, add comments/edits provided (Y/N) and comments/edits incorporated (Y/N) columns.
2	CIR #960 Closed: 2019-07-19	Consider including more front line staff in the annual Risk Assessment process and rotate staff through the process.
3	CIR #961 Closed: 2019-07-19	Consideration should be given to adding the following risks to the annual Risk Assessment process for the Locate section: the risk of tracer wire not being installed, or not being installed properly; and incorrect or not updated GIS data.
4	CIR #962 Closed: 2019-05-22	The process to which the QMS rep is notified of changes to the drinking water system needs to be re-evaluated.
5	CIR #963	For the Operational Plan endorsement, create a “top risk background and synopsis” similar to what was created in 2019 to accompany the Risk Assessment element of the Operational Plan to help facilitate understanding amongst Councilors.
6	CIR #964 Closed: 2019-09-26	Compare the risks identified in the Water Supply Master Plan to ensure they are captured in the Risk Assessment.
7	CIR #965	Consider providing more computer training to Distribution Operators, such as: Excel, Outlook (including Calendar), GIS and WAM.

Item #	Status	Description of Staff Suggestion
8	CIR #966 Closed: 2019-07-31	There is a need to revisit the value of the printed map books for when the GIS is not accessible.
9	CIR #967 Closed: 2019-12-03	Consider establishing a centralized storage location in Distribution for all of the on-call required resources (laptop, map book, SOP binder, etc.).
10	CIR #968 Closed: 2019-09-26	Create a checklist of what should be included in the Distribution on-call bag so that Operators can quickly verify they have everything they need when they go on-call.
11	CIR #969 Closed: 2019-09-26	A request has been made for more consistently scheduled Distribution meetings to improve communication. Have the Leads from each work area in distribution provide updates on their programs and any issues or interesting events that are happening.
12	CIR #970 Closed: 2019-07-31	Consider getting Distribution Operators certified in Backflow Prevention, which would be helpful for new watermain construction projects.
13	CIR #971 Closed: 2019-07-31	During the new watermain construction season, consider allotting one Lead Hand and two Operators to the projects to ensure there is coverage for vacations. Consider a training program for all Distribution staff in New Construction.
14	CIR #972 Closed: 2019-07-31	Backflow prevention devices used at new construction sites are double check valves. It would be beneficial to consider upgrading the requirement to reduced pressure zones (RPZs) which are rated for high hazards.

Item #	Status	Description of Staff Suggestion
15	CIR #973 Closed: 2019-12-01	New Construction progress reports should be created and shared with Distribution staff at an appropriate frequency that allows for transition into the role when necessary (e.g. vacations, sick, etc.).
16	CIR #974 Closed: 2019-09-26	A post-construction meeting should be held to bring everyone up to speed on the new infrastructure, which will ensure that Operators know where the infrastructure is and can operate the system.
17	CIR #975 Closed: 2019-04-24	For the new construction process, tender drawings should be made available as early as possible in the process to ensure that maintenance of the system has been fully considered, for example ensuring there are enough valves and their placement to accommodate maintenance. Perhaps a pre-construction meeting to compliment the post-construction meeting.
18	CIR #976 Closed: 2019-07-25	Consider requiring locking-out access to super chlorinated water during the disinfection process on new watermains for health and safety and to prevent the failure of the disinfection process.
19	CIR #977	It would be helpful if there was a way to see customer history in one place and know which addresses must be kept off due to backflow non-compliance or meter non-compliances after hours. Further to this, consideration should be given to ensuring Distribution staff are notified that these turn-offs have happened and for health and safety reasons, a second Operator should attend if staff are responding to these calls.
20	CIR #978 Closed: 2019-09-26	Staff need clarification on how to track time in WAM dealing with investigations because this is not asset work.

Item #	Status	Description of Staff Suggestion
21	CIR #979 Closed: 2019-07-25	Engineering has identified that Water Services representation is important at monthly Engineering coordination meetings and project meetings. It was suggested that attendance be assured via a designate if the Supervisor or Lead Hand of new construction is not available. To help ensure required attendance, it is suggested that each project have an assigned Distribution Operator to attend the meetings.
22	CIR #980 Closed: 2019-11-28	Engineering has suggested that construction standards at Water Services mirror the same standards that Engineering has, when applicable. For example, the use of Denso tape to wrap valves.
23	CIR #981 Closed: 2019-09-26	In the summer months, it is very difficult for Locate staff to attend the monthly staff meetings due to the volume of work. It is suggested that the Supervisor review the meeting minutes with staff who are unable to attend the monthly meeting so that they are kept informed of what is happening at Water Services.
24	CIR #982 Closed: 2019-12-12	Basic water courses would be beneficial for Locators for them to understand the criticality of the infrastructure that they are locating.
25	CIR #983	Consider having Locators shadow a Distribution dig crew so that they can better understand how underground infrastructure is laid out.
26	CIR #984	It was suggested that there should be a requirement for tracer wire to be installed on sanitary and storm sewers. This could be captured in tenders.

Item #	Status	Description of Staff Suggestion
27	CIR #985 Closed: 2019-07-25	Consider sending the Lead Hand of Locates along with a Locator to the quarterly Ontario Regional Common Ground Alliance meetings, as they are very beneficial to share best management practices among municipalities.
28	CIR #986	Consider having locate vendors (e.g. Vivax) come in to give the Locators training in the field on our own infrastructure.
29	CIR #987 Closed: 2019-12-12	Locators would benefit from more computer training: EDMS, Outlook (including calendar), Excel and PowerPoint.
30	CIR #988 Closed: 2019-04-19	It was noted that the hydro database is very difficult to use. A suggestion was made to implement our own database for meters.
31	CIR #989 Closed: 2019-09-25	Look at increasing social media presence to further promote Source Water Protection.
32	CIR #990 Closed: 2019-07-19	Review the information that is being shared with the public at water wagon events around water supply and treatment to ensure that it is accurate with all of the recent changes.
33	CIR #991	It was suggested that Maintenance receive more training on specialized valves (e.g. pressure sustaining and pressure reducing), such as the training offered by Cla-Val.
34	CIR #992 Closed: 2019-07-25	Consider adding critical station valves to the PM Program, as currently only POE valves are included.
35	CIR #993 Closed: 2019-05-22	Consider cross-training tradespeople, for example: millwright and electricians cross-trained with instrumentation. Consider Instrumentation training and licencing for Maintenance Operators.

Item #	Status	Description of Staff Suggestion
36	CIR #943	Create "speaking notes" for the Customer Service Reps on typical customer inquiries (e.g. discoloured water, water with odour, curb stop maintenance, lead, etc.) so that messaging to the public is consistent and correct.
37	CIR #944	Consider more front-line training for Customer Service Clerks, specifically Dealing with Difficult Customers.
38	CIR #945	Emails from Administration that involve mainbreak investigations should also be accompanied by a phone call to ensure there is a timely response from Distribution Operators.
39	CIR #946	Communicate with Distribution staff the flat-fee charge for after-hours call-outs and include a list of all activities that would be charged back to the customer (i.e. turn offs, frozen meter, etc.). This should also be posted on the website along with the water rates for transparency.
40	CIR #947	Verify that Distribution Operators can still help Treatment Operators in an emergency based on the new drinking water system classifications and the different licences that the Operators have. For example, there are times (i.e. a SCADA outage) where Distribution staff are used to help take chlorine residuals at treatment facilities. Are there certain activities that a Distribution Operator could not perform at a treatment facility? Should Distribution staff obtain Treatment OIT licences for these situations? Is there a compliance risk if a Distribution only certified Operator is helping at a treatment facility?
41	CIR #948	The On-the-Job training forms, as documented in QMS 10 require updating to ensure that they are up-to-date and accurate and are being consistently used for new staff.

Item #	Status	Description of Staff Suggestion
42	CIR #949	Consider sending the Incident Report and Status Update Form to all Water Services staff during an incident (unless it contains personal information or is confidential) to promote staff awareness of issues/emergencies happening in the department and to promote learning of other work areas and processes.
43	CIR #950 Closed: 2019-05-24	Consider if all Operations staff should be included in the annual review of the critical SOPs for each work area to promote learning amongst all staff.
44	CIR #951	A suggestion was made to bring back the staff suggestion box so that people can make suggestions anonymously.
45	CIR #952 Closed: 2019-12-12	SOPs/WIs for Health and Safety should be kept in one place (i.e. EDMS folio) and the formal WS-SOP for creation and review of procedures should be used. This includes all relevant Corporate Health and Safety Policies and Procedures.
46	CIR #953	It would be beneficial for non-operational staff to participate in training to increase awareness of our facility and its functions. For example, basic treatment, primary vs. secondary disinfection, etc.
47	CIR #954 Closed: 2019-07-03	The current Contractor Evaluation Form is construction based. It would be very beneficial if there was a similar form that would be service based to properly evaluate consultants or other agencies providing services.
48	CIR #955 Closed: 2019-07-03	Consider having a designated alternate Risk Management Official (RMO), as appointed by the DCAO, to be available for Source Water Protection issues when the RMO is absent (holidays or other extended absences).

Item #	Status	Description of Staff Suggestion
49	CIR #956 Closed: 2019-07-31	Look into artificial recharge projects as part of the Water Supply Master Plan.
50	CIR #957 Closed: 2019-11-26	Consider a way to improve data management for water quality and environmental monitoring data.
51	CIR #958 Closed: 2019-07-23	Consider adding a training session for Distribution when facility upgrades change where distribution infrastructure is. For example: the new valves at Water and Emma since the contact chamber installation; and the new landscape at Burkes, as Distribution's current drawings are measured off of the old building. This could be added to the Project Management Project Map process.
52	CIR #959 Closed: 2019-07-03	It was suggested that Water Services consider purchasing a hydro-vac truck.
53	CIR #923 Closed: 2019-04-23	Now that Burkes Treatment System is up and running, we should consider draining and cleaning the Clair Tower to remove all manganese that has settled in the tower.
54	CIR #924	Now that Burkes Treatment Plant is up and running, consideration should be given to ensuring that watermain cleaning occurs in the Burke zone of influence in the distribution system this spring to remove any built up iron and manganese in the distribution system.
55	CIR #1087	It was recommended that a formal procedure be developed that outlines Operator's responsibilities when overseeing Contractors working on the drinking water system, specifically repairing watermain breaks.

Appendix I: Water Efficiency Program – 2019 Annual Progress Report

Background

The City of Guelph is a leader in water conservation and efficiency. As one of Canada's largest communities reliant on a finite groundwater supply for our drinking water needs, our ability to reclaim water and wastewater serving capacity through conservation initiatives offers numerous benefits to our community and local ecosystem.

Between 2006 and 2014, 9,520 cubic metres per average day of water and wastewater capacity was reclaimed due to the successful uptake of the City's 2009 Water Conservation and Efficiency Strategy. This reclaimed supply allowed the City to delay the need for over \$41 million in additional water and wastewater infrastructure with an investment of approximately \$11.3 million in water conservation programming, during that timeframe. Further, the reduction in water use across the city has resulted in a cumulative daily operational savings of over \$625,000 per year in electricity and treatment chemical costs, creating a significant financial benefit to water rate payers, over the same period. As a result, the City's water and wastewater rates remain close to the median of Council-approved Ontario comparator municipalities responsible for the provision of water and wastewater services.

In July 2014, Guelph City Council endorsed an updated Water Supply Master Plan (WSMP). Water servicing capacity reclaimed through conservation and efficiency continued to be a top priority in achieving a sustainable and cost effective community water supply. The WSMP established a new reduction target of 9,147 cubic metres in average daily production by 2038 to guide the City's water efficiency programming.

In support of the new reduction target, staff initiated an update in 2015 to the 2009 Water Conservation and Efficiency Strategy, which was later approved by Guelph City Council in 2016. The 2016 Water Efficiency Strategy defines the programs, policies and resources that will help Guelph meet WSMP reduction targets.

The following sections provide an update of the water conservation and efficiency program activities and successes of the 2016 Water Efficiency Strategy for the period of January 1 to December 31, 2019. For more information on the City's Water Efficiency Program and individual program resources please visit guelph.ca/ourstoconserve.

Water Reduction Target Progress

Building off the data analysis completed for the 2014 Water Supply Master Plan, the 2016 Water Efficiency Strategy (WES) identified a ten-year water savings goal of 6,265 cubic metres per day between 2017 and 2026. The updated Strategy anticipates a considerable amount of supply capacity can be reclaimed through water loss management (i.e. Leak Detection and District Metered Areas) and efficiencies realized within the industrial, commercial and institutional sector.

Based on community uptake and participation in new and enhanced water efficiency programs, the total water savings achieved for 2019 was 658.5 cubic metres per day, surpassing this year's target set in the WES. Based on reductions in energy needed for water treatment and distribution, it is anticipated that 47.7 tonnes of greenhouse gas emissions and over \$48,000 in electricity costs will be avoided through this year's water savings. Since the implementation of the 2016 WES, the cumulative water savings achieved to date is 1,105 cubic metres per day.

Figure 6 presents the anticipated volumetric production values as presented in the 2014 Water Supply Master Plan and the 2016 Water Efficiency Strategy. The City continues to experience a positive differential between projected and actual production values. Actual average daily production tracks below that expected through the Water Supply Master Plan. This is due, in part, to the successful implementation of the 2016 WES and 2009 Water Conservation and Efficiency Strategy Update.

Figure 6: Water Supply Master Plan (2014) and Water Efficiency Strategy (2016) Production Rates

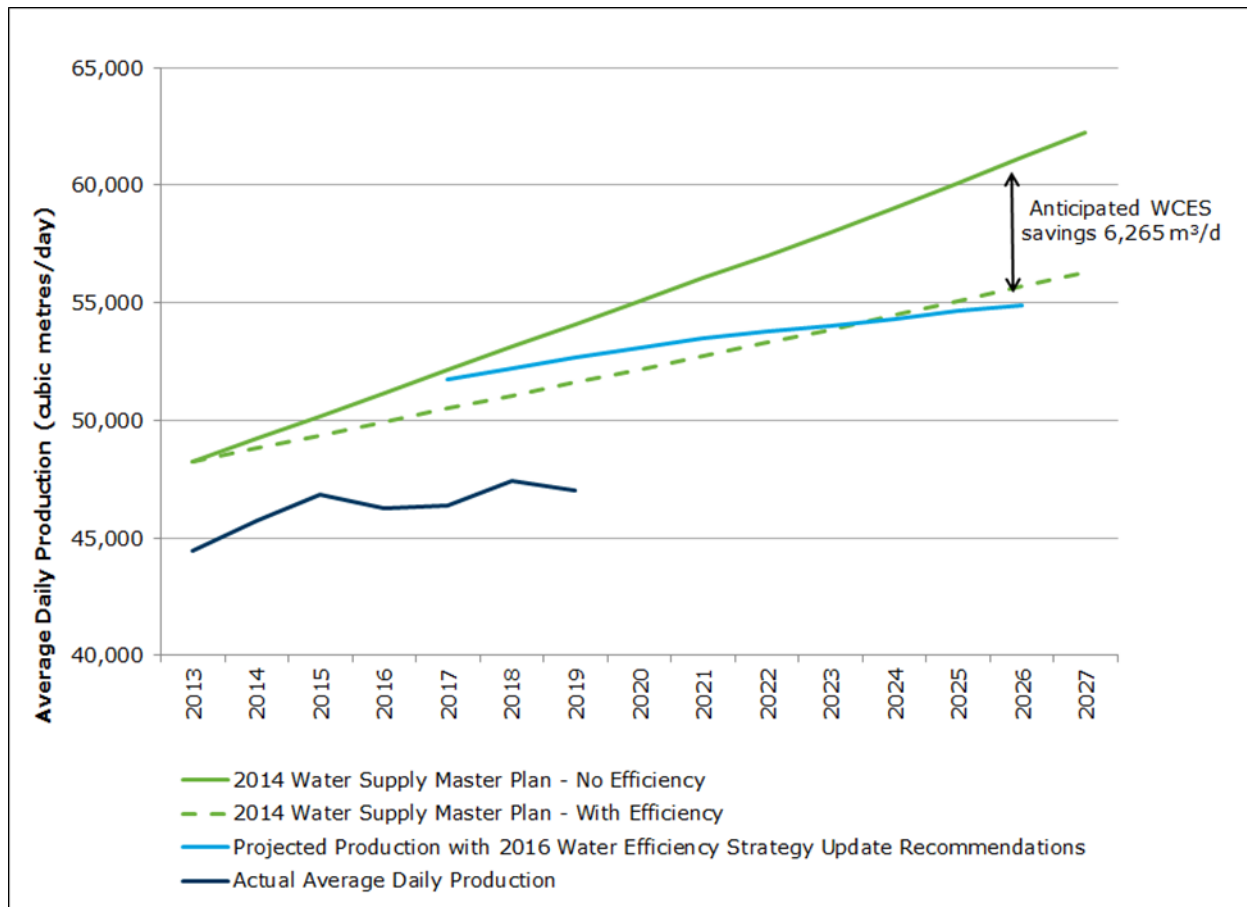
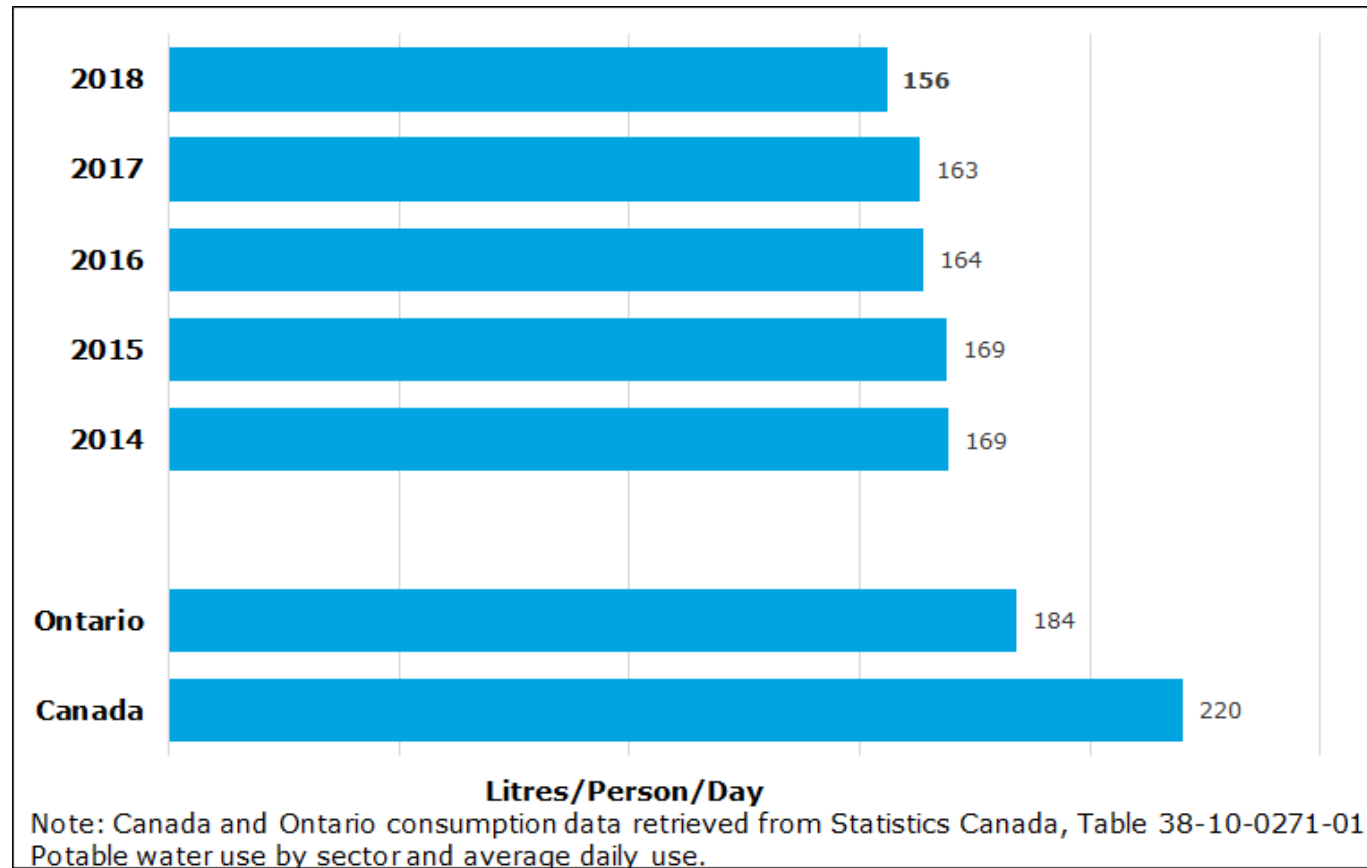


Figure 7 presents the City of Guelph's residential water use between 2014 and 2018, calculated using the volumetric consumption of water of all residential properties – low, medium and high density. During this period the City of Guelph's residential water use has been on a downwards trend, at an approximate rate of 3.25 litres per person per day annually. That is enough water to fill 66 Olympic swimming pools each year.

Average daily residential water use in Guelph continues to remain below the provincial and national averages. In 2018, the average water use was 156 litres per person per day, whereas the most recently published average for Ontario is 184 and Canada is 220 litres per person per day.

Figure 7: Residential Water Use

The following sections outline the individual program successes for 2019, as identified in the 2016 WES.

Water Efficiency Incentive and Rebate Programs

During 2019, 984 rebate applications and audits were completed through the City's residential rebate programs. An additional 38 incentives for municipal and business upgrades were processed. For more information on the individual water efficiency programs available, visit guelph.ca/rebates.

Royal Flush Toilet Rebate Program

The Royal Flush Toilet Rebate Program offers households a \$50 rebate per toilet (up to two toilets) when 6 litre per flush or higher flush volume toilets are replaced with a model using only 4.8 litres per flush or less. This program encourages residents to upgrade older homes to meet current building code standards and reduce their actual water use permanently through fixture exchanges. A total 668 toilet rebates were claimed in 2019, achieving an in-year water savings of 26 cubic metres per day. This meets the Strategy's 2019 goal for the program savings.

Residential Sub-Water Meter Rebate Program

Sub-water meters identify water leaks and high water-using behaviours, creating awareness of water use and potential cost savings for property owners (i.e. homeowners, landlords, property managers). Sub-water meters provide specific information on water use at properties and help in creating measurable conservation challenges and goals for property owners and tenants. This offers significant opportunities for motivating behaviour change since a knowledge gap often exists in regards to how much water residents actually use.

The Residential Sub-Water Meter Rebate program offers up to half the cost of a qualified meter to a maximum of \$100 per sub-meter installed. In 2019 the program participation rates were low, seeing only four eligible applications. Of the participants, three were for multi-residential buildings and one for single family detached home.

Since January 2018, associated water savings for program participants is on average a 12 per cent reduction in total water use. These measured savings are in range with industry expectations (ten per cent) and significantly above the three per cent average savings witnessed in the program pilot. While program participation was down in through 2019, the

program has saved approximately 7.8 cubic metres per day. This is ahead of the five-year target of five cubic metres per day.

A robust and innovative approach to program promotion is scheduled for Spring 2020 to increase enrollment and meet program water-saving goals.

Water Use Home Visit and Audit Program

The home audit program provides a unique opportunity to engage Guelph residents one-on-one to understand water using behaviours and habits. These visits assist homeowners in verifying water use of fixtures and appliances and provide individualized feedback on tools, techniques and behaviour changes to become more water efficient in their home.

Since November 2013, eMERGE has made the Home Tune-up program available to Guelph residents. The Home Tune-up program is an innovative collaboration between eMERGE Guelph Sustainability, the City of Guelph and other local partners. This service offers a free one-hour home audit by trained advisors, a complimentary retrofit of common home water use fixtures (such as water efficient showerheads and faucet aerators), and toilet leak detection. Each participating household receives an Action Plan; a personalized electronic report that provides information and suggestions to help reduce home resource use. The action plan directs Home Tune-up participants to further resources and tools, including City programs, to assist with the implementation of recommended improvements.

In verifying the household water consumption data, homeowners who receive the visit have reduced their average water consumption by up to 10 per cent depending on the retrofit measures taken. To date, eMERGE home visits have engaged 1,659 households with a home audit since 2013.

The eMERGE Home Visit service engaged 109 single-family households and eight multi-residential buildings, comprised of a total 185 units in 2019, for a total 292 Home Tune-ups. The single-family homes achieved an average in-year household water savings of 4.73 cubic metres per day. This value is down from the 13 cubic metre per day goal outlined in the Strategy. However, this does not account for savings from multi-residential properties. As Home Tune-up's for multi-residential properties occurred later in the year, work is ongoing to determine water savings from these property types.

In 2020, staff will continue to promote the Home Tune-up program alongside Blue Built Home to boost both programs by feeding off each other's success.

Blue Built Home Water Efficiency Standards and Rebate Program

The Blue Built Home (BBH) Water Efficiency Standards and Rebate Program is a voluntary construction and retrofit standard designed to outperform the plumbing and water-using fixture requirements of the Ontario Building Code. The installation of water efficient technologies contributes to reduced water use in single-family detached homes and multi-residential properties. Residents with certified Blue Built Homes will save water and reduce utility bills by 15 to 62 per cent. From launch in 2010 until year-end 2017, 50 new homes were Blue Built Home certified in one of three tiers: 44 Bronze, 4 Silver and 2 Gold.

In 2018, Blue Built Home was updated and relaunched. Program changes included a transition to a single-tier program and certification and associated rebates were made available to existing, new homes and the multi-residential community. With these program modifications, eleven single-family homes (ten retrofit and one new build) were Blue Built Home certified within the year.

In 2019, six single-family homes (two new build and four retrofits) were Blue Built Home certified. Together these homes are saving 0.27 cubic metres per day or 97.8 cubic metres each year. However, significant water savings are achieved by an additional four new multi-residential buildings that were Blue Built Home certified as a pilot, which together save a total of 6.9 cubic metres per day. This makes the total water savings for Blue Built Home in 2019 7.17 cubic metres per day, more than triple our water savings goal for 2019.

In Q1 2020, it is planned that staff will officially launch the Blue Built Home program for new-build multi-residential properties and continue to pursue the significant savings associated with sustainable growth.

Multi-Residential Water Audit Program

The Multi-Residential Water Audit program offers a no-cost water audit of Guelph's multi-residential apartment and condominium buildings completed by a third party consultant. The audit includes an assessment of the whole building's water use and verification of specific water using processes, such as pools, central cooling and irrigation systems. A proportionate number of units of each building are audited to identify water saving opportunities across the remainder of the suites.

Building owners or property managers are provided a final report cataloguing all water using fixtures, appliances and processes with tailored recommendations to help reduce their water bill. Staff meet with property owners and/or condominium boards to review available

rebates to achieve the noted savings. In 2019, eligibility for the Multi-Residential Water Audit Program was updated to expand eligibility to properties using an average of 130 cubic metres or more per unit, per year.

This year, the Multi-Residential Water Audit Program had ten participants, an increase from three the previous year. The main findings from all audits performed in 2019 were as follows:

Leaks

- Detected in 90 per cent of buildings audited
- Accounted for 2.5 to 16.3 per cent of buildings' total water use
- 9,130 cubic metres of leaks detected collectively in 2019
- Estimate 25.0 cubic metres per day in water savings would result from implementation of audit recommendations

Water Savings Opportunities (including leaks)

- Account for 13.9 to 31.8 per cent of total building water use
- 22,258 cubic metres of water savings potential was identified across ten participating properties in 2019
- Estimate 61.0 cubic metres per day in water savings would result from implementation of audit recommendations

In order to calculate savings associated with the program, an annual assessment of consumption is completed, which requires data from the following year. With this in mind, the three program participants of 2018 achieved a verified water savings of 24.3 per cent, or 15.84 cubic metres per day. This significant savings may be attributable to "early adopters" and may not reflect the true average of all possible multi-residential building potential.

Staff have taken a conservative approach to estimating savings associated with 2019 program participants. Assuming a ten per cent decrease in water use (as per the WES), 29.4 cubic metres of water per day have been reclaimed through 2019 participation. This provides a combined water savings of 45.24 cubic metres per day since launch of the program in 2018, eight cubic metres more than the anticipate program goal to-date. The estimated savings will be confirmed and reflected in subsequent annual reports.

Water Smart Business Program

The Water Smart Business program offers support to local businesses toward completion of a detailed water efficiency review, and offers incentives for the completion of third-party

water audits and funding for capital retrofits that permanently reduce water demand. The audit benchmarks the water consumption of the businesses and provides a report with recommendations that include estimated payback on investment in upgrades. Once the business undertakes a recommendation that achieves water savings, the savings are then verified and an incentive is issued (where qualifications met).

In 2019, Water Smart Business program actively engaged seven program participants through either a water review, audit and/or capital project incentive. The following are the summarized results:

Leaks

- Detected in 29 per cent of businesses visited
- Accounted for 17.5 to 53.5 per cent of business' total water use
- 3,910 cubic metres of leaks detected collectively in 2019
- Estimate 10.2 cubic metres per day in water savings

Water Savings Opportunities (including leaks)

- Account for 6.9 to 25.3 per cent of total facility's water use
- 10,442 cubic metres of water savings potential was identified across seven participating businesses in 2019
- Estimate 28.6 cubic metres per day in water savings would result

One program participant in 2019 was incentivized through the Water Smart Business program for an ice-machine upgrade, which has resulted in 3.5 cubic metres per day of verified water savings through process upgrades.

Outside the formal scope of the Water Smart Business program, two additional program touch-points realized significant water savings associated with leaks for two industrial facilities in Guelph. These included:

- Sourcing a ten-year private side leak resulted in a 47.1 cubic metres per day in consumptive savings; and
- Cooling tower leak that, had it gone unresolved, would have resulted 4.98 cubic metres of water per day.

Further to that, staff hosted an event for local businesses in December to learn more about the Water Smart Business program. Water Smart for Guelph Restaurants and Hospitality Sector lunch-and-learn was hosted at a local restaurant. Twenty-one representatives spanning various hospitality businesses confirmed their attendance despite this busy time of year for the sector. Meetings with those who expressed interest but could not attend will be

held in Q1 2020 and indicate a high probability of sector interest in program participation through 2020.

Staff continue to consider enhancements to the program to entice businesses, including commercial plaza water users – a sector typically bulk-metered where by individual businesses within are not accountable for their water use directly. Since the launch of the Residential Sub-Water Meter Rebate program staff have received inquiries and requests related to sub-water metering primarily from the commercial sector. In 2019, staff commenced preliminary research to evaluate the water saving potential (if any) of this technology within this sector. Evaluation includes assessing municipal examples of similar programs, determining value for parties involved, participation and program costs to establish a business case for Guelph to pursue. This research will be completed by Q2 2020.

Overall, Water Smart Business program water savings since the 2016 Water Efficiency Strategy have resulted in 65.87 cubic metres per day; 15 per cent of the cumulative five-year program goal. Staff are committed to finding new and unique ways to see water saving projects come to fruition. In 2020, staff will be focusing efforts on key business and industry types in the community (i.e. food, beverage, hospitality and commercial plazas) where messaging can be tailored to increase program participation.

Cooling Tower Research

The 2016 Water Efficiency Strategy recommended City staff assess participation, cost and water savings associated with a cooling tower audit, conductivity sensor and meter rebate pilot. A sample size of at least five buildings were recommended to be studied in order to verify savings and costs effectiveness of the program. The following sections describe research conducted in 2019 in support of program development:

The Water Efficiency Strategy includes a proposed multi-year budget of \$120,000 CAD (2021 to 2026) to establish the parameters of a program as well as fund the completion of cooling tower audits and offer an incentive for upgrading.

Alliance for Water Efficiency Cooling Tower Research Project

In 2017, the Alliance for Water Efficiency (AWE) commenced a Cooling Tower Research project. The overall purpose of this study is to gain foundational knowledge needed to create an effective, targeted, and appealing incentive and outreach program to achieve greater efficiency in industrial cooling systems. As part of AWE's broader effort to explore

the potential for water conservation in urban areas, the research effort is intended to have multiple phases.

Phase I has five broad goals:

- Develop best practices for identifying water-cooled facilities in urban areas.
- Develop best practices for estimating consumptive and non-consumptive water demands for cooling.
- Determine the conservation potential for improvements to traditional cooling technologies, such as cooling towers.
- Determine the conservation potential of alternative cooling technologies.
- Develop practical guides to increase understanding of cooling technologies.

Thirteen municipalities and utilities from across North America have signed on including Denver Water, Southern Nevada Water Authority and San Antonio Water System in this multi-tasked project.

In 2019, initial data collection was completed and modelling commenced to develop best practices for identifying water cooled facilities in urban centres. This research component is intended to be available for the municipal and utility project team to test in early 2020.

The results of this research will provide the framework for the proposed cooling tower audit and rebate program. While the timeline has been accelerated from that outlined in the WES, the City's total investment of \$28,000 in this leading North American research project will provide a well-researched, value-for-dollar scope for local programming (a total project budget of \$530,000CAD; \$400,000USD). Due to issues in sourcing a research facility to complete the work, this project is now scheduled for completion in early 2021 in line with the WES update and timing for recommended program roll-out.

Legionella

Further to the research being completed through the Alliance for Water Efficiency, industry-leading technical associations and working groups are beginning to explore the implications of properly managed cooling towers, reuse and concerns around public health related to stagnant heated water. As such, staff commenced preliminary research related to the effects of cooling tower water efficiency, specifically water age and quality, in industrial, commercial and institutional buildings. These two things can be contributing factors that lead to micro bacterial growth with one of those being Legionella.

Staff attended the National Legionella Conference (United States of America) to provide a clearer definition of the municipal role in managing for Legionella bacteria, the relationship

between water efficiency and legionella, and any potential nexuses that exists. Through the update to the Water Efficiency Strategy commencing in 2021, a larger evaluation will need to be considered related to water reuse in cooling towers to ensure program recommendations appropriately evaluate risk and protect public health.

Municipal Facility Water Efficiency

In support of the Water Efficiency Strategy, the City continues to lead by example with water efficiency within its own facilities. Recreation centre and facility managers and maintainers participated with staff in seven water use reviews, audits and capital infrastructure upgrades to improve the efficiency of their buildings.

In 2019, the River Run Centre, Guelph Farmer's Market, John McCrae House and the Civic Museum each completed a water review with program staff. In support of facility upgrades completed by Parks and Recreation and Corporate Energy program staff completed two additional water-using process reviews: Norm Jary Splash Pad and West End Recreation Centre. Lastly, a third-party engineering consulting firm was hired to complete a water audit of the Sleeman Centre. The following are the cumulative results:

Leaks

- Detected in 50 per cent of municipal facilities visited
- Accounted for 7.1 to 11.1 per cent of buildings' total water use
- 1,167 cubic metres of leaks detected collectively in 2019
- Estimate 3.1 cubic metres per day in water savings

Water Savings Opportunities (including leaks):

- Account for 6.1 to 60.1 of total facilities water use
- 7,553.7 cubic metres of water savings potential per year was identified across seven municipal locations
- Estimate 65.69 cubic metres per day in water savings would result if audit recommendations were implemented.

In 2019, 46.22 cubic metres per day of verified water savings through process upgrades were achieved across four of the municipal facilities and locations. 2019's municipal water efficiency upgrades were:

- Norm Jary Splash Pad recirculation system
- West End Recreation Centre pool heat recovery system
- River Run Centre toilet and faucet aerator upgrades
- Guelph Farmer's Market faucet aerator installation.

These upgrades have exceeded the annual program savings goal for 2019, and the program is on track to exceed the five-year goal.

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 2019 Leak Detection Program included sounding and correlation of all 342 kilometers of metallic watermain within the City's distribution system. In total, 33 possible leaks were identified through this survey, including 14 main breaks and the rest consisting of hydrant, service, or valve repair/replacements, or no leaks were found. The average daily volume of servicing capacity reclaimed through the location and remediation of these leaks equate to approximately 534 cubic metres per day, enough to fill almost 78 Olympic swimming pools in 2019. The water loss management program savings goal for the year was exceeded.

It is anticipated that further recoveries in reclaimed treated water lost to the distribution system will be achieved with the continued optimization of the City's district metered areas (DMAs). The objective of the DMA program is enhance operational understanding of water demand patterns and to recognize water demand changes early to address non-revenue water loss in the water distribution system. In recognition of benefits offered through continuous water demand monitoring as proactive water loss management, staff will be continuing to refine the DMAs and develop associated trend analysis tools through 2020.

Peak Season Water Demand Management

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 our finite groundwater supply during times of environmental stress and creates operational efficiencies by reducing capital and operational investment to service our community for only a few days a year.

Outside Water Use Program

Since 2002, the City's Outside Water Use Program (OWUP) has helped to manage peak season (summer) water use through regulatory controls with complementary programs, such as Healthy Landscapes, working to proactively manage potential peak demands by assisting residents and local businesses in establishing low outdoor water use environments. The following activities were completed as part of this program in 2019.

There was limited precipitation in June and July of 2019. Even with the large rain event on July 17, precipitation was 60 per cent of 30 year precipitation average for the month. Because of this sustained dry spell, the Outside Water Use Program moved to Level 1 (Yellow) on July 29. The remainder of the summer was dry, however conditions improved into the fall season, which finished the season in Level 0 (Blue) on October 2.

Rain barrels offer homeowners the benefit of capturing free volumes of water for outside use but also assist in managing stormwater impacts on private property. This year's annual rain barrel truckload sale was held at Water Services' open house in May and yielded the sale of 950 rain barrels – the largest number of rain barrels sold during any of the previous years. This year's sale was in partnership with Stormwater Engineering. The Engineering department through the Stormwater utility subsidized the cost of the barrels and the first 850 barrels were sold to residents for \$10.

Please visit the City of Guelph Webpage for more information on the [Outside Water Use Program](#).

Healthy Landscapes

The Healthy Landscapes Program continues to offer various public resources to proactively manage peak season demand.

The annual Healthy Landscapes Workshops and Seminar Series featured numerous free talks on time-of-year appropriate outdoor water conservation topics including water efficient landscape design, plant selection, and proactive maintenance best practices to manage the impact of drought and common turf pests. It is estimated over 500 Guelph residents took part in this Workshop and Seminar series. Further, 100 individuals participated in the annual four-part Landscape Design Course.

Healthy Landscapes visits continue to be a popular resource, with 300 complimentary one hour visits completed by trained staff this year. This service offers a complementary site-based consultation aiming to educate residents on garden design and maintenance practices to significantly curb outdoor water demand at their home.

Healthy Landscapes visits continued to add the Blue Built Home Landscape Visit to the programming. Homeowners sign up for this specialized visit to complete one of three qualifying water saving options to become Blue Built Home certified. Twenty Healthy Landscape visits of this type were completed in 2019.

In 2019, Healthy Landscapes also collaborated with the Stormwater Engineering to pilot a Residential Rain Garden Rebate program. Two workshops were organized that required participants to attend to be a part of the program. A total of 50 participants attended the workshops. Through the workshop, 30 residents were prequalified for the pilot program and given a rain garden visit with a professional landscape consultant. With this site visit, a resident could determine how best to install his or her own rain garden. Once the rain garden was completed and a final verification visit was given, a one-time rebate from the City was awarded. Out of these 30 residents, 16 completed the installation of a rain garden and received their rebates. This resulted in:

- a combined capacity of over 39,800L of stormwater captured with an average rain gardens capacity of approximately 2,490L;
- the potential garden and lawn watering offset typically relied on for municipal supply;
- over \$13,800 in rebates provided with an average rebate of \$867.

In anticipation for the program to be offered again in 2020, there are 71 residents on a contact list. It is anticipated for the program to be offered again in 2020.

Visit the City of Guelph webpage for more information on the [Healthy Landscapes Program](#).

Peak Season Water Demand Research

Staff continue to pursue collaborative research opportunities where resources can be leveraged to garner greater products. This year, staff collaborated in a project with the University of Guelph to find alternative plants to use as groundcover to traditional grass seed and sod. This three-year research project will evaluate alternative groundcovers and varieties of turf grass to determine their water use requirements and suitability for use in local urban residential lawn areas. The first season (2019) of research results were inconclusive due to weed encroachment, low germination rate of some species, and a rain-out shelter was not constructed in time for the growing season. These issues will be addressed moving forward, data collected and reported to inform future peak season demand programming for Guelph. This research project will be ongoing until 2022.

Youth and Public Outreach and Education Programming

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, or completing water audits, or installing water meters, to ensure the wise use of the resource. Staff continue to offer a variety of very successful programs to increase awareness, influence people's attitudes and habits regarding water use, and inform public

on how the City invests their rate dollars. Investment in Guelph's water future includes education and outreach programming.

Curriculum-Linked Education Programming

The City's curriculum-based Grade 2 and Grade 8 in-class, water conservation programming continues to be a popular resource for local educators in both the Upper Grand District School Board and the Wellington Catholic District School Board. In 2019, staff provided 70 interactive school presentations to 1,459 students. Since the inception of this in-class, curriculum-linked program eight years ago, the City has provided a total of 411 school presentations to over 14,620 students.

In addition to in-class presentations, Water Services hosted 32 classes and over 690 students and teachers to tour the F.M. Woods Water Treatment Plant in 2019.

H2Awesome

After a one-year break, this award-winning water event for Guelph's Grade 8 students reconvened in 2019. This curriculum-based learning event hosted in partnership with the local school boards is an opportunity to celebrate water, encourage conservation of the resource, and provide focus to the importance of water in our daily lives.

The 2019 event saw H2Awesome take place in 2 phases. Phase 1 took place on April 30, gathering approximately 570 students and teachers to War Memorial Hall on the University of Guelph campus. The event was co-hosted by two students representing both the Catholic and Public School Boards. Local Anishinaabe Metis, Jan Sherman, opened and closed the event with a traditional aboriginal acknowledgement, followed by keynote speakers Emily De Sousa, marine conservation educator, and The Water Brothers, Tyler and Alex Mifflin.

Phase 2 of H2Awesome included a half-day workshop hosted in their schools from May 1 through May 15, for each of the 222 classes registered for the event. Workshops were designed for grade 8 students and were participatory activities linked to water through art, science and technology.

Splitting this event into separate phases was a departure from past H2Awesome events typically held over the course of a single school day at one venue. The planning committee felt that the logistics and delivery of the water conservation and protection message was well suited to this approach. The event received positive feedback from participating teachers.

Planning has begun for H2Awesome in 2020, and will look to use the same format.

Planet Protectors

Since 2016, Water Services has partnered with Engineering and Transportation Services and the Office of Climate Change to offer a curriculum-focused, interactive and activity-based online program called Planet Protectors. This program helps students understand the basics of climate change, the impact of our actions, as well as the importance of energy and water conservation, and transportation choices. Through 'missions', Planet Protectors solicits personal commitments from students and encourages sharing them with their family members - commitments such as shortening shower time.

The 2018/19 school-year witnessed a reduction in participation, however still saw the program utilized in 26 classrooms, reaching 566 students in both the Upper Grand District School Board and the Wellington Catholic District School Board.

As program use stagnates it will be prudent to determine whether the program offers the best value per dollar spent. At this time other educational program offerings have not demonstrated additional value or capacity above and beyond what Planet Protectors Academy offers. Staff continue to evaluate value for dollar.

In 2019 Planet Protectors created H2Whoa, a four part program focusing solely on water – decoupling water content from the broader program offering. Water Services will continue their relationship with the Planet Protectors through the H2Whoa program in 2019/2020 school year, with the intent of monitoring appetite and delivery of the new, water focused material.

Other Outreach and Engagement Programming

H2O Go Festival

2019 H2O Go Festival (hosted by the City) celebrated its seventh year of programming. This Festival is a community celebration of water, hosting a variety of educational and interactive displays aimed at connecting audiences of all ages with water. The Festival runs in tandem with the eMERGE Guelph EcoMarket – a sustainability expo.

This year's H2O Go hosted nine organizations, collaborating with local not-for-profits, businesses and institutions. Hosted at the Old Quebec Street Shoppes, attendance has continued to grow each year. This year's event attracted over 3,000 participants of all ages (800 more than the year prior).

Coordinated planning for the 2020 event has begun with the event to take place at the Old Quebec Street Shoppes in downtown Guelph on Saturday, March 21, 2020.

Waterloo Wellington Children's Groundwater Festival

Celebrating its 24th year, the long-standing Waterloo Wellington Children's Groundwater Festival was held from May 24 to May 30 in 2019. Water Services is proud to be an ongoing partner, sponsor, contributor and organizer of the Festival. In 2019, the Festival engaged 4,898 students Grades 2 through 5 from the City of Guelph, Wellington County, and the Region of Waterloo. Upwards of 900 students participate from Guelph on an annual basis.

Since 1996, over 95,000 students have participated in the Festival, which features fun and interactive activities designed to inform students of the importance of water protection and conservation in their daily lives. In partnership with Guelph's school boards, staff have worked to increase local awareness and participation in this Festival annually.

Outreach to New Canadians in Guelph

To build trust in governments' management of drinking water amongst new Canadians and introduce new Guelph residents to the City's unique water supply and constraints, continued public education programming is encouraged within the community.

Two Linamar facilities implemented an initiative to reduce the amount of disposable plastic water bottles purchased and used by their staff in 2019. Reducing plastic water bottle use minimizes Linamar's environmental impact and promotes a safe and clean working environment by eliminating workstation clutter within the plants due to empty, or partially empty, plastic bottle accumulation. Linamar approached Water Services about providing an educational presentation about Guelph's water to support this project. Linamar staff demographics are highly multicultural and are largely comprised of new community members to Canada and Guelph. Linamar believed this educational component would be a key to the success of their project.

The two locations installed additional water fountains to improve accessibility to tap water and provided each staff member with their own reusable, stainless-steel water bottle. To enhance the initiative's success, Water Services gave a 15-minute presentation to all staff members at participating facilities on Guelph's water supply during their monthly staff meetings. Presentation content included the role of Water Services in the community and our drinking water's source, treatment, safety, and quality. In total, 840 staff members received the presentation.

Our tap water presentation built confidence in our tap water's safety and quality and was an important component in the success of Linamar's initiative. There is significant potential for this initiative to have spillover effects into the personal lives of Linamar's staff. Ideally, Linamar staff will confidently choose to drink tap over bottled water at home as well as at work, and encourage family members and friends to do so.

Water-Energy Nexus Research

Collectively, Water and Wastewater utilities (i.e. treatment and conveyance) are among the largest energy consumers by sector in Ontario. Water requires energy intensive treatment and pumping to maintain a reliable water supply while protecting public health and the environment. Consequently, water conservation and efficiency presents significant energy saving opportunities. Furthermore, the cost to expand water and energy infrastructure emphasizes that conservation and efficiency are among the most cost effective sources of water and energy. As electricity costs continue to rise and population growth increases water resource demands, conservation is important for Ontario municipalities to limit the increasing cost to produce safe clean drinking water and meet energy needs in a time when climate resilience is required. The water-energy nexus offers new opportunities to save water, energy and money through reduced infrastructure costs, greenhouse gas emissions, and operational and maintenance costs.

In 2019, Water Services began to apply the water-energy nexus concept to communicate associated water, energy and cost savings as identified in the Water Efficiency Strategy. The intent in doing so could lead to further decreases in water use.

Further to this, staff commenced the practical assessment of renewable energy applications to the infrastructure related to pumping, treating and distributing water, in alignment with the City's Community Energy Initiative. Renewable energy applications for water infrastructure are rapidly evolving and have the potential to reduce the water sector's dependency on fossil fuel-based electricity use.

As a continuation from the 2018 work, Water Services continued to assess energy optimization opportunities within the drinking water system. In doing so, this information informs budget forecasting, proposed water rate changes, and to assess the efficacy of water conservation and efficiency programs. The Water Efficiency Strategy challenges staff to evaluate opportunities to strategically implement technologies to maximize the use of available water supply. Staff currently utilize a suite of tools such as water audits, acoustic leak detection and district metered areas to recover water losses. Water loss management is known to be a highly cost effective water conservation and efficiency measure for

municipalities as they defer the associated costs of water infrastructure expansion. This evaluation is anticipated to continue through the 2020 Water Supply Mater Plan update process.

Guelph Water Wagon

In support of the City's 2009 Public Promotion Action Plan for City Drinking Water Consumption, the Guelph Water Wagon has been providing tap water to attendees of large, outdoor community events during the summer months for seven years. The Water Wagon provides access to tap water where water fountains or taps are not readily available. Continually growing in demand year-after-year, the Water Wagon attended 33 events in 2019 and provided 22,332 litres of water to event attendees. The Water Wagon continues to provide staff an excellent opportunity to engage with the public. Staff engage with Guelph residents about:

- the value of Guelph's water;
- the need for water conservation and source protection;
- questions and concerns regarding municipal tap water;
- Water Services-based public processes, programs and studies; and
- promote tap water consumption over other beverages.

In 2019, staff developed a Water Wagon Communication Plan that will undergo implementation in 2020. The Communication Plan was developed using insights from the 2018 Water Efficiency Public Education and Communication Strategy and associated market research, as well as Community Based Social Marketing principles. The Communication Plan:

- identifies specific goals and objectives for public engagement at the Water Wagon,
- clarifies key messages and target audiences,
- details how the Water Wagon Program Coordinator interacts with the public and set-up their display,
- outlines communication material development, and
- provides direction for monitoring public engagement.

This formal, strategically developed communication plan will be an important guide moving forward to ensure public engagement efforts via the Water Wagon program remain consistent, on-point, and contribute to our overarching goals. This resource will be especially advantageous for assisting the Water Wagon Program Assistant, who is a new staff member each summer, quickly and successfully navigate their role.

Water Softener Alternatives Testing and Market Research

With high levels of naturally occurring hardness in the City's groundwater source, the use of residential ion-exchange (salt-based) water softener technologies is quite common amongst Guelph households. It is estimated that approximately 77 per cent of local households, as part of a 2009 residential call survey, use a water softener.

The Region of Waterloo and the City of Guelph financed ground-breaking research in 2015 to assess the performance of an alternative to ion-exchange softening technology that treats hard water without the need for salt and recharge water. This technology referred to as salt and water free technology through the use of: media induced crystallization (nucleation assisted crystallization (NAC) and template assisted crystallization (TAC)); electromagnetic water treatment (MWT); chemical conditioning with complexing; or chelating agents. Salt and water free technology employs a combination of processes to prevent scale buildup in household water heaters and appliances. However, these technologies do not allow for the same lathering effect as salt-based water softeners provide.

In June 2017, the City of Guelph again collaborated with the Region of Waterloo to continue the research, trialling the NAC/TAC technology in real life scenarios. The aim of this study was to assess the field performance and user benefits associated with salt and water free residential water softener treatment technology.

Through this study, social research in both communities were completed (phone surveys, focus groups) to generate a technology test group of 18 homes, to install a single technology in their home for testing of user experience.

The technology was installed in participating homes by December 2017. Use of the systems continued throughout 2018. Participants were engaged to provide feedback through subsequent focus groups and an online discussion board. The final focus group concluded in January 2019.

The final report was completed in September. The results of the Water Conditioner Study were posted to the joint website, watersoftenerfacts.ca in November. The results of the study will be used to inform the update to the Water Efficiency Strategy moving forward.

Appendix J: Water Services Committees

Water Conservation and Efficiency Public Advisory Committee – Annual Report

The Water Conservation and Efficiency Public Advisory Committee (WCEPAC) – a Guelph Committee of Council – was formed in 2009 through Council approval. Council recommitted to this Committee in 2016 with the approval of the Water Efficiency Strategy update. This committee provides a forum for community input and guidance throughout the City's implementation of the Water Efficiency Strategy.

The WCEPAC met four times in 2019. The WCEPAC continues to provide valued insights on opportunities for continued enhancement of current and developing water conservation programming, policy and education, engagement and outreach resources. In alignment with Council reporting requirements outlined in the committee's Terms of Reference, this Annual Report details activities of the WCEPAC within 2019.

Water Conservation and Efficiency Public Advisory Committee continued to provide invaluable citizen feedback and recommendations to enhance the City of Guelph's successful water efficiency program, including:

- Feedback on the following water efficiency programs that were updated or developed as directed through the 2016 Water Efficiency Strategy:
 - Blue Built Home Water Efficiency Standard and Rebate Program,
 - Residential Sub-meter Rebate Program,
 - Integrated Water Mapping Project, including key performance indicators, and
 - Residential Rain Garden Pilot Project
- Comment on various innovative research, study and pilots including the residential water conditioner study (related to residential water softener impacts) and the Assimilative Capacity and Reclaimed Water Feasibility Studies which were conducted in partnership with Wastewater and Source Water Protection.
- Participation in discussions on how best to utilize and enhance the committee's capacity to provide advantageous and quality input.
- Learning opportunities to support member's role on the committee. This was especially important in 2019 with four new members joining the committee, and a new member and City Staff who had joined the committee in 2018. Members received presentations on WCEPAC roles, responsibilities, policies and procedures; 2016 Water Efficiency Strategy; Water Supply Master Plan update; Stormwater Management

Master Plan update; Water and Wastewater Servicing Master Plan update; Guelph's Wastewater Treatment operations; and Water Services' operations.

In 2020, the WCEPAC will continue to be engaged to solicit input throughout continued implementation of the 2016 Water Efficiency Strategy recommendations including, but not limited to the following:

- Present an updated Terms of Reference for the Committee, in line with Clerk's policies and procedures for Committees of Council (last update in 2009);
- Commencing an update to the Water Efficiency Strategy, contingent upon completing the Water Supply Master Plan in 2020;
- Outreach and engagement strategies for City of Guelph's conservation programming and tap water promotion;
- Development, update, or enhancement to Water Efficiency programs;
- Feedback on the pursuit and application of study results in regards to water reuse, water energy nexus, and alternative water softening technology; and
- Water Supply Master Plan update.

Visit the [Water Conservation and Efficiency Public Advisory Committee webpage](#) for a full list of the WCEPAC members, meeting minutes and agendas.

The WCEPAC possesses no annual budget. Funding for the City's Water Efficiency Program is provided within the Council-approved Non-Tax Supported Water and Wastewater Services Capital and Operating Budgets as well as through Development Charges.

Well Interference Committee

The Well Interference Committee is a specially arranged—or ad hoc—committee that is brought together to address well interference complaints resulting from the City's water takings.

The committee was established in 2004 to address concerns voiced during the City's Class Environmental Assessment for the Arkell Springs Ground Water Supply Strategy. During the Environmental Assessment, private well owners expressed concern that City water taking may interfere with or reduce the amount of water available for their wells.

No complaints have gone to the Well Interference Committee since it was established. It is worth noting that the Committee convened on May 29, 2019 in order to facilitate an overview of the City's Well Interference Standard Operating Procedure, Permit to Take Water Requirements, upcoming water supply projects and the Terms of Reference for the Committee. The purpose of the review was to inform new members who may not have been

familiar with the duties or function of the Committee as these members were recently elected to council.

Visit the [Well Interference Committee webpage](#) for more information.

Appendix K: Source Water Protection

The third annual report summarizes information requested from the Risk Management Official by the Source Protection Authorities, as required under section 81 of the Clean Water Act, 2006 (CWA). The report outlines activities undertaken by the City of Guelph in 2019 to protect municipal drinking water sources. Source Protection is one component of the multi-barrier approach to ensure clean safe drinking water.

The Lake Erie Source Protection Region is one of 19 in Ontario created to implement drinking water source protection planning under the Clean Water Act, 2006. The region includes four watersheds, called Source Protection Areas (SPAs) in the Act:

- Catfish Creek
- Grand River
- Kettle Creek
- Long Point Region

The City of Guelph is part of the Grand River SPA and has a representative who sits on the 24 member Lake Erie Region Source Protection Committee (SPC). The SPC meets about four times a year to discuss and implement matters related to program implementation. The City of Guelph is an active participant along with other municipal representative who have a stake in drinking water issues.

The Grand River Source Protection Authority will receive this information in the format they have requested by February 1, 2020. This information may also be requested by the Director of the Ministry of Environment, Conservation and Parks (MECP).

City of Guelph internationally recognized for Source Protection

In 2019, the City of Guelph was awarded the American Water Works Association Exemplary Source Water Protection Award. Award winners “establish and maintain source water protection programs that account for their unique local conditions, incorporate the interests of local stakeholders, and reflect sustainable long-term commitments to the process by all parties.” Established in 1881, the American Water Works Association (AWWA) is the largest and oldest non-profit, scientific and educational association dedicated to managing and treating water. There are approximately 50,000 members worldwide.

Figure 8: City Staff Receiving AWWA Award along with Guelph Mayor and Councillors.



Risk Management Official Update

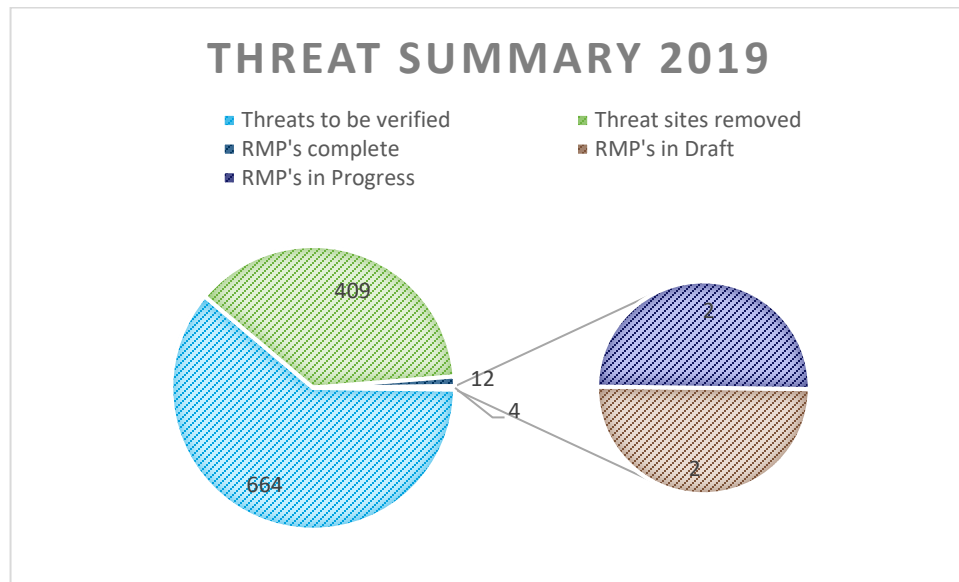
The RMO represents the City of Guelph as a municipal member of the Grand River Source Protection Committee. The Risk Management Official (RMO), Peter Rider, was appointed under subsection 47(6) of the Clean Water Act on May 27, 2016. The Risk Management Inspector (RMI) Kristin Pressey, was appointed on December 19, 2017.

Threat Verification and Negotiating Risk Management Plans

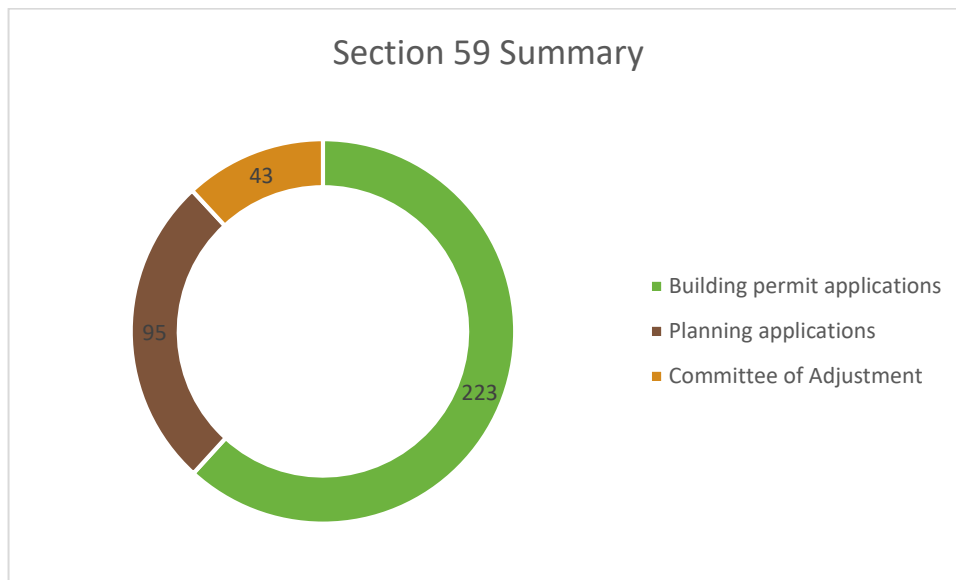
The City of Guelph continued to work with a number of property owners and businesses to verify and manage threat activities at their sites. Threats identified in the 2010 Assessment Report total 942 within the City of Guelph. Threat verification has been completed for 409 sites, resulting in the completion of 12 Risk Management Plans (RMPs) and an additional 4 in progress. City staff continue to develop RMPs for sites with threats, including evaluating existing practices and identifying potential missing gaps in drinking water protection. A template developed by the City was used to make the Risk Management Plan negotiation process less onerous for business and property owners.

Information related to the Source Protection Program is managed in the Local Source Water Information Management System (LSWIMs), a data management system. This program is used by several other municipalities in southern Ontario to manage data associated with the Source Protection Program. The application is being updated regularly with additional functionality as requested by the collaborating partners.

Figure 9: Risk Management Official Summary, 2019



The CWA requires a section 59 Notice for development within the Wellhead Protection Areas (WHPAs) to determine if an application has a potential to introduce a new threat to drinking water. A notice is required before planning and building applications can be deemed complete. In 2019, Source Water Protection staff reviewed 361 applications and issued 167 Section 59 Notices.

Figure 10: Clean Water Act, Section 59 Summary

Policy Implementation

The City of Guelph is the implementing body responsible for a range of Source Protection Policies, from prohibition to negotiating Risk Management Plans (RMPs) and providing education and outreach. There are 72 policies in the City of Guelph's section of the Grand River Source Protection Plan. Of these, 48 are identified as the City's responsibility to implement. As of January 2019, we currently have 28 policies fully implemented and 18 that we have made some progress on. Efforts are underway to implement the remaining policies, however, there may be certain triggers required (e.g. upon the next Official Plan update) which will determine the pace at which some of the policies will be implemented.

Protecting Water Quantity

The City of Guelph is working closely with the Townships and staff from the Lake Erie Region Source Protection Authority to develop a set of water quantity threat policies for the identified WHPAs. Meetings are ongoing and it is anticipated that public consultation will be completed by the end of 2020. The draft policies will then be submitted to the Minister of Environment, Conservation and Parks for approval before implementation.

Education and Outreach

In the second half of 2019 moving into 2020, Source Water started an ad campaign to bring awareness to the program. The campaign consisted of Guelph Transit advertisements: both on the back and side of the bus; along with posters up at various bus shelters throughout the City. Advertisements were also posted through various social media sites and the Guelph Chamber of Commerce. Figure 11 below is an example of source water public communication.

Figure 11: Source Water Protection Advertisement to Reduce Your Winter Salt Use



Staff from the Sourcewater Protection Team have worked collaboratively with the City of Guelph Operations department staff to sponsor and support the purchase of new and enhanced road salting equipment. The goal of this initiative is to improve the management of road salt application within the City and to obtain a better understanding of how much road salt is being applied throughout the City. The purchase of this state-of-the-art equipment will allow the Operations department to develop more accurate records. This will greatly assist both departments in developing a better understanding of water quality trends and potential impacts to our drinking water system.

Staff from the Sourcewater Protection Team have also been actively involved in providing input to a joint committee lead by Ontario Good Roads Association and Conservation Ontario, whose mandate is to raise awareness at the provincial level of increasing chloride trends in groundwater and the need to evaluate the effectiveness of current legislation and best practices for winter maintenance.

Moving Forward in 2020

Efforts will continue to develop Risk Management Plans and carry out threat verifications, as required. We anticipate ramping up efforts to educate the public about road salting and how

everyone can play a part in reducing the amount of road salt that is applied to hard surfaces.

The Source Water Protection team will continue to pursue opportunities to educate the public and various stakeholders on the benefits of protecting our water resources. This will be accomplished through meetings, seminars and conferences when opportunities present themselves.

Appendix L: Glossary

Included below is an index of terms used throughout this report.

Term	Description
<	Less than (used in reference: less than lower detection limit shown)
µg/L	Micrograms per litre = 1 part per billion
½ MAC	half of the maximum allowable concentration
Above Detection Limit	Means the result can be detected using the current level of technology.
AMP	Adaptive Management Plan
AO	Aesthetic Objective
AODA	Accessibility for Ontarians with Disabilities Act
A&S	Annual and Summary
AWQI	Adverse Water Quality Incident
Background	Indicator bacteria group used to monitor general water quality (non - regulatory)
BBH	Blue Built Home program
CAO	Chief Administrative Officer
CAPS	Capital Asset Prioritization System
CCL	Critical Control Limit. The point at which a Critical Control Point response procedure is initiated.
CCP	Critical Control Point. An essential step or point in the Subject System at which control can be applied by the Operating Authority to prevent or eliminate a Drinking Water Health Hazard or to reduce it to an acceptable level.
CELP	Community Environmental Leadership Program
CIR #	Continual Improvement Report Number. Refers to the number assigned to an item in the Continual Improvement Database.
cfu	colony forming unit

Term	Description
Cubic metre (m ³)	1 Cubic metre = 1,000 litres water
Distribution Samples	Samples taken within the distribution system, post primary disinfection.
Distribution System	The part of a drinking water system that is used in the distribution, storage or supply of water and that is not part of a treatment system.
DMA	District Metered Area
Drinking Water System	A system of works, excluding plumbing, that is established for the purpose of providing users of the system with drinking water and includes, (a) any thing used for the collection, production, treatment, storage, supply or distribution of water, (b) any thing related to the management of residue from the treatment process or the management of the discharge of a substance into the natural environment from the treatment system, and (c) a well or intake that serves as the source or entry point of raw water supply for the system.
DWQMS	<u>Drinking Water Quality Management Standard</u>
DWS	Drinking Water System
DWWP	Drinking Water Works Permit
EC	E. coli (Escherichia coli)
E. coli	Escherichia coli, indicator bacteria used to determine the presence of fecal contamination
EDMS	Electronic Document Management System
EHV	Efficient Home Visit
Eng.	Engineering Services
EOCG	Emergency Operations Control Group
EPA	Environmental Protection Act
ERO	Environmental Registry of Ontario
Form 1	Form 1 – Record of Watermains Authorized as a Future Alteration

Term	Description
Form 2	Form 2 – Record of Minor Modification or Replacements to the Drinking Water System
GUDI-WEF	Groundwater Under the Direct Influence of surface water – With Effective Filtration
HAAs	Haloacetic acids (HAAs) are a type of chlorination disinfection by-product that are formed when the chlorine used to disinfect drinking water reacts with naturally occurring organic matter in water.
HPC	Heterotrophic Plate Count, indicator bacteria group used to monitor general water quality (non-regulatory).
ICI	Industrial, Commercial, Institutional
In-situ filtration	Refers to the filtration achieved as river water migrates through the ground and into the Arkell Springs Glen Collector System.
km	Kilometre
Langelier Index	An approximate indicator of the degree of saturation of calcium carbonate in water. It is calculated using the pH, alkalinity, calcium concentration, total dissolved solids, and water temperature of a water sample collected at the tap.
LESP	Lake Erie Source Protection
LRP	Lead Reduction Plan
LSL	Lead Service Lines
LSWIMs	Local Source Water Information Management System
L/s	Litres per second
m	Metres
m ³	Cubic metres = 1 m ³ = 1,000 litres water
m ³ /day	Cubic metres per day = 1 m ³ /day = 1,000 litres per day
MAC	Maximum Allowable Concentration
MCC	Motor Control Centre
MDL	Minimum Detection Limit
MDWL	Municipal Drinking Water Licence
MECP	Ontario Ministry of the Environment, Conservation and Parks

Term	Description
mEq/L	Milliequivalents Per Litre
mg/L	Milligrams per litre = 1 part per million
n/a	Not Applicable
NDOG	Non-Detect Overgrown
N/O	Non-Operational
NSF 60	NSF/ANSI Standard 60: Drinking Water Treatment Chemicals -- Health Effects
NSF 61	NSF/ANSI Standard 61: Drinking Water System Components -- Health Effects
ntu	nephelometric turbidity unit
O. Reg. 170/03	Ontario Regulation 170/03 Drinking Water Systems
OA	Operating Authority
ODWQS	O. Reg. 169/03 Ontario Drinking Water Quality Standards
ODWSP	Ontario Drinking Water Stewardship Program
OG	Operational Guideline
OIC	Operator-in-Charge
OP	Operational Plan
ORO	Overall Responsible Operator
OTP	Operational Testing Plan
OWRA	Ontario Water Resources Act
OWUP	Outside Water Use Program
OWWCO	Ontario Water Wastewater Certification Office
Pb	Lead
PDDW	Procedure for Disinfection of Drinking Water in Ontario
PLC	Programmable Logic Controller
POE	Point of Entry, the point at or near which treated water enters the distribution system.
ppm	Parts per million (mg/L)

Term	Description
ppb	Parts per billion (µg/L)
PTTW	Permit to Take Water
Q1	Quarter One (aka first quarter), Q2 (second quarter), etc.
QMS	Quality Management System
Raw water	Water in its natural state, prior to any treatment for drinking.
RMPs	Risk Management Plans
RCAp	Rapid Chemical Analysis Package
SAC	Spills Action Centre
SAN	Storage Area Network
SCADA	Supervisory Control and Data Acquisition
SDS	Subdivision Distribution System (as in Gazer Mooney SDS)
SDWA	Safe Drinking Water Act, 2002
TC	Total Coliform, indicator bacteria group used to determine presence of contamination.
TCE	Trichloroethylene
THM	Trihalomethane
TOMRMS	The Ontario Municipal Records Management System
Total Coliform	Indicator bacteria group used to determine presence of contamination.
Treated	Refers to samples that have received disinfection, for example treated sources.
UGDSB	Upper Grand District School Board
UV	Ultraviolet
VOC	volatile organic compound
WCDSB	Wellington Catholic District School Board
WCES	Water Conservation and Efficiency Strategy
WCWC	Walkerton Clean Water Centre
WDGPH	Wellington-Dufferin-Guelph Public Health
WES	Water Efficiency Strategy

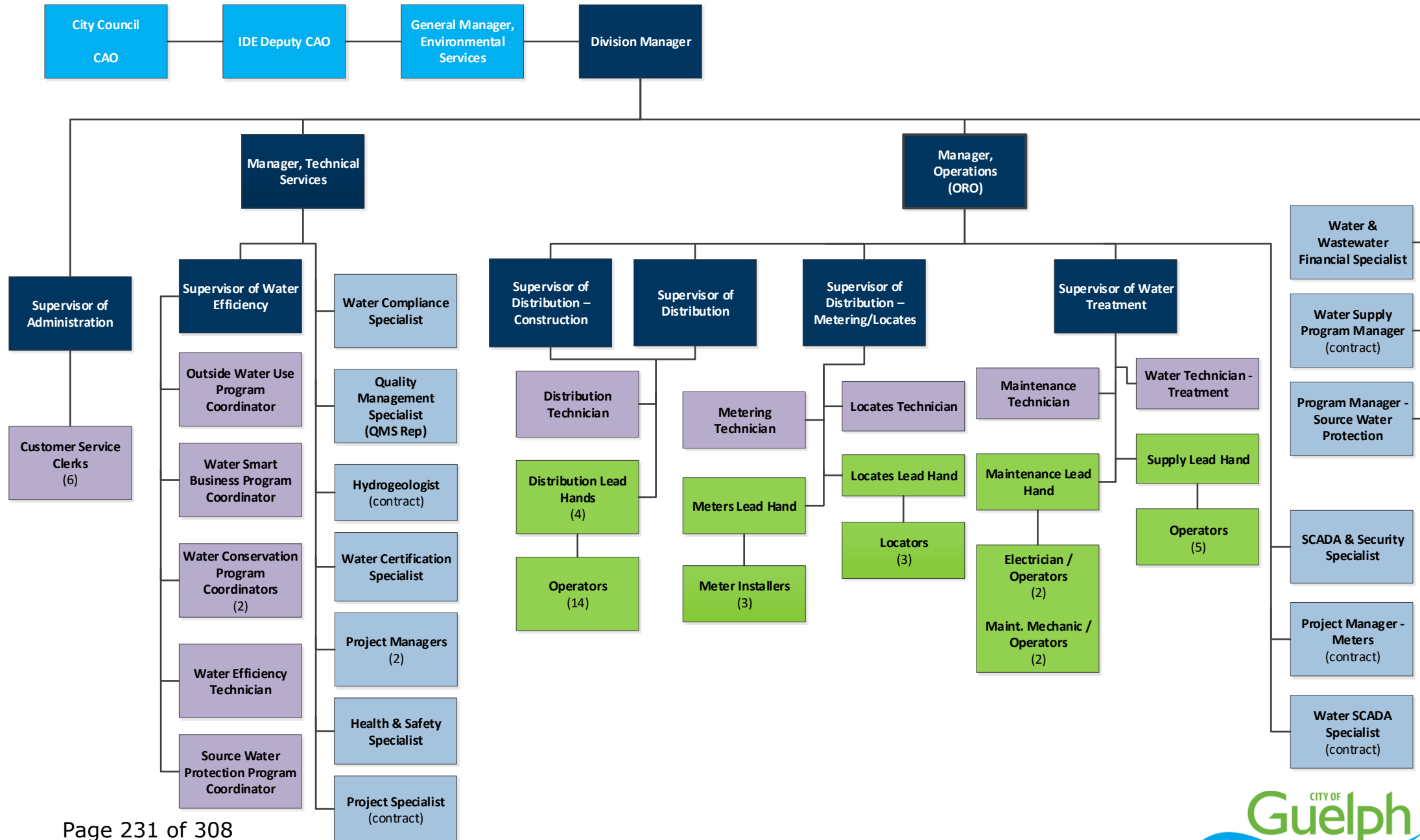
Term	Description
WHPA	Wellhead Protection Area
WSMP	Water Supply Master Plan

Water Services

QMS 09-01 Organizational Structure

Revision date: 2019-08-19

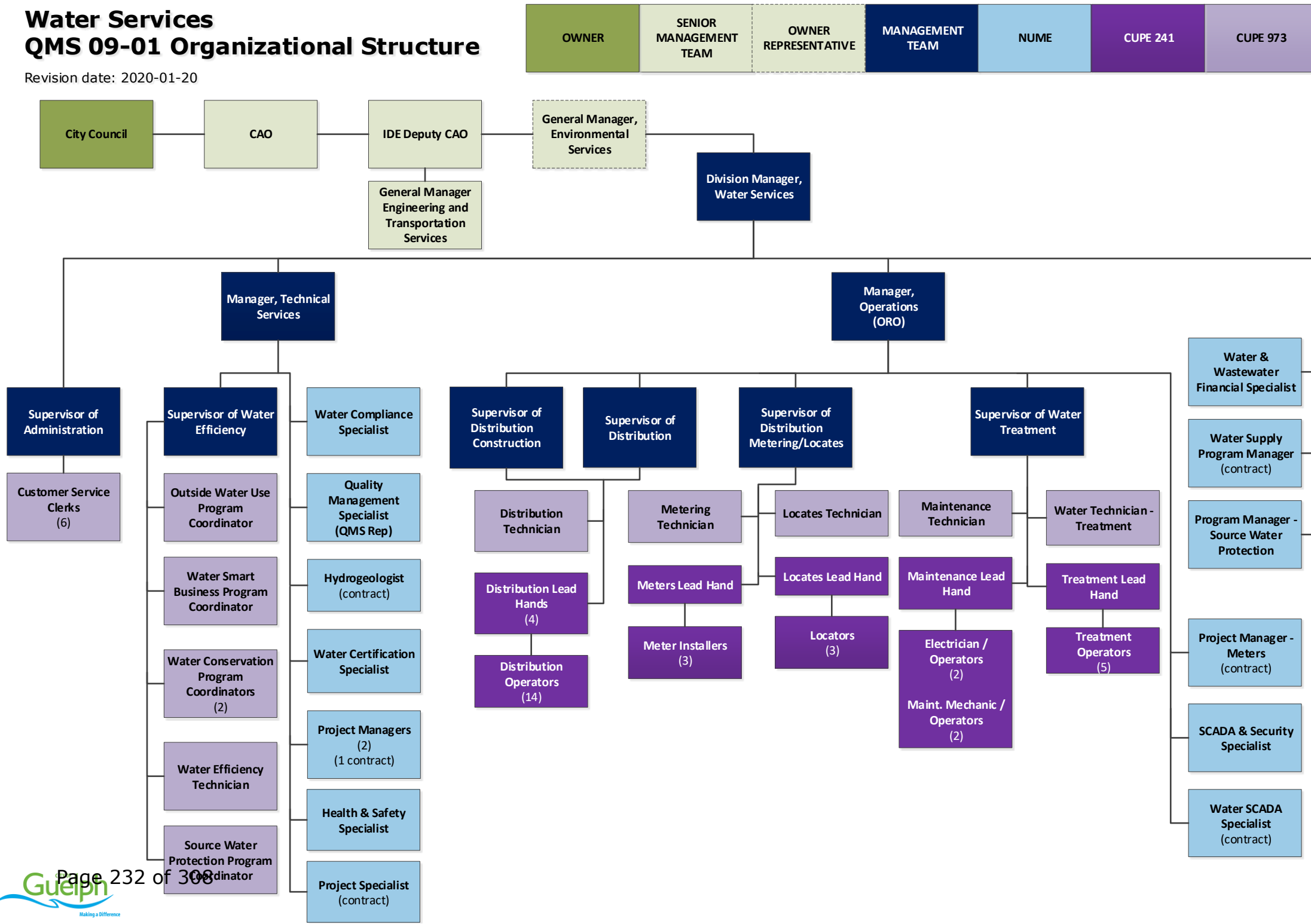
OWNER	MANAGEMENT TEAM	NUME	CUPE 241	CUPE 973
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Water Services

QMS 09-01 Organizational Structure

Revision date: 2020-01-20



Council Memo



Date	March 23, 2020
To	City Council
From	Tara Baker, General Manager, Finance/City Treasurer
Service Area	Corporate Services
Department	Finance
Subject	Fiscal Relief Measures

Background

On March 11, 2020, the World Health Organization declared a global pandemic and on March 18, 2020 the Province of Ontario declared an emergency in relation to COVID-19. During this period, as part of the City's Emergency Management Program and Emergency Response Plan, the CAO has directed the closure of all City facilities to the public, instituted free public transit and paused all non-urgent inspections and site visits until April 5, 2020.

In response to the economic pressures and difficult financial reality that many residents and businesses are experiencing, the Federal and Provincial governments have been responding with financial relief in various forms including stimulus funding, small business loans and deferred payment options. There is now evolving expectation for municipal governments to also provide fiscal relief.

Municipal governments operate under different fiscal constraints than senior levels of government and have limited power for raising capital. The City relies predominantly on property taxes and user fees to meet its financial obligations and the Municipal Act is prescriptive for budgeting, investment and debt management.

With the efforts already announced to date, the City's user fee revenues have been significantly impacted. This includes, all recreation facility and park programming revenues, cultural facility revenue including museum, River Run, Farmers' Market and library revenues, transit revenues, parking and bylaw enforcement, courts, and building permit and development related revenues. Further, because of the economic slowing, it is likely that the usage for water and wastewater will decline for a period of time also reducing these user fees. Finance staff are also concerned that with broader economic challenges, accounts and tax receivables will begin to increase, further negatively impacting cash flow.

As these immediate cash flow concerns are being identified, there are also longer-term budgetary concerns of the lowered Bank of Canada rate, as well as the likelihood of increased cost pressures in our Social Services, Health Services and Emergency Services due to the economic downturn and pandemic response efforts.

The City does have contingency reserves however, as Council is aware, these reserves are under the targeted level of 8% of operating expenditures. The City's investment portfolio is healthy because of the non-tax operating and capital reserve fund balances, however, the liquidity of these investments is laddered out over a number of years in order to maximize investment revenue and diversify the financial risk in the portfolio.

The following financial relief recommendations reflect an assessment of the City's immediate concerns for the community well-being, economic conditions, and the sustainability of the City's financial health. As it is anticipated that there will be impending provincial stimulus funding forthcoming, the recommendations have been extended only to April 30, 2020. For reference, an estimate of the financial impact for an extension of these recommendations through to May 31, 2020 is included.

Financial Relief Recommendations

Taking all of this into consideration, including the City's cash flow projections for the balance of 2020, the following additional fiscal relief measures are recommended:

1. Parking permit fee waiver to assist downtown businesses and employees for the month of April.
2. Continued waiving of Transit fees for the month of April 2020.
3. Providing property tax relief to businesses and residents for the month of April through:
 - The waiver of interest and penalties that would be applied May 1.
 - The waiver of NSF charges through to April 30, 2020.
 - Ceasing all progressive collection activities until April 30, 2020.
 - Waiving of tax statement fees related to mortgage requirements.
 - Option to defer monthly Pre-authorized Debit (PAD) plans upon written request of at least ten days prior to withdrawal date. (email: tax@guelph.ca)

For further clarity related to property taxes, the April 30 due date and billing will still proceed as planned and all PAD and post-dated cheques will be processed unless written notice is received ten days prior to the withdrawal date. (email: tax@guelph.ca)

Financial Implications

Early financial projections for the estimated lost revenue due to the COVID-19 pandemic response measures for the period of March 18 to April 30, 2020 is in the range of \$4 to \$6 million. Extending the application of these response measures to May 31, 2020 without any significant alterations is estimated to be an additional \$2 to \$4 million. The City has sufficient contingency reserves to mitigate a one-time loss in this range, however, the property tax collection timing implications of shifting cash receipts of upwards of \$100 million towards the last half of 2020 is

causing the greatest concern. The City continues to need enough liquidity to meet its obligations to vendors and employees.

We are encouraging the community, where possible, to continue under their normal PAD plans and meeting the April 30 payment deadline. The taxation office may not be in a position to respond to a high volume of changes and will do their best under the challenges that are being experienced.

Management will also be reviewing expenditure control with an eye on shifting payments to the end of 2020 to better align with revenue collection. Additionally, staff will continue to investigate and consider other options to support liquidity through this period.

Recommended by:



Scott Stewart
Chief Administrative Officer
Office of the Chief Administrative
Officer
519-822-1260 Extension 2221
Scott.Stewart@guelph.ca



Colleen Clack
Deputy Chief Administrative Officer
Public Services
519-822-1260 Extension 2258
Colleen.Clack@guelph.ca



Kealy Dedman, P. Eng., MPA
Deputy Chief Administrative Officer
Infrastructure, Development and
Enterprise Services
519-822-1260 Extension 2248
Kealy.Dedman@guelph.ca



Trevor Lee
Deputy Chief Administrative Officer
Corporate Services
519-822-1260 Extension 2281
Trevor.Lee@guelph.ca

THE CORPORATION OF THE CITY OF GUELPH

By-law Number (2020) – 20479

Being a By-law to amend By-law Number (2002) – 17017 – the Traffic By-law (Through Highways in Schedule V, Traffic Control Signals in Schedule VI, All-way Stop Signs in Schedule IX, Pedestrian Crossovers in Schedule X, One-way Streets in Schedule XI, No Parking in Schedule XV and No Stopping in Schedule XVI)

NOW THEREFORE THE COUNCIL OF THE CORPORATION OF THE CITY OF GUELPH ENACTS AS FOLLOWS:

1. Schedule V of By-law Number (2002)-17017 is hereby deleted and replaced with the new Schedule V, attached hereto as Schedule “A”.
(To remove Dublin Street, Waterloo Avenue to Suffolk Street; to add Dublin Street North, Kent Street to Suffolk Street West; to add Kent Street, Northumberland Street to Glasgow Street North; to add Kent Street, easterly limits to Glasgow Street South; in the Through Highways Schedule)
2. Schedule VI of By-law Number (2002)-17017 is hereby deleted and replaced with the new Schedule VI, attached hereto as Schedule “B”.
(To add Gordon Street at Gosling Gardens; to add Paisley Road at Stephanie Drive; to add Stone Road East at Evergreen Drive; in the Traffic Control Signals Schedule)
3. Schedule IX of By-law Number (2002)-17017 is hereby deleted and replaced with the new Schedule IX, attached hereto as Schedule “C”.
(To add Kent Street and Dublin Street South; to add Kent Street and Dublin Street North; to add Macalister Boulevard and Zaduk Place; in the All-way Stop Signs Schedule)
4. Schedule X of By-law Number (2002)-17017 is hereby deleted and replaced with the new Schedule X, attached hereto as Schedule “D”.
(To add Lane Street at Ryan Avenue; to add Cityview Drive North at Lee Street; to add Goodwin Drive at 15m east of Pearson Street; to add Colonial Drive at 76m north of Baxter Drive; to add Farley Drive at 48m south of Porter Drive; to add Arkell Road at Amos Drive and Zecca Drive; to add Kortright Road East at Fieldstone Road; in the Pedestrian Crossovers Schedule)
5. Schedule XI of By-law Number (2002)-17017 is hereby deleted and replaced with the new Schedule XI, attached hereto as Schedule “E”.
(To add Northumberland Street, 175m east of Dublin Street North to Kent Street, southerly; to add Kent Street, Northumberland Street to Glasgow Street North, westerly; to add Kent Street, Dublin Street South to Glasgow Street South, westerly; in the One-way Street Schedule)
6. Schedule XV of By-law Number (2002)-17017 is hereby deleted and replaced with the new Schedule XV, attached hereto as Schedule “F”.
(To remove Kent Street, north, Dublin to easterly limit, anytime; to remove Kent Street, south, Glasgow Street S to Dublin Street S, anytime, Dec 1-Mar 31; to remove Northumberland Street, south, Dublin Street to 30m west thereof, anytime; to remove Northumberland Street, north, Dublin Street North [north leg] to 190m east thereof, anytime; to remove Northumberland Street, east, 190m east of Dublin Street North [north leg] to 60m south thereof, anytime; to remove Northumberland Street, south, 168m east of Dublin Street North [south leg] to 24m east thereof, anytime; to remove Burns Drive, North, 126m east of Edinburgh Road North to 26m east thereof, anytime; to remove Goodwin Drive, both Tolton Drive to 127m west thereof, anytime; to remove Cityview Dr, east, 30m north of Cityview Dr to 25m south of Cityview Dr, anytime; to remove Cityview Dr, west, 30m north of Cityview Dr to 30m south of Cityview Dr, anytime; to add Kent Street, both, Glasgow Street North to Dublin Street North, anytime; to add Kent Street, south, Dublin Street North to easterly limit, anytime; to add Kent Street, south, Glasgow Street South to Dublin Street South, anytime, Dec 1-Mar 31; to add Kent Street, north, Glasgow Street South to Dublin Street South, anytime; to add Kent Street, both, Dublin Street South to easterly limit, anytime; to add Northumberland Street, north, Dublin Street North to Kent Street, anytime; to add Burns Drive, North, 120m east of Edinburgh Road North to 32m east

thereof, anytime; to add Colonial Drive, east, 9m south of Baxter Drive to 67m north thereof, anytime; to add Colonial Drive, east, Lambeth Way to 40m south thereof, anytime; to add Colonial Drive, west, 9m south of Baxter Drive to 64m north thereof, anytime; to add Colonial Drive, west, 24m south of Walker Way to 100m south thereof, anytime; to add Goodwin Drive, north, Tolton Drive to 62m west thereof, anytime; to add Goodwin Drive, south, Tolton Drive to 77m west thereof, anytime; in the No Parking Schedule)

7. Schedule XVI of By-law Number (2002)-17017 is hereby deleted and replaced with the new Schedule XVI, attached hereto as Schedule “G”.

(To remove Colonial Drive, west, 9m south of Baxter Drive to 169m north there, anytime; to remove Colonial Drive, east, 9m south of Baxter Drive to 212m north thereof, anytime; to remove Goodwin Drive, both, Tolton Drive to 127m west thereof, 8:00am-4:30pm Mon-Fri; to remove Cityview Dr, east, 30m north of Lee St to 25m south of Lee St, 8:00am-4:30pm Mon-Fri; to remove Cityview Dr, west, 30m north of Lee St to 30m south of Lee St, 8:00am-4:30pm Mon-Fri; to remove Lane Street, east, Ryan to 26m south thereof, 8:00am-4:30pm Mon-Fri; to remove Lane Street, west, 27m south of Ryan to 34m north thereof, 8:00am-4:30pm Mon-Fri; to add Farley Drive, east, 36m south of Porter Drive to 48m south thereof, Anytime, Except Buses; to add Colonial Drive, west, 24m south of Walker Way to 100m south thereof, 8:00am-4:30pm, Mon-Fri; to add Colonial Drive, west, 9m south of Baxter Drive to 64m north thereof, 8:00am-4:30pm, Mon-Fri; to add Colonial Drive, east, 9m south of Baxter Drive to 67m north thereof, 8:00am-4:30pm, Mon-Fri; to add Colonial Drive, east, Lambeth Way to 40m south thereof, 8:00am-4:30pm, Mon-Fri; to add Goodwin Drive, north, Tolton Drive to 62m west thereof, 8:00am-4:30pm Mon-Fri; to add Goodwin Drive, south, Tolton Drive to 77m west thereof, 8:00am-4:30pm Mon-Fri; in the No Stopping Schedule)

8. Subject to Section 9, Sections 1, 2, 3, 4, 5, 6 and 7 of this By-law shall come into effect immediately.
9. No portion of this By-law shall come into effect until the part of the highway affected by it has all traffic control devices in place and is marked to comply with the signing requirements of the Ministry of Transportation of Ontario’s Ontario Traffic Manuals.
10. This By-law is hereby adopted, amending Schedule V, VI, IX, X, XI, XV and XVI of By-law Number (2002)-17017 – the Traffic By-law.

PASSED this TWENTY-THIRD day of MARCH, 2020.

CAM GUTHRIE - MAYOR

STEPHEN O'BRIEN - CITY CLERK

Schedule A
to By-law Number (2020) – 20479
being new Schedule V
to By-law Number (2002) – 17017
THROUGH HIGHWAYS

Column I
STREET

Column II
LOCATION

Acker Street	Severn Drive to easterly limit
Albert Street	Water Street to Mary Street
Alice Street	Arthur Street to Huron Street
Alice Street	Huron Street to Stevenson Street
Alma Street	Inkerman Street to Willow Road
Alma Street	Waterloo Avenue to Inkerman Street
Ambrous Crescent	MacAlister Boulevard to Kirvan Drive
Ambrous Crescent	Kirvan Drive to MacAlister Boulevard
Amos Drive	Arkell Road to Dawes Avenue
Applewood Crescent	Willow Road to Willow Road
Arkell Road	Gordon Street to east City limit
Arnold Street	Suffolk Street to Paisley Street
Arrow Road	Woodlawn Road to its northerly limit
Arthur Street	Eramosa Road to Elizabeth Street
Arthur Street North	Eramosa Road to Macdonell Street
Arthur Street North	Norwich Street to northerly limit
Arthur Street South	Elizabeth Street to Ontario Street
Aspenwood Place	Stephanie Drive to Southerly limit
Atto Drive	Norma Crescent to Woodlawn Road East
Auden Road	Grange Road to Eastview Road
Bagot Street	Paisley Street to Willow Road
Bailey Avenue	Nicklin Crescent to Kathleen Street
Baker Street	Quebec Street to Woolwich Street
Balmoral Drive	Windsor Street to Waverley Drive
Bard Boulevard	Summerfield Drive to Colonial Drive
Bathgate Drive	Brady Lane to southerly limit
Baxter Drive	Colonial Drive to Goodwin Drive
Beaumont Crescent	Elizabeth Street to Cityview Drive
Beaver Meadow Drive	Farley Drive to Clair Road East
Bellevue Street	Edinburgh Road to Maple Street
Bennett Avenue	Lane Street to Stevenson Street
Bennett Avenue	Metcalf Street to Lane Street
Beverley Street	Morris Street to Stevenson Street
Birchbank Boulevard	Bowen Drive to Ferndale Avenue
Bishop Court	at Bishop Court
Bishop Court	Flanders Road to west leg of intersection of Bishop Court at Bishop Court
Blackbird Court	Ferndale Avenue to southerly limit
Bond Court	Easterly limit to westerly limit
Borden Street	Moore Avenue to University Avenue W
Borland Drive	Doyle Drive to Gibb Crescent

Schedule A
to By-law Number (2020) – 20479
being new Schedule V
to By-law Number (2002) – 17017
THROUGH HIGHWAYS

Column I
STREET

Column II
LOCATION

Bowen Drive	Victoria Road North to Wideman Boulevard
Bradson Drive	Grange Road to Cedarvale Avenue
Brady Lane	Fieldstone Road to the westerly limit
Brant Avenue	Chesterfield Avenue to Eramosa Road
Brant Avenue	Montana Drive to Chesterfield Avenue
Brant Avenue	Victoria Road North to Montana Drive
Brentwood Drive	June Avenue to Nicklin Road
Brentwood Drive	Speedvale Avenue to June Avenue
Bristol Street	Roland Street to Edinburgh Road
Bristol Street	Wellington Street to Edinburgh Road
Burcombe Crossing	Poppy Drive East to Dallan Drive
Burns Drive	Edinburgh Road North to Nicklin Road
Burton Road	Kipling Avenue to Thornhill Drive
Caledonia Street	University Avenue to College Avenue
Callander Drive	Ottawa Crescent to Eramosa Road
Candlewood Drive	Paisley Road to Stephanie Drive
Cardigan Street	Norwich Street to Marcon Street
Carere Crescent	Atto Drive to Atto Drive
Carey Crescent	Ferman Drive to Westhill Road
Carrington Drive	Edinburgh Road South to Ryder Avenue
Cassino Avenue	Stevenson Street to Hadati Road
Castlebury Drive	Deerpath Drive to Stephanie Drive
Cedar Street	Edinburgh Road to Maple Street
Cedarvale Avenue	Cityview Drive to Bradson Drive (north leg)
Celia Crescent	Elson Drive to Pacific Place
Cheltonwood Drive	Glenburnie Drive to Glenburnie Drive
Chesterton Lane	Auden Road to Starwood Drive
Chillico Drive	Westerly limit to Elmira Road
Cityview Drive	Lee Street to CNR right-of-way
Cityview Drive	York Road to CNR right-of-way
Clair Road	Laird Road to Victoria Road South
Clair Road West	Laird Road to Hanlon Parkway
Clairfields Drive	Gibbs Crescent to Beaver Meadow Drive
Clairfields Drive W	Clair Road to Hayward Crescent (south leg)
Clairfields Drive W	Hayward Crescent (south leg) to Gibbs Crescent
Clinton Street	Paisley Street to Elora Street
Clive Avenue	Speedvale Avenue to Waverley Drive
Clythe Creek Drive	Grange Road to Law Drive
Colborn Street	Stone Road to Monticello Crescent
Cole Road	Ironwood Road to easterly limit

Schedule A
to By-law Number (2020) – 20479
being new Schedule V
to By-law Number (2002) – 17017
THROUGH HIGHWAYS

Column I
STREET

Column II
LOCATION

Cole Road	Ironwood Road to Steffler Drive
Cole Road	Scottsdale Drive to Ironwood Road
College Avenue	Stone Road to Victoria Road South
Colonial Drive	Arkell Road to Frederick Drive
Columbus Crescent	Rickson Avenue to Kron Drive
Country Club Drive	Woodlawn Road to Inverness Drive
Coventry Drive	Flanders Road to south leg of Southbound Drive/Eastbound intersection of Bishop Court
Cox Court	Kortright Road to southerly limit
Creekside Drive	Watson Parkway North to Fleming Road
Curtis Drive	Silvercreek Parkway North to Imperial Road North
Curzon Crescent	Westra Drive to Tovell Drive
Dallan Drive	Clair Road East to Poppy Drive East
Darby Road	Rochelle Drive to Stephanie Drive
Davis Street	Shackleton Drive to Eastview Road
Davis Street	Eastview Road to Acker Street
Dawes Avenue	West limit to east limit
Dawn Avenue	Clairfields Drive W to northern limit
Dawson Road	Woodlawn Road to Willow Road
Dean Avenue	Gordon Street to Talbot Street
Dean Avenue	Talbot Street to Edinburgh Road
Deerpath Drive	Imperial Road to Stephanie Drive
Deerpath Drive	Stephanie Drive to Stephanie Drive
Delaware Avenue	Brant Avenue to Speedvale Avenue
Delhi Street	Eramosa Road to Riverview Drive
Derry Street	Arthur Street to Queen Street
Deshane Street	Norma Crescent to Mullin Drive
Devere Drive	Flanders Road to College Avenue
Dimson Avenue	Hands Drive to Kortright Road
Division Street	Exhibition Street to Westmount Road
Division Street	Woolwich Street to Exhibition Street
Dominion Drive	Goodwin Drive to northerly limit
Dormie Lane	Gordon Street to easterly limit
Doughty Court	MacAlister Boulevard to southerly limit
Downey Road	Woodland Glen Drive to southerly limit
Doyle Drive	Clairfields Drive W to Gosling Gardens
Drone Crescent	Westra Drive to Westra Drive
Dublin Street	Suffolk Street to London Road
Dublin Street North	Kent Street to Suffolk Street West
Dublin Street	Wellington Street to Waterloo Avenue

Schedule A
to By-law Number (2020) – 20479
being new Schedule V
to By-law Number (2002) – 17017
THROUGH HIGHWAYS

Column I
STREET

Column II
LOCATION

Duck Lane	Hall Avenue to Dominion Drive
Dudley Drive	MacAlister Boulevard to Kirvan Drive
Dufferin Street	London Road to Mac Avenue
Dumbarton Street	Knightswood Boulevard to Waverley Drive
Eastview Road	Victoria Road North to Watson Parkway North
Edinburgh Road	Woodlawn Road to Gordon Street
Edwards Street	Washburn Drive to easterly limit
Elginfield Road	Cheltonwood Drive to Hyland Road
Elizabeth Street	Arthur Street to York Road
Elmira Road	Fife Road to CNR right-of-way
Elmira Road	North city limits to CNR right-of-way
Elora Street	Harrison Avenue to Yorkshire Street N
Elson Drive	Municipal Street to Pacific Place
Emma Street	Delhi Street to Metcalfe Street
Emma Street	Delhi Street to westerly limit
Emma Street	Metcalfe Street to Stevenson Street
Emma Street	Stevenson Street to Renfield Street
Empire Street	Stevenson Street to Garibaldi Street
Eramosa Road	Woolwich Street to northerly limit
Esker Run	Grange Road to Hill Trail
Essex Street	Dublin Street to Glasgow Street
Essex Street	Glasgow Street to Bristol Street
Exhibition Street	Division Street to Powell Street
Exhibition Street	Mont Street to London Road
Exhibition Street	Powell Street to Mont Street
Exhibition Street	Robertson Drive to Division Street
Exhibition Street	Speedvale Avenue to Robertson Drive
Fairmeadow Drive	West Acres Drive to Gateway Drive
Farley Drive	Clair Road E to easterly limit
Fergus Street	Waterloo Avenue to Preston Street
Ferguson Street	Morris Street to Stevenson Street
Ferman Drive	Imperial Road to Willow Road
Fieldstone Road	Kortright Road to the Robin Road
Fife Road	Wellington Street to Whitelaw Road
Flaherty Drive	Elmira Road to Willow Road
Flanders Road	Hanlon Road to College Avenue
Fleming Road	Watson Parkway North. to Starwood Drive
Forbes Avenue	Mary Street to Gordon Street
Forest Hill Drive	James Street West to Forest Street
Forest Street	Edinburgh Road to Mary Street

Schedule A
to By-law Number (2020) – 20479
being new Schedule V
to By-law Number (2002) – 17017
THROUGH HIGHWAYS

Column I
STREET

Column II
LOCATION

Former Puslinch Township Con. 15	Gordon Street to Hanlon Expressway
Former Puslinch Township Con. 15	Victoria Road South to Gordon Street
Former Puslinch Township Con. 20	Hanlon Expressway to South City limits
Former Puslinch Township Con. 5	Downey Road to Hanlon Expressway
Former Puslinch Township Con. 4A	Former Puslinch Township Concession 20 to Downey Road
Forster Drive	Kortright Road E to Hands Drive (north intersection)
Foster Avenue	Edinburgh Road to Yorkshire Street
Fountain Street	Wyndham Street to Gordon Street
Fountain Street	Wyndham Street to Neeve Street
Foxwood Crescent	Niska Road to Tanager Drive
Frasson Drive	Fleming Road to Starwood Drive
Frederick Drive	Baxter Drive to Victoria Road South
Freeman Avenue	Kathleen Street to Bailey Avenue
Freshfield Street	Fountain Street to C.N.R. right-of-way
Freshmeadow Way	Stephanie Drive to Elmira Road
Fuller Drive	Watson Parkway North to Clythe Creek Drive
Gateway Drive	Fife Road to West Acres Drive
Gibbs Crescent	Clairfields Dr. to Doyle Drive
Glasgow Street	Bristol Street to Waterloo Avenue
Glasgow Street	Paisley Street to Suffolk Street
Glasgow Street	Suffolk Street to London Road
Glasgow Street	Waterloo Avenue to Paisley Street
Glenburnie Drive	Eastview Road to Elginfield Drive
Goodwin Drive	Farley Drive to Frederick Drive
Gordon Street	Waterloo Avenue to southern City limit
Gosling Gardens	Clair Road West to Gordon Street
Gosling Gardens	Clairfields Drive W to Clair Road W
Grange Road	Starwood Drive to Watson Parkway North
Grange Road	Victoria Road North to Starwood Drive
Grange Road	Watson Parkway North to easterly limit
Grange Street	Jane Street to Victoria Road North
Grange Street	Metcalfe Street to Jane Street
Grange Street	Regent Street to Metcalfe Street
Greenwich Drive	Burton Road to Thornhill Drive
Grey Oak Drive	Colonial Drive to Miller Street
Grove Street	Regent Street to Stevenson Street

Schedule A
to By-law Number (2020) – 20479
being new Schedule V
to By-law Number (2002) – 17017
THROUGH HIGHWAYS

Column I
STREET

Column II
LOCATION

Guelph Street	Paisley Road to Willow Road
Hadati Road	Victoria Road North to Auden Road
Hagan Avenue	Bradson Drive to Grange Road
Hawkins Drive	Clair Road East to southerly limit
Hawthorne Place	Renfield Street to Walnut Drive
Hall Avenue	Goodwin Drive to Dominion Drive
Hands Drive	Gordon Street to Forster Drive (south intersection)
Hanlon Road	Clair Road to southerly City limit
Hanlon Road	College Avenue to southerly limit north of Stone Road
Harrison Avenue	Robinson Avenue to Paisley Street
Harvard Road	McElderry Road to Youngman Drive
Harvard Road	Rickson Avenue to Gordon Street
Harvard Road	Youngman Drive to Rickson Avenue
Hazelwood Drive	Downey Road to Quail Creek Drive
Hearn Avenue	Inkerman Street to Waterloo Avenue
Hebert Street	Summit Ridge Drive to Edwards Street
Hill Trail	Grange Road to Esker Run
Hilldale Crescent	Ironwood Road to Sagewood Place
Hilltop Road	Country Club Drive to Wilton Road (east leg)
Hodgson Drive	Goodwin Drive to Samuel Drive
Huron Street	Alice Street to Ontario Street
Huron Street	Elizabeth Street to Alice Street
Hyland Road	Eramosa Road to easterly limit
Imperial Road	Wellington Street to Curtis Drive
Inkerman Street	Edinburgh Road to C.N.R. right-of-way
Inverness Drive	Balmoral Drive to Simmonds Drive
Ironwood Road	Kortright Road to Kortright Road
Ironwood Road	Kortright Road to Scottsdale Drive
Ironwood Road	Scottsdale Drive to Edinburgh Road
Jackson Street	Grange Street to Palmer Street
James Street	Gordon Street to Forest Hill Drive
Jean Anderson Crescent	Clairfields Dr to Clairfields Dr.
Jenson Boulevard	Pine Ridge Dr. to Summerfield Drive
John Brabson Crescent	MacAlister Boulevard to MacAlister Boulevard
Karen Avenue	Oak Street to Yewholme Drive
Kathleen Street	Division Street to Highview Place
Kathleen Street	Freeman Avenue to Bailey Avenue
Kathleen Street	Highview Place to Freeman Avenue
Kathleen Street	London Road to Tipperary Place
Kathleen Street	Tipperary Place to Division Street

Schedule A
to By-law Number (2020) – 20479
being new Schedule V
to By-law Number (2002) – 17017
THROUGH HIGHWAYS

Column I
STREET

Column II
LOCATION

Kay Crescent	Dallan Drive to Poppy Drive East
Kent Street	Northumberland Street to Glasgow Street North
Kent Street	Easterly limits to Glasgow Street South
Kimberley Drive	Traymore Drive to Westmount Road
King Street	Eramosa Road to Derry Street
King Street	Eramosa Road to Arthur Street
Kipling Avenue	Imperial Road to Thornhill Drive
Kirkland Street	Suffolk Street W to London Road
Kirvan Drive	McCann Street to McCann Street
Kirvan Drive	McCann Street to Ambrous Crescent
Kirvan Drive	Ambrous Crescent to Ambrous Crescent
Knightswood Boulevard	Speedvale Avenue to Waverley Drive
Knightswood Boulevard	Speedvale Avenue to Renfield Street
Koch Drive	Walman Drive to Edinburgh Road
Kortright Road	Woodland Glen Drive to easterly limit
Kron Drive	Rickson Avenue to Yewholme Drive
Laird Road	Downey Road to Clair Road
Lane Street	Palmer Street to Stevenson Street
Laughland Lane	Goodwin Drive to Goodwin Drive
Law Drive	O'Connor Lane to Fleming Road
Law Drive	Fleming Road to Skinner Drive
Lawrence Avenue	York Road to Florence Lane
Leacock Avenue	Hadati Road to Auden Road
Leader Lane	Simmonds Drive to Norma Crescent
Lee Street	Cityview Drive to Silurian Drive
Lemon Street	Queen Street to Stuart Street
Lemon Street	Stuart Street to Metcalfe Street
Lemon Street	Metcalfe Street to Franklin Avenue
Lemon Street	Franklin Avenue to Winston Crescent
Lewis Road	Speedvale Avenue to northerly limit
Linden Place	Renfield Street to westerly limit
Lobsinger Lane	Dallan Drive to Burcombe Crossing
Lois Lane	Deerpath Drive to Melrose Place
London Road	Edinburgh Road to Cardigan Street
Lovett Lane	Carrington Drive to Ryder Avenue
Lynch Circle (north)	Goodwin Drive (west leg) to Goodwin Drive (east leg)
Lynch Circle (south)	Goodwin Drive (west leg) to Goodwin Drive (east leg)
Lynwood Avenue	College Avenue W to Edinburgh Road
Macdonell Street	Norfolk Street to Arthur Street
Mahoney Court	MacAlister Boulevard to southerly limit

Schedule A
to By-law Number (2020) – 20479
being new Schedule V
to By-law Number (2002) – 17017
THROUGH HIGHWAYS

Column I
STREET

Column II
LOCATION

Malcolm Road	Governors Road to Elmira Road
Manitoba Street	Ontario Street to Huron Street
Maple Street	Forest Street to Water Street
Margaret Street	Richardson Street to northerly limit
Marksam Road	Willow Road to Speedvale Avenue
Marlborough Road	Speedvale Avenue to Emma Street
Mary Street	Easterly intersection with Harcourt Drive to James Street
Mary Street	James Street to Water Street
Matthew Street	Marksam Road to Sanderson Drive
MacAlister Boulevard	Victoria Road to Ambrous Crescent
McArthur Drive	Goodwin Drive to McArthur Crescent (south leg)
McCann Street	Zaduk Place to MacAlister Boulevard
McElderry Road	Rickson Avenue for entire length
McGee Street	Bristol Street to Waterloo Avenue
McIntyre Court	Dallan Drive to easterly limit
McLachlan Place	Flaherty Drive to McLachlan Place
McNulty Lane	Summerfield Drive (west leg) to Summerfield Drive (east leg)
McTague Street	Exhibition Street to Woolwich Street
Melrose Place	Deerpath Drive to Deerpath Drive
Memorial Crescent	Paisley Road to Goldie Avenue
Merganser Drive	Ptarmigan Drive to Pheasant Run
Metcalf Street	Grange Street to Palmer Street
Metcalf Street	Grove Street to Grange Street
Metcalf Street	Palmer Street to Lemon Street
Metcalf Street	Lemon Street to Emma Street
Metcalf Street	Emma Street to Speedvale Avenue
Metcalf Street	Speedvale Avenue to Waverley Drive
Meyer Drive	Ottawa Crescent to Eramosa Road
Michener Road	Woodlawn Road to Massey Road
Miller Street	Summerfield Drive to Grey Oak Drive
Milson Crescent	Teal Drive to Teal Drive
Montana Road	Brant Avenue to Woodlawn Road
Monticello Crescent	Gordon Street to Stone Road East
Moore Avenue	Caledonia Street to Hales Crescent
Morris Street	Alice Street to Elizabeth Street
Morris Street	York Road to Alice Street
Moss Place	Rickson Avenue to Rodgers Road
Mountford Drive	Carter Drive to Eastview Road
Mountford Drive	Eastview Road to Hadati Road
Mullin Drive	Victoria Road North to Atto Drive

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THROUGH HIGHWAYS

<u>Column I</u> <u>STREET</u>	<u>Column II</u> <u>LOCATION</u>
Municipal Street	Edinburgh Road to the limit
Mussen Street	Victoria Road North to Mullin Drive
Neeve Street	Fountain Street to Ontario Street
Neeve Street	Ontario Street to York Road
Nicklin Crescent	Nicklin Road to Brentwood Drive
Nicklin Road	Burns Drive to Nicklin Crescent
Nicklin Road	Woodlawn Road to Burns Drive
Niska Road	Downey Road to Ptarmigan Drive
Niska Road	Ptarmigan Drive to westerly limit
Norfolk Street	Macdonell Street to Woolwich Street
Norma Crescent	Victoria Road North to Bowen Drive
North Street	Suffolk Street W to London Road
Norton Drive	Grange Road to Severn Drive
Norwich Street	Woolwich Street to King Street
O'Connor Lane	Grange Road to Fleming Road
Oak Street	Rickson Avenue to Gordon Street
Omar Street	Alma Street North to Raglan Street (east intersection)
Ontario Street	Arthur Street/Manitoba Street to York Road
Ontario Street	Neeve Street to Arthur Street/Manitoba Street
Ottawa Crescent	Northerly intersection with Vancouver Drive to William Street
Ottawa Crescent	Southerly intersection with Vancouver Drive to William Street
Pacific Place	Municipal Street to Denver Street
Paddison Court	Zaduk Place to westerly limit
Paisley Road	Edinburgh Road to westerly limits
Paisley Street	Norfolk Street to Edinburgh Road
Palmer Street	Jane Street to Stevenson Street
Palmer Street	Metcalf Street to Jane Street
Palmer Street	Metcalf Street to Stuart Street
Paulstown Crescent	Clairfields Drive W (west leg) to Clairfields Drive W (east leg)
Pettitt Drive	Starwood Drive to Frasson Drive
Pettitt Drive	Frasson Drive to Law Drive
Periwinkle Way	Pine Ridge Drive to Pine Ridge Drive
Pheasant Run Drive	Ptarmigan Drive to Downey Road
Pine Ridge Drive	Farley Drive to Farley Drive
Pinetree Drive	Imperial Road to Stephanie Drive
Poppy Drive East	Gordon Street to Dallen Drive
Poppy Drive West	Gosling Gardens to Gordon Street
Powell Street	Woolwich Street to Exhibition Street
Price Street	Atto Drive to Carere Crescent
Primrose Lane	Westwood Road to Imperial Road

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<u>Column I</u> <u>STREET</u>	<u>Column II</u> <u>LOCATION</u>
Ptarmigan Drive	Downey Road to Niska Road
Queen Street	Eramosa Road to Arthur Street
Queensdale Crescent	Gateway Drive to Gateway Drive
Raglan Street	Alma Street North to Omar Street
Raglan Street	Edinburgh Road North to Raglan Street (east leg)
Ray Crescent	Dominion Drive to Goodwin Drive
Raymond Street	Bristol Street to easterly limit
Renfield Street	Speedvale Avenue to Walnut Drive
Revell Drive	Vaughan Street to Zess Court
Revell Drive/Zess Court	Vaughan Street (north intersection) to westerly limit
Rhonda Road	Willow Road to Westwood Road
Rickson Avenue	Harvard Road to Edinburgh Road
Riverview Drive	Waverley Drive to Speedvale Avenue
Robinson Avenue	Edinburgh Road to Yorkshire Street
Rochelle Drive	Elmira Road to Stephanie Drive
Rodgers Road	Edinburgh Road to Rickson Avenue
Rodgers Road	Rickson Avenue to Lovett Lane
Rodney Boulevard	College Avenue E to Dean Avenue
Rooke Court	Westra Drive to northerly limit
Rose Street	Arthur Street to Upper Regent Street
Royal Road	Woodlawn Road to Speedvale Avenue
Ryder Avenue	Lovett Lane (north leg) to Lovett Lane (south leg)
Sagewood Place	Ironwood Road to easterly limit
Saigon Street	Westra Drive to Curzon Crescent
Sanderson Drive	Marksam Road to Marksam Road
Samuel Drive	Clair Road East to Goodwin Drive
Schiedel Drive	Norma Crescent to Simmonds Drive
Schroder Crescent	Grange Road to Grange Road
Scottsdale Drive	College Avenue to Kortright Road
Serena Lane	Victoria Road South to Westerly limit
Severn Drive	Grange Road to Eastview Road
Severn Drive	Grange Road to southerly limit
Severn Drive	Eastview Road to Couling Crescent
Shackleton Drive	Watson Parkway North to easterly limit
Sherwood Drive	Renfield Street to Speedvale Avenue
Silurian Drive	Grange Road to Starwood Drive
Silvercreek Pkwy North	C.N.R. right-of-way to north city limit
Silvercreek Pkwy South	Waterloo Avenue to CNR right-of-way
Simmonds Drive	Inverness Drive to Victoria Road North
Simmonds Drive	Victoria Road North to Bowen Drive

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THROUGH HIGHWAYS

Column I
STREET

Column II
LOCATION

Skinner Drive	Starwood Drive to Law Drive
Skinner Drive	Law Drive to Swan Drive (public laneway)
Sleeman Avenue	Paisley Road to northerly limit
Southgate Drive	Laird Road to Clair Road
Southgate Drive	Laird Road to Laird Road
Speedvale Avenue	East City limit to West City limit
Springdale Blvd.	Gateway Drive to Fairmeadow Drive
St. Arnaud Street	Waterloo Avenue to Inkerman Street
Starwood Drive	Eastview Road to Grange Road
Starwood Drive	Grange Road to Watson Parkway North
St. Catherine Street	Eramosa Road to Lemon Street
Steffler Drive	Ironwood Road to Scottsdale Drive
Stephanie Drive	Elmira Road to Paisley Road
Stephen Drive	Westwood Road to Marksam Road
Stevenson Street	York Road to Waverley Drive
Suffolk Street	Dublin Street to Woolwich Street
Suffolk Street	Edinburgh Road to Yorkshire Street
Suffolk Street	Yorkshire Street to Dublin Street
Summerfield Drive	Victoria Road South to Arkell Road
Summit Ridge Drive	Starwood Drive to Eastview Road
Surrey Street East	Gordon Street to Wyndham Street
Surrey Street East	Wyndham Street to Neeve Street
Surrey Street East	Neeve Street to Wellington Street East
Swan Drive (public laneway)	Law Drive to Law Drive
Sweeney Drive	Zaduk Place to Cox Court
Sydenham Street	Edinburgh Road to Harrison Avenue
Tanager Drive	Niska Road to southerly limit
Terry Blvd (east leg) at Terry Blvd	Terry Blvd (east leg)
Thornhill Drive	Imperial Road to Flaherty Drive
Tolton Drive	Goodwin Drive to Clair Road East
Toronto Street	Neeve Street to Short Street
Toronto Street	Short Street to York Road
Toth Drive	Frasson Drive to Skinner Drive
Tovell Drive	Elmira Road N to northern limit
University Avenue E	Gordon Street to easterly limit
University Avenue W	College Avenue E to Gordon Street
Upton Crescent	Hadati Road to Hadati Road
Vanier Drive	College Avenue W to northerly limit

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Column I
STREET

Column II
LOCATION

Vaughan Street	Gordon Street to Zess Court
VaughanStreet	Gordon Street to Revell Drive/Zess Court
Victoria Road	North City limit to South City limit
Walman Drive	Ironwood Road to Koch Drive
Washburn Drive	Summit Ridge Drive to Edwards Street (east intersection)
Water Street	Maple Street to McCrae Boulevard
Water Street	McCrae Boulevard to Gordon Street
Water Street	Westerly limit to Maple Street
Waterloo Avenue (eastbound)	Silvercreek Pkwy to Gordon Street
Waterloo Avenue (westbound)	Gordon Street to Wellington Street
Watson Parkway	North City limit to South City limit
Watson Road	Watson Parkway North to Watson Parkway South
Watt Street	Eastview Road to Auden Road
Waverley Drive	Riverview Drive to Speedvale Avenue
Wellington Street	Macdonell Street to west City limit
West Acres Drive	Elmira Road to Imperial Road
West Acres Drive	Whitelaw Road to Elmira Road
Western Avenue	Paisley Road to Guelph Street
Westhill Road	Ferman Drive to Ferman Drive
Westmount Road	London Road to Speedvale Avenue
Westra Drive	Tovell Drive to westerly limit
Westwood Road	Silvercreek Parkway N to Bond Court
Whitelaw Road	Paisley Road to Fife Road
Wideman Boulevard	Victoria Road North to Bowen Crescent
Wideman Boulevard	Webster Street to Victoria Road North
Wilkie Crescent	Goodwin Drive to Goodwin Drive
William Street	Cassino Avenue to Grange Street
William Street	Ottawa Crescent to Cassino Avenue
Willow Road	Elmira Road to Edinburgh Road
Willow Road	Elmira Road to Tovell Drive
Wilson Street	Macdonell Street to Gordon Street
Wilton Road	Hilltop Road to Inverness Drive
Wimbledon Road	Westwood Road to Westwood Road
Wimbledon Road	Westwood Road to Willow Road
Windsor Street	Inverness Street to Waverley Drive
Wood Street	Ontario Street to Manitoba Street
Woodborough Road	Ironwood Road to easterly limit
Woodland Glen Drive	Stone Road to Downey Road

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Column I
STREET

Column II
LOCATION

Woodlawn Road	Westerly limit to Muskoka Drive
Woodside Road	Dean Avenue to southerly limit
Woolwich Street	Macdonell Street to northerly limit
Wyndham Street	Woolwich Street to York Road
Yewholme Drive	Oak Street to Kortright Road West
York Road	Wyndham Street to easterly limit
Yorkshire Street	Bristol Street to Waterloo Avenue
Yorkshire Street	London Road to Suffolk Street
Yorkshire Street	Robinson Avenue to Waterloo Avenue
Yorkshire Street	Suffolk Street to Robinson Avenue
Yorkshire Street	Waterloo Avenue to Suffolk Street
Youngman Drive	Edinburgh Road to Harvard Road
Youngman Drive	Harvard Road to Harvard Road
Zaduk Place	McAlister Boulevard to westerly limit

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TRAFFIC CONTROL SIGNALS

Column I
LOCATION

Alma Street North at Paisley Road
Arkell Road at Gordon Street
Arthur Street at MacDonell Street
Baker Street at Quebec Street
Carden Street at Wyndham Street North
Cassino Avenue at Victoria Road North
Clair Road at Gordon Street
Clair Road East at Farley Drive
Clair Road East at Beaver Meadow Drive/Dallan Drive
Clair Road West at Clairfields Drive West and Poppy Drive
Clair Road West at Gosling Gardens
Clairfields Drive at Gordon Street
College Avenue at Gordon Street
College Avenue East at a distance of 4m east of MacDonald Street
College Avenue East at East Ring Road
College Avenue East at Victoria Road South
College Avenue West at a distance 55m west of Vanier Drive
College Avenue West at Edinburgh Road South
College Avenue West at Janefield Avenue
College Avenue West at Scottsdale Drive
Dawson Road at Shelldale Crescent
Dawson Road at Speedvale Avenue West
Dawson Road at Willow Road
Dawson Road at Woodlawn Road West
Delhi Street at Eramosa Road
Delhi Street at Speedvale Avenue East
Downey Road at Ptarmigan Drive
Downey Road at Laird Road
Dublin Street at Paisley Street
Dublin Street at Wellington Street West
Eastview Road at Starwood Drive
Eastview Road at Victoria Road North
Eastview Road at 335m west of Watson Parkway North
Edinburgh Rd South 32m north of Manor Park Crescent (Speed River)
Edinburgh Rd South at Forest Street
Edinburgh Rd South at Ironwood Road and Youngman Drive
Edinburgh Road North at London Road West
Edinburgh Road North at Paisley Street and Paisley Road
Edinburgh Road North at Speedvale Avenue West
Edinburgh Road North at Willow Road
Edinburgh Road North at Woodlawn Road West
Edinburgh Road South at Carrington Place and Rickson Avenue

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TRAFFIC CONTROL SIGNALS

Column I
LOCATION

Edinburgh Road South at Gordon Street
Edinburgh Road South at Kortright Road West
Edinburgh Road South at Municipal Street
Edinburgh Road South at Rodgers Road
Edinburgh Road South at Stone Road Market Place and Stone Road Mall
Edinburgh Road South at Stone Road West
Edinburgh Road South at Water Street
Edinburgh Road South at Waterloo Avenue
Edinburgh Road South at Wellington Street West
Elizabeth Street at Huron Street
Elizabeth Street at Stevenson Street South
Elizabeth Street at Victoria Road South
Elmira Road North at Independence Place
Elmira Road North at Massey Road
Elmira Road North at Speedvale Avenue West
Elmira Road North at Willow Road
Elmira Road North at Woodlawn Road West
Elmira Road South at Access to 21 Imperial Road South/28 Elmira Road South
Elmira Road South at Paisley Road
Elmira Road South at West Acres Drive
Eramosa Road at 65m south of Meyer Drive
Eramosa Road at Metcalfe Street
Eramosa Road at Meyer Drive
Eramosa Road at Mitchell Street
Eramosa Road at Speedvale Avenue East
Eramosa Road at Stevenson Street North
Eramosa Road at Victoria Road North
Eramosa Road at Woolwich Street and Wyndham Street North
Fife Road at Gateway Drive
Fife Road at Wellington Street West
Fire Station #4 at West End Community Centre access road
Fountain Street at Gordon Street
Gordon Street at 88-192 Clair Road East
Gordon Street and Norfolk Street at Waterloo Avenue
Gordon Street at Poppy Drive
Gordon Street at a distance of 255m south of Clairfields Drive
Gordon Street at a distance of 437m south of the centre line of College Avenue
Gordon Street at 140m north of Water Street
Gordon Street at Gosling Gardens
Gordon Street at Harvard Road
Gordon Street at Heritage Drive
Gordon Street at Kortright Road

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TRAFFIC CONTROL SIGNALS

Column I
LOCATION

Gordon Street at Lowes Road
Gordon Street at South Ring Road
Gordon Street at Stone Road
Gordon Street at Water Street
Gordon Street at Wellington Street
Gordon Street at Gosling Gardens
Grange Road and Joseph Street at Victoria Road North
Grange Road at Buckthorn Crescent (north intersection)
Grange Road and Starwood Drive
Grange Street at Stevenson Street North
Imperial Road North at Speedvale Avenue West
Imperial Road North at Westwood Drive
Imperial Road North at Willow Road
Imperial Road North at Woodlawn Road West
Imperial Road South at Paisley Road
Imperial Road South at St. Francis of Assisi School
Imperial Road South at Stephanie Drive
Imperial Road South at Wellington Street
Imperial Road South at West End Recreation Centre Access Road
Inverness Drive at Woodlawn Road East
Ironwood Road at Kortright Road West
Kathleen Street at Speedvale Avenue West
Kortright Road West 286m west of Edinburgh Road South (Preservation Park)
Kortright Road West at Rickson Road
Kortright Road West at Scottsdale Drive and Ironwood Road
Laird Road at Southgate Drive
Laird Road at Hanlon Creek Boulevard/Cooper Drive
London Road at Exhibition Street
London Road at Woolwich Street
Macdonell Street at Carden Street
Macdonell Street at Norfolk Street
Macdonell Street at Wellington Street East and Woolwich Street
Macdonell Street at Wyndham Street North
Marilyn Drive at Woolwich Street
MacAlister Boulevard at Victoria Road South
Neeve Street at Wellington Street East
Nicklin Road at Woodlawn Road West
Norfolk Street at Norwich Street and Woolwich Street
Norfolk Street at Quebec Street and Paisley Street
Norfolk Street at Suffolk Street
Paisley Road at 191m east of Elmira Road South (West Hills Development)
Paisley Road at Silvercreek Parkway North

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TRAFFIC CONTROL SIGNALS

Column I
LOCATION

Paisley Road at Stephanie Drive
Paisley Street at Yorkshire Street North
Powell Street at Woolwich Street
Ptarmigan Drive at Merganser Drive
Quebec Street at Wyndham Street North
Royal Road at Speedvale Avenue West
Scottsdale Drive at Ironwood Road
Scottsdale Drive at point 88m north of Wilsonview Avenue
Scottsdale Drive at Stone Road West
Scottsdale Drive 150m north of Janefield Avenue
Silvercreek Parkway North at Greengate Road
Silvercreek Parkway North at Paisley Road
Silvercreek Parkway North at Speedvale Avenue West
Silvercreek Parkway North at Willow Road
Silvercreek Parkway North at Woodlawn Road West
Speedvale Avenue at Woolwich Street
Speedvale Avenue East at Fire Station #2
Speedvale Avenue East at Renfield Street
Speedvale Avenue East at Stevenson Street North
Speedvale Avenue East at Victoria Road North
Speedvale Avenue West at Westmount Road
St. John and St. James Catholic Schools at Victoria Road North
Stevenson Street North at Balsam Drive
Stevenson Street North at Cassino Avenue
Stevenson Street North at Emma Street
Stevenson Street South at York Road
Stone Road East at South Ring Road and Village Green Drive
Stone Road East at Victoria Road South
Stone Road East at Evergreen Drive
Stone Road West at access to 127, 151, 175 Stone Road West
Stone Road West at Research Lane and West Ring Road
Stone Road West at 1 Stone Road West
Stone Road West at Stone Gate Plaza and Stone Road Mall
Victoria Road North at Delta Street
Victoria Road North at Greenview Street
Victoria Road North at St. Patrick Catholic School
Victoria Road North at Woodlawn Road East
Victoria Road South at York Road
Victoria Road South and Clair Road East
Victoria Road South at Frederick Drive
Waterloo Avenue and Hanlon Expressway east ramp at Wellington Street West
Waterloo Avenue at Dublin Street North

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TRAFFIC CONTROL SIGNALS

Column I
LOCATION

Waterloo Avenue at Yorkshire Street South
Watson Parkway at Dunlop Drive/Watson Road South
Watson Parkway at York Road
Watson Parkway at Couling Crescent (north intersection)
Watson Parkway at Eastview Road
Watson Parkway North at Grange Road
Watson Parkway North at Fleming Road
Watson Road South at York Road
Wellington Street East at Wyndham Street South
Wellington Street West at Holliday Street
Wellington Street West at 490m west of Edinburgh Road South
Westwood Road at St. Peter Catholic School
Westwood Road at Willow Road
Willow Road at Applewood Crescent (west intersection)
Willow Road at Bonar Place
Willow Road at Guelph Street
Woodlawn Road at Woolwich Street
Woodlawn Road East at 35 m west of Speed River
Woodlawn Road West at 160m east of Nicklin Road (Home Depot)
Woodlawn Road West at 330 m west of Woolwich Street (Wal-Mart)
Woodlawn Road West at access to 455 Woodlawn Road West (Galaxy Cinema)
Woodlawn Road West at Arrow Road
Woolwich Street at a point 50m south of Douglas Street
Woolwich Street at a point 52m north of Clarence Street (Spur Line Trail)
Woolwich Street at a point 5m north of Baker Street
Woolwich Street at Evergreen Centre
Woolwich Street at River Run Centre
Wyndham Street at a distance of 175m north of Quebec Street
Wyndham Street at a distance of 85m north of Quebec Street
York Rd at 65m east of Ontario St (Owens-Corning Canada Inc.)
York Road at Toronto Street
York Road at Elizabeth Street

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ALL-WAY STOP SIGNS

Brant Avenue and Chesterfield Avenue
Brentwood Drive and June Avenue
Clairfields Drive W and Gibbs Crescent
Clairfields Drive W and Hayward Crescent (south leg)
Clairfields Drive W and Paulstown Crescent/Irving Crescent
Dean Avenue and Talbot Street
Emma Street and Metcalfe Street
Exhibition Street and Division Street
Exhibition Street and Powell Street
Farley Drive and Goodwin Drive
Fife Road and Whitelaw Road
Fleming Road and O'Connor Lane
Grange Street and Metcalfe Street
Hanlon Creek Boulevard and Laird Road
Huron Street and Alice Street
Jane Street and Grange Street
Jane Street and Palmer Street
Kathleen Street and Freeman Drive
Kent Street and Dublin Street South
Kent Street and Dublin Street North
Macalister Boulevard and Zaduk Place
Manitoba Street / Arthur Street and Ontario Street
Maple Street and Water Street
McCrae Boulevard and Water Street
Metcalfe Street and Lemon Street
Metcalfe Street and Palmer Street
Montana Drive and Brant Street
Muskoka Drive and Woodlawn Road East
Neeve Street and Ontario Street
Nicklin Road and Burns Drive
Niska Road and Ptarmigan Drive
Rickson Avenue and Harvard Road
Short Street and Toronto Street
Stuart Street and Lemon Street
Stuart Street and Palmer Street
Southgate Drive and Clair Road West
Suffolk Street and Dublin Street
Suffolk Street and Yorkshire Street
Teal Drive and Milson Crescent
Teal Drive and Milson Crescent / Tanner Street
Yorkshire Street and Robinson Avenue

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ALL-WAY STOP SIGNS

Youngman Drive and Harvard Road

Watson Parkway and Stone Road

Watson Parkway North and Speedvale Avenue East

William Street and Cassino Avenue

Schedule D
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PEDESTRIAN CROSSEOVERS

COLUMN I
LOCATION

Arkell Road at Amos Drive and Zecca Drive
Bagot Street at Suffolk Street West
Cityview Drive North at Lee Street
Colonial Drive at 76m north of Baxter Drive
Delhi Street at Emma Street
Ironwood Road 54m east of Reid Court
Farley Drive at 48m south of Porter Drive
Forest Street at Maple Street
Goodwin Drive at 15m east of Pearson Street
Grange Road at Auden Road and Schroder Crescent
Grange Road at Kearney Street
Kortright Road East at Fieldstone Road
Lane Street at Ryan Avenue
London Road West at Kathleen Street and Kirkland Street
Rickson Avenue at Darnell Road
Stephanie Drive at Deerpath Drive (north intersection)
Victoria Road North at Simmonds Drive
Waterloo Avenue 137m west of Beechwood Avenue
Wilson Street at Northumberland Street
Woodlawn Road East at Atto Drive
York Road at Harris Street and Boulton Avenue

Schedule E
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ONE-WAY STREETS

<u>Column I</u> <u>STREET</u>	<u>Column II</u> <u>LOCATION</u>	<u>Column III</u> <u>PERMITTED</u> <u>DIRECTION</u>
8m lane shown on Hayes Ave to Victoria Rd	Registered Plans 340, 351, 353, and 354	Easterly
Baker St	Woolwich St to Chapel Ln	Southerly
Bristol St	Wellington to Surrey	Westerly
Carden St	50m east of Wyndham St to Macdonell St	Easterly
Cardigan St	Woolwich St to Norwich St	Northerly
Charles St	Woolwich St to Dublin St	Easterly
Christopher Crt	cul-de-sac only	Westerly
Douglas St	St. George's Square to Woolwich St	Northerly
Driveway to Bank of Montreal	60m west of Wyndham St	Northerly
Edwin St	Dublin St to Woolwich St	Easterly
Farquhar St	Wyndham St to Freshfield St	Westerly
Florence Lane	Hayes Ave to Lawrence Ave	Easterly
Garth St	Glasgow St to Yorkshire St	Westerly
Kent Street	Northumberland Street to Glasgow Street North	Westerly
Kent Street	Dublin Street South to Glasgow Street South	Westerly
King St	Eramosa Rd to Arthur St N	Southerly
McCrae Blvd	Gow Bridge to Wellington St	Northerly
New St	Queen St to Arthur St	Westerly
Northumberland Street	175m east of Dublin Street North to Kent Street	Southerly
Queen St	Arthur St to Eramosa Rd	Northerly
Samantha Ct	Imperial Rd to Imperial Rd	Northerly
Tipperary St	Lyon Ave to Kathleen St	Easterly
Waverley Dr	Right turn connection with Balmoral Dr.	Northerly
Wilson Street	Northumberland Street to Gordon Street	Southerly
Woolwich St Service Rd	Woolwich St to Meldrum St	Southerly
Yarmouth St	Quebec St to Woolwich St	Northerly

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NO PARKING

<u>Column I</u> <u>STREET</u>	<u>Column II</u> <u>SIDE</u>	<u>Column III</u> <u>LOCATION</u>	<u>Column IV</u> <u>TIME</u>
Abbeywood Crescent	North	148m west of Deerpath Drive to 36m west thereof	Anytime
Aberdeen Street	North	29m west of Arnold Street to Edinburgh Road North	Anytime
Aberdeen Street	South	Edinburgh Road North to Arnold Street	8am-6pm, Mon-Fri
Acker Street	North	Severn Drive to easterly limit	Anytime
Admiral Place	Both	Southgate Drive to westerly limit	Anytime
Albert Street	South	Water Street to Mary Street	Anytime
Alice Street	Both	Arthur Street South to Huron Street	Anytime
Alice Street	North	Johnston Street to Stevenson Street South	Anytime
Alice Street	North	Morris Street to Harris Street	Anytime
Alice Street	South	Harris Street to Johnston Street	Anytime
Alice Street	South	Huron Street to Morris Street	Anytime
Alice Street	South	Johnston Street to Stevenson Street	8am-6pm, Mon-Fri
Alma Street North	East	Raglan Street to 46m north of Paisley Road	Anytime
Alma Street North	East	Suffolk Street West to 23m south thereof	Anytime
Alma Street North	West	46m south of Paisley Road 53m north of Paisley Road	Anytime
Alma Street North	West	Suffolk Street West to 29m south thereof	Anytime
Ambrous Crescent (north leg)	North	MacAlister Boulevard to Kirvan Drive	Anytime
Ambrous Crescent	North, West and South	Kirvan Drive (north leg) to MacAlister Boulevard (west leg)	Anytime
Ambrous Crescent	South	190m west of Kirvan Drive to 45m west thereof	Anytime
Ambrous Crescent	South	MacAlister Boulevard to 190m east thereof	Anytime
Ambrous Crescent (south leg)	North	200m west of Kirvan Drive (south leg) to 45m west thereof	Anytime
Ambrous Crescent (south leg)	North	MacAlister Boulevard to 90m west thereof	Anytime
Amsterdam Crescent (north leg)	South	150m west of Summerfield Drive to 28m west thereof	Anytime
Amsterdam Crescent (south leg)	North	150m west of Summerfield Drive to 28m west thereof	Anytime
Ann Street	North	Woolwich Street to easterly limit	Anytime
Applewood Crescent	East	21m north of Parkwood Road to 34m south thereof	Anytime
Applewood Crescent	East	Elmhurst Crescent to 22m south thereof	Anytime
Applewood Crescent	West	22m south of Elmhurst Crescent to 38m north thereof	Anytime
Applewood Crescent	West	Parkwood Road to 21m north thereof	Anytime
Applewood Crescent (east leg)	East	Willow Road to 31m north thereof	Anytime

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NO PARKING

<u>Column I</u> <u>STREET</u>	<u>Column II</u> <u>SIDE</u>	<u>Column III</u> <u>LOCATION</u>	<u>Column IV</u> <u>TIME</u>
Applewood Crescent (west leg)	West	Willow Road to Greengate Road	Anytime
Ardmay Crescent	West	Eramosa Road to Lemon Street	Anytime
Arkell Road	Both	Victoria Road to Gordon Street	Anytime
Armstrong Avenue	East	York Road to Balsarroch Place	Anytime
Arnold Street	East	Paisley Road to Suffolk Street West	Anytime
Arrow Road	Both	Woodlawn Road to the northerly limit	Anytime
Arthur Street	East	Norwich Street East to Elizabeth Street	Anytime
Arthur Street North	East	40m south of Spring Street to 16m south thereof	Anytime Apr. 15th - Nov. 15th
Arthur Street North	West	Eramosa Road to 40m north thereof	Anytime
Arthur Street North	West	Heffernan Street to 67m south thereof	8 am - 6 pm Mon - Sat
Arthur Street North	West	Heffernan Street to King Street	Anytime
Arthur Street North	West	Norwich Street East to northerly limit	Anytime
Arthur Street South	East	Alice Street to 120m north thereof	Anytime
Arthur Street South	East	Manitoba Street to Oliver Street	Anytime
Arthur Street South	West	38m south of Cross Street to Ontario Street	Anytime
Arthur Street South	West	Macdonell Street to 34m south of Cross Street	Anytime
Atto Drive	West	Woodlawn Road East to Norma Crescent	Anytime
Auden Road	East	Chesterton Lane to 21m south thereof	Anytime
Auden Road	West	77m north of Lindsay Court to a point 72m north thereof	Anytime
Auden Road	West	Hadati to 29m north thereof	Anytime
Audrey Avenue	East	York to southerly limit	Anytime
Audrey Avenue	West	York Road to 22m south thereof	Anytime
Bagot Street	East	Paisley to Willow	Anytime
Bailey Avenue	South	55m east of Beattie Street to 59m east thereof	Anytime
Baker Street	East	Quebec Street to 66m north thereof	Anytime
Baker Street	East	Woolwich Street to 11m south thereof	Anytime
Baker Street	West	Quebec Street to 36m north thereof	Anytime
Baker Street	West	Woolwich Street to 15m south thereof	Anytime
Baker Street	West	Chapel Lane to Quebec	Anytime
Balmoral Drive	Both	36.3m east of Inverness To 65.6m west thereof	Anytime
Balmoral Drive	West	Waverley to 137m north thereof	Anytime
Barber Avenue	East	London to 30m north thereof	Anytime
Barber Avenue	West	London to 37m north thereof	Anytime
Barber Avenue	South	53m east of Westmount Road to 26m east thereof	Anytime
Bard Boulevard	North	55m west of Victoria Road South to 21m west thereof	Anytime

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Barton Street	South	Kathleen Street to Exhibition Street	Anytime
Baxter Drive	East	60m north of Goodwin Drive to 30m north thereof	Anytime
Baxter Drive	West	Goodwin Drive to northerly limit	Anytime
Beaumont Crescent	Both	Elizabeth to York	Anytime
Beaumont Crescent	Both	York to Clearview	Anytime
Beaumont Crescent	South	Elizabeth to Clearview	Anytime
Beaver Meadow Drive	East	Farley Drive to 50m south thereof	Anytime
Beaver Meadow Drive	West	Farley Drive to 12m south of Blair Drive	Anytime
Beechwood Avenue	East	Chadwick Avenue to 15m south thereof	Anytime
Beverley Street	South	Harris to Morris	Anytime
Birmingham Street	East	Waterloo Avenue to Essex Street	Anytime
Bishop Court	North	43m south of Flanders Road to 51m west thereof	Anytime
Bonar Place	East	Willow Road to 180m north thereof	Anytime
Borden Street	West	College to Moore	Anytime
Boult Avenue	West	York to southerly limit	Anytime
Bowen Drive	South	Victoria Road North to Birchbank Boulevard	Anytime
Bowen Drive	West	Norma Crescent to Birchbank Boulevard	Anytime
Brady Lane	East	84m west of Bathgate Drive to 34m south thereof	Anytime
Braid Place	East	University to northerly limit	Anytime
Braid Place	West	University of northerly limit	8 am - 6 pm, Mon.-Fri
Brant Avenue	North	43m west of Muskoka to 54m west thereof	Anytime
Brant Avenue	South	64m west of Muskoka to 43m west thereof	Anytime
Brentwood Drive	Both	Nicklin to 17m west thereof	Anytime
Brentwood Drive	East	19m north of June to 15m south of June	Anytime
Brentwood Drive	West	23m north of June to 17m south of June	Anytime
Brentwood Drive	East	352m north of June Avenue to 62m west of Strathmere Place	Anytime
Bright Lane	West	McNulty Lane to 23m north thereof	Anytime
Brighton Street	North	Stevenson Street west to the driveway of Brighton Street School	Anytime
Brighton Street	South	Stevenson Street to 43m west thereof	Anytime
Bristol Street	North	Wellington to Edinburgh	Anytime
Bristol Street	South	23m east of Holliday to westerly limit	Anytime
Brockville Avenue	East	York to southerly limit	Anytime
Brockville Avenue	West	York to 98m south thereof	Anytime
Brown Street	Both	Colonial Drive to 49m west thereof	Anytime
Buckthorn Crescent	East	108 m west of Grange Road to 33m west thereof (south leg)	Anytime

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Buckthorn Crescent	East	124 m west of Grange Road to 30 m west thereof (north leg)	Anytime
Burcombe Crossing	East	Dallan Drive to Lobsinger Lane	Anytime
Burcombe Crossing	East	Lobsinger Lane to Poppy Drive East	Anytime
Burns Drive	North	120m east of Edinburgh Road North to 32m east thereof	Anytime
Burns Drive	South	Edinburgh Road to 158m east thereof	Anytime
Caledonia Street	Both	College to Dean	Anytime
Calgary Avenue	Both	Ottawa Crescent to 40m south thereof	Anytime
Callander Drive	East	Ottawa Crescent to Eramosa Road	8am-9am, 3pm-4pm, Mon-Fri, Sep 1-Jun 30
Cambridge Street	North	32m west of Yorkshire Street to Clinton Street	Dec 1 st to Mar 31 st
Cambridge Street	North	Yorkshire Street to 32m west thereof	Anytime
Cambridge Street	North	Yorkshire to 18.4m east thereof	Anytime
Cambridge Street	South	Clinton to Glasgow	Anytime
Cambridge Street	South	Dublin to Glasgow	Anytime
Camm Crescent	South	99m north of Periwinkle Way (west leg) to 23m north thereof	Anytime
Camm Crescent	South	89m north of Periwinkle Way (east leg) to 27m north thereof	Anytime
Campbell Road	Both	Silvercreek Pkwy to Dawson Road	Anytime
Carden Street	South	Wilson Street to Wyndham Street North	Anytime
Cardigan Street	East	107m north of Woolwich to 30m north thereof	Anytime
Cardigan Street	East	191m north of Norwich to Marcon	Anytime
Cardigan Street	East	London to 122m north thereof	Anytime
Cardigan Street	East	Norwich Street to 15m north thereof	Anytime
Cardigan Street	West	Marcon to 105m south thereof	Anytime
Cardigan Street	West	Norwich to 132m south of Marcon	Anytime
Carere Crescent	East	125 m east of Atto Drive to 130 m north thereof	Anytime
Carere Crescent	South/East	Atto Drive to 130 m north thereof	Anytime
Carere Crescent (south)	North	95m east of Atto Drive to 125m east thereof	Anytime
Carrington Drive	East	Darnell Road to Ryder Avenue	Anytime
Carrington Place	East	Edinburgh to 30m south thereof	Anytime
Carrington Place	West	87m south of Edinburgh Road South to 31m south thereof	Anytime
Cassino Avenue	South	William Street to 27m west of Anthony Avenue	Anytime
Cavell Avenue	North	Central to Exhibition	Anytime
Cedar Street	East	44m south of Water Street to 40m south thereof	Anytime
Chadwick Avenue	South	Beechwood Avenue to 16m east thereof	Anytime

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Chapel Lane	Both	South-east corner, north to Post Office	Anytime
Chapel Lane	North	South-east corner, west to Baker Street	Anytime
Chapel Lane	South	58m east of Baker Street to 34m east thereof	Anytime
Charles Street	South	Woolwich to Dublin	Anytime
Cheltonwood Avenue	North	97m east of Elginfield Drive to 25m east thereof	Anytime
Chester Street	North	Exhibition Street to Kathleen Street	Anytime
Chillico Drive	North	Elmira Road to westerly limit	Anytime
Chillico Drive	South	49m west of Hillsdon Place to 14m west thereof	Anytime
Church Lane	Both	Norfolk to easterly limit	Anytime
Cityview Drive	Both	York Rd to White St	Anytime
Clair Road W	Both	Hanlon Parkway to Laird Road	Anytime
Clair Road W	Both	Laird Road to Gordon Street	Anytime
Clairfields Drive W	East	Clair Road West to Doyle Drive	Anytime
Clairfields Drive E	North	37m west of Beaver Meadow Drive to 133m west thereof	Anytime
Clairfields Drive E	South	31m east of McGarr Drive to 35m west of McGarr Drive	Anytime
Clairfields Drive E	South	97m west of McGarr Drive to 33m west thereof	Anytime
Clara Street	East	Grange to southerly limit	Anytime
Clarence Street	Both	Dufferin to C.P.R. track	8 am - 6 pm, Mon - Sat
Clarence Street	North	Woolwich to Dufferin	Anytime
Clark Street	North	Dufferin to Woolwich	Anytime
Clark Street	South	Exhibition to Princess	Anytime
Clark Street	South	Woolwich to Princess	Anytime
Clearview Street	Both	Suburban to Beaumont	Anytime
Clinton Street	East	Elora to Paisley	Anytime
Clough Crescent	North	105m east of Colonial Drive to 28m east thereof	Anytime
Clough Crescent	East	Bard Boulevard to 19m south thereof	Anytime
Clough Crescent	North	Colonial Drive to 21m east thereof	Anytime
Clough Crescent	South	Colonial Drive to 22m east thereof	Anytime
Colborn Street	Both	Stone to Monticello	8 am - 6 pm
Cole Road	Both	Scottsdale to Cole	Anytime
Cole Road	NE	164m south of Briarlea to 46m south-east thereof	Anytime
Cole Road	NW/West	Scottsdale to Ironwood South	Anytime
Cole Road	North	64m east of Ironwood Road to 30m east thereof	Anytime
Cole Road	SE	112m north of Aspen 46m north-east thereof Valley/Christopher to	Anytime

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Cole Road	South	97m east of Cole Road (north leg) to 20m east thereof	Anytime
College Avenue	Both	Stone to Victoria	Anytime
Colonial Drive	East	15m south of Marsh Crescent to 92.5m north thereof	Anytime
Colonial Drive	West	15m south of Brown Street to 98.5m north thereof	Anytime
Colonial Drive	Both	20m south of Bard Boulevard to 15m north of Bard Boulevard	Anytime
Colonial Drive	East	9m south of Baxter Drive to 67m north thereof	Anytime
Colonial Drive	East	Lambeth Way to 40m south thereof	Anytime
Colonial Drive	West	9m south of Baxter Drive to 64m north thereof	Anytime
Colonial Drive	West	24m south of Walker Way to 100m south thereof	Anytime
Commercial Street	North	58m west of Norfolk to 6.1m west thereof	Anytime
Conroy Crescent	West	College to College	Anytime
Cork Street	North	Yorkshire to 17m east thereof	Anytime
Cork Street	South	Dublin to Yorkshire	Anytime
Cork Street West	Both	Norfolk Street to Dublin Street North	Anytime
Corporate Court	Both	Southgate Drive to easterly limit	Anytime
Cote Drive	Both	Skov to northerly limit	8 am-6 pm, Mon.-Fri.
Couling Crescent	North, West and South	Inner portion of the Crescent from Watson Parkway to Watson Parkway	Anytime
Crawford Street	West	Dean Avenue to University Avenue West	Anytime
Creighton Avenue	North	77m east of Vipond Street/Trimble Crescent to 33m east thereof	Anytime
Crestwood Place	West	60m north of Palmer Street to 12m north thereof	Anytime
Crestwood Place	West	60m north of Palmer Street to 12m north thereof	Anytime
Crestwood Street	East	Palmer to the northerly limit	Anytime
Crimea Street	North	Alma to 42m east thereof	Anytime
Crimea Street	North	Edinburgh to 213m west thereof	8 am - 6 pm
Crimea Street	South	Edinburgh to 63m west to C.N.R. crossing	Anytime
Crimea Street	South	164m west of C.N.R. crossing Alma Street North	Anytime
Cross Street	South	Arthur Street South to Neeve Street	Anytime
Crowe Street	South	Edinburgh Road South to McElderry Road	Anytime
Curtis Road	Both	Silvercreek Pkwy to the westerly limit	Anytime
Curzon Crescent	North	Tovell Drive to 93m west thereof	Anytime
Curzon Crescent	North	54m west of Saigon Street to 32m west thereof	Anytime
Cutten Place	Both	Southgate Drive to easterly limit	Anytime
Dallan Drive	East	Clair Road East to McIntyre Court	Anytime

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Dallan Drive	West	Kay Crescent to Poppy Drive East (east leg)	Anytime
Dallan Drive	West	Poppy Drive East to Lobsinger Lane	Anytime
Dallan Drive	West	Lobsinger Lane to Burcombe Crossing	Anytime
Dallan Drive	East	Poppy Drive East (west leg) to 104m south thereof	Anytime
Darby Road	East	56m south of Stephanie Drive to 34m south thereof	Anytime
Davis Street	East	Eastview Road to Acker Street	Anytime
Davis Street	West	Eastview Road to 18m north thereof	Anytime
Dawson Road	Both	Willow to Woodlawn	Anytime
Dean Avenue	North	36m west of Talbot to Caledonia Street	Anytime
Dean Avenue	North	Gordon to 36m west thereof	Anytime
Dean Avenue	South	65m west of Talbot to Caledonia Street	Anytime
Dean Avenue	South	Gordon to 58m west thereof	Anytime
Deerpath Drive	West	Imperial Road to 27m north thereof	Anytime
Deerpath Drive	East	61m north of Abbeywood Crescent (west intersection) to 34m east thereof	Anytime
Delaware Avenue	East	50m north of Speedvale Avenue East to 30m north thereof	Anytime
Delhi Street	East	Eramosa Road to 323m north of Spring Street	Anytime
Delhi Street	East	Peter Avenue to Philip Avenue	Anytime
Delhi Street	East	Emma Street to 52m south thereof	Anytime
Delhi Street	West	130m south of Speedvale Avenue to 31m south thereof	Anytime
Delhi Street	West	35m north of Paul Avenue to 35m south of Paul Avenue	Anytime
Delhi Street	West	11m north of Peter Avenue to 6m south of Peter Avenue	Anytime
Delhi Street	West	93m north of Spring Street to 15m south of Derry Street	Anytime
Delhi Street	West	Eramosa Road to 42m north thereof	Anytime
Delhi Street	West	280m south of Emma Street to 22.5m south thereof	Anytime
Delhi Street	West	Emma Street to 256m south thereof	Anytime
Delhi Street	West	Peter Avenue to 21m south thereof	Anytime
Derry Street	North	Arthur to 108.5m east thereof	Anytime
Derry Street	South	Arthur to Delhi	Anytime
DeShane Street	East	Mullin Drive to Norma Crescent	Anytime
Devere Drive	East	Crane to 28m south thereof	Anytime
Devere Drive	West	18m south of Crane to 47m north thereof	Anytime
Division Street	Both	Woolwich to Westmount	Anytime
Dodds Avenue	West	York Road to 20m south thereof	Anytime
Dominion Drive	Both	northerly limit to 40m south thereof	Anytime

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Domo Drive	Both	Grange Road to easterly limit	8 a.m. – 4 p.m. Monday - Friday
Douglas Street	West	St. George's Square to Woolwich	Anytime
Downey Road	Both	30m west of Hanlon Pkwy to Hanlon Creek Boulevard	Anytime
Dublin Street	East	55m north of Cork Street to Paisley Street	Anytime
Dublin Street	East	Cork Street to 36m north thereof	Anytime
Dublin Street	East	Cork to Kent	Anytime
Dublin Street	East	Paisley to 23m north thereof	Anytime
Dublin Street	East	Suffolk to 10m north of Norwich	Anytime
Dublin Street	West	9m south of Durham to 36m north of Cambridge	Anytime
Dublin Street	West	London to 31m south thereof	Anytime
Dublin Street	West	Paisley to 30m south thereof	Anytime
Dublin Street	West	Suffolk to Paisley	Anytime
Dublin Street	West	Waterloo to Kent	Anytime
Dublin Street	West	Wellington to Waterloo	Anytime
Dublin Street South	East	Nottingham Street to 19m north thereof	Anytime
Dublin Street North	East	8m north of Norwich Street West to 16m south of Charles Street (Except Authorized Permits)	Anytime
Dublin Street North	East	McTague Street to 16m south of Charles Street	Anytime
Dudley Drive	South	42m west of MacAlister Boulevard to 37m west thereof	Anytime
Dufferin Street	East	London to Clarence	Anytime
Dufferin Street	West	George Street to 40m north thereof	Anytime
Duke Street	West	Elizabeth to 14m south thereof	Anytime
Duke Street	West	105m north of Alice to 7m north thereof	Anytime
Duke Street	West	78m south of Elizabeth to 29m south thereof	Anytime
Duke Street	West	Alice to 27m north thereof	Anytime
Durham Street	South	Yorkshire to Dublin	Anytime
Earl Street	North	Woolwich to Dufferin	Anytime
Earl Street	South	Woolwich to 34m east thereof	Anytime
Eastview Road	Both	61m east of Victoria to the east City limit	2 am - 6 pm
Eastview Road	Both	Victoria to 61m east thereof	Anytime
Eastview Road	South	Watt Street to 30m east thereof	Anytime
Eastview Road	South	Auden Road to 25m east thereof	Anytime
Eden Street	Both	Silvercreek to westerly limit	Anytime
Edgehill Drive	Both	Division to the southerly limit	8am - 6pm, Mon.- Fri.
Edgehill Drive	East	30m north of Division to 15m south of Highview Place	8am - 6pm, Mon.- Fri.
Edgehill Drive	East	Division to 30m north thereof	Anytime
Edgehill Drive	West	Division to 15m north of Highview	Anytime

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Edinburgh Road	Both	Woodlawn to southerly limit	Anytime
Edwin Street	North	Woolwich to Dublin	Anytime
Elizabeth Street	Both	York to Suburban	Anytime
Elizabeth Street	North	Duke to Arthur	Anytime
Elizabeth Street	North	Stevenson to Victoria	Anytime
Elizabeth Street	South	Arthur to Victoria	Anytime
Elmira Road	Both	Fife Road to Willow Road	Anytime
Elmira Road North	Both	North City limits to Flaherty Drive	Anytime
Elmira Road North	East	Willow Road to 115m north thereof	Anytime
Elmira Road North	West	Flaherty Drive to Willow Road	Anytime
Elora Street	North	Yorkshire to Harrison	Anytime
Elora Street	South	91m west of Yorkshire to Harrison	Anytime
Emma Street	North	Delhi Street to westerly limit	Anytime
Emma Street	South	Metcalf Street to Marlborough Road	Anytime
Emma Street	South	Stevenson Street North to Renfield Street	Anytime
Emma Street	North	East of Delhi Street to 28m east thereof	Anytime
Emslie Street	North	Yorkshire Street to 18.0m west thereof	Anytime
Emslie Street	South	Yorkshire Street South to McGee Street	Anytime
Eramosa Road	East	13.6 m north of Mitchell Street to northerly City limits	Anytime
Eramosa Road	East	Woolwich Street to 39 m south of Mitchell Street	Anytime
Eramosa Road	West	19 m north of Mitchell Street to northerly City limits	Anytime
Eramosa Road	West	Woolwich Street to 57 m south of Mitchell Street	Anytime
Erin Avenue	Both	Lane to westerly limit	Anytime
Essex Street	South	Waterloo Avenue to 111m east of Dublin Street North	Anytime
Essex Street	North	Waterloo Avenue to 31.9m west thereof	Anytime
Evergreen Drive	Both	Monticello to Stone	8am-6pm, Mon. - Fri.
Exhibition	East	Speedvale to Division	Anytime
Exhibition	West	161m north of Division to Speedvale	Anytime
Exhibition	West	Division Street to 37m north thereof	Anytime
Exhibition	West	Division to London	Anytime
Exhibition Street	East	Clark to 25m north of Powell	Anytime
Exhibition Street	East	Powell to 22m south thereof	Anytime
Extra Street	North	Woolwich to Central	Anytime
Fair Road	Both	Silvercreek Pkwy to Arrow Road	Anytime
Fairview Blvd	North	Gordon to Mary	Anytime
Farley Drive	Both	32m west of Beaver Meadow Drive to 24m east of Beaver Meadow Drive	Anytime
Farley Drive	East	Porter Drive to 26m south thereof	Anytime
Farquhar Street	Both	Freshfield to 12m east thereof	Anytime

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Farquhar Street	Both	Gordon to Freshfield	Anytime
Farquhar Street	South	48 east of Wyndham to easterly limit (Authorized Permits Exempt)	8am-6pm, Mon.-Fri.
Farquhar Street	North	Wyndham to 126m west thereof (Authorized Permits Exempt)	8am-6pm, Mon.-Fri.
Farquhar Street	North	Wyndham to easterly limit	Anytime
Farquhar Street	South	111m east of Wyndham to 24m east thereof	Anytime
Farquhar Street	South	Wyndham to 129m west thereof (Authorized Vehicle Exempt)	Anytime
Farquhar Street	South	Wyndham to 56m east thereof	Anytime
Fergus Street	East	Waterloo Avenue to Galt	Anytime
Fergus Street	West	Galt Street to 21m north thereof	Anytime
Ferguson Street	Both	Morris to Stevenson	Anytime
Ferguson Street	North	40m west of Morris Street to 18m west thereof	Anytime
Ferguson Street	South	Morris to 57m west thereof	Anytime
Ferndale Avenue	South	75m east of Blackbird Crescent to 46m east thereof	Anytime
Fife Road	North	Wellington Street West to west City limits	Anytime
Fife Road	South	Wellington Street West to Elmira Road South	Anytime
Fife Road	South	Whitelaw Road to 81m west thereof	Anytime
Fischer Drive	Both	Paisley Road to the easterly limit	Anytime
Flanders Road	North	39m east of Bishop to 71m west thereof	Anytime
Flanders Road	South	20m west of Bishop to 66m east thereof	Anytime
Forbes Avenue	North	Gordon to Mary	Anytime
Forbes Avenue	South	Fairview Blvd. To 35m west thereof	Anytime
Foster Avenue	Both	Yorkshire to Edinburgh	Anytime
Fountain Street	North	61m west of Wyndham to 44m west thereof	Anytime
Fountain Street	North	Dublin to 18.6m east thereof	Anytime
Fountain Street	North	Wyndham Street to 93m east thereof (Authorized Permits Exempt)	8am-6pm, Mon.-Fri.
Fountain Street	North	Freshfield to 40m east thereof (Authorized Vehicles Exempt)	Anytime
Fountain Street	South	Gordon to Grant	Anytime
Frederick Drive	North	Baxter to 15m east of Waterford	Anytime
Frederick Drive	South	Baxter to 15m east of Oldfield	Anytime
Freshfield Street	West	9m north of Fountain to 17m north thereof (Authorized Permits Exempt)	8am-6pm, Mon.-Fri.
Freshfield Street	West	39m north of Fountain to 18m north thereof	Anytime
Freshfield Street	West	57m north of Fountain to 17m north thereof (Authorized Permits Exempt)	8am-6pm, Mon.-Fri.

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Freshfield Street	West	74m north of Fountain to the most northerly limit	Anytime
Freshmeadow Way	North	Stephanie Drive to 21m west thereof	Anytime
Freshmeadow Way	South	Stephanie Drive to 20m west thereof	Anytime
Freshmeadow Way	Both	Elmira Road to 18m west thereof	Anytime
Freshmeadow Way	South	68m west of Elmira Road South (north intersection) to 34m west thereof	Anytime
Galt Street	Both	Fergus to Edinburgh	Anytime
Galt Street	North	57m east of Fergus Street to 26m east thereof	7am-6pm, Mon. –Fri.
Galt Street	South	Fergus to 76m east thereof	Anytime
Galt Street	South	Edinburgh Road South to Meadowview Avenue	Anytime
Garth Street	South	Yorkshire to Glasgow	Anytime
Gateway Drive	East	45m south of Queensdale to 24m north of Queensdale	Anytime
Gateway Drive	East	Queensdale to 45.7m south thereof	Anytime
Gaw Crescent	East	107m north of Periwinkle Way (south intersection) to 20m east thereof	Anytime
Gaw Crescent	West	107m north of Periwinkle Way (north intersection) to 20m west thereof	Anytime
George Street	North	Dufferin to 42m east thereof	Anytime Nov 1-Mar 31
George Street	South	Dufferin to 20m east of the C.P.R. right-of-way	Anytime
Ginger Court	North	52m east of Edinburgh Road South to 32m east thereof	Anytime
Glasgow Street	East	19m north of Paisley to 35m north thereof	Anytime Mon. - Sat.
Glasgow Street	East	Cambridge to 28m south thereof	Anytime
Glasgow Street	East	London to 30m south of Suffolk	Anytime
Glasgow Street	East	Paisley to 19m north thereof	Anytime
Glasgow Street	East	Paisley to 21m south thereof	Anytime
Glasgow Street	West	London Road West to 42m south thereof	Anytime
Glasgow Street	West	Waterloo Avenue to 30m north of Suffolk Street West	Anytime
Glasgow Street	West	Waterloo Avenue to Fountain Street	Anytime
Glenhill Place	East	Eramosa Road to 42m north thereof	Anytime Nov 1-Mar 31
Glenhill Place	West	Eramosa Road to 57m north thereof	Anytime Nov 1-Mar 31
Goldie Avenue	East	Paisley Road to 25m south thereof	Anytime
Goldie Avenue	West	Paisley Road to 21m south thereof	Anytime
Goodwin Drive	South	200m east of Farley Drive to 30m east thereof	Anytime
Goodwin Drive	South	Farley Drive to 95m east thereof	Anytime
Goodwin Drive	North	Farley Drive to Beaver Meadow Drive	Anytime

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Goodwin Drive	South	22m west of Lynch Circle (west intersection) to 35m west thereof	Anytime
Goodwin Drive	North	Tolton Drive to 62m west thereof	Anytime
Goodwin Drive	South	Tolton Drive to 77m west thereof	Anytime
Gordon Street	West	Clair to Nottingham	Anytime
Gordon Street	West	Waterloo Avenue to 45m south thereof	Anytime
Governors Road	Both	Woodlawn Road to Malcolm Road	Anytime
Grandridge Crescent	East	116m north of Stephen Drive to 27m north thereof (south leg)	Anytime
Grandridge Crescent	East	116m north of Stephen Drive to 27m west thereof (north leg)	Anytime
Grange Road	South	Cityview Drive to Breese garden Lane	Anytime
Grange Road	South	Victoria Road to 307m east thereof	Anytime
Grange Street	Both	Regent to Arthur	Anytime
Grange Street	Both	Regent to Stuart	Anytime
Grange Street	North	Hardy Street to Victoria Avenue	Anytime
Grange Street	North	Stevenson to 122m east thereof	Anytime
Grange Street	South	Hardy to a point 100m west thereof	Anytime
Grange Street	South	Stevenson to Stuart	Anytime
Grant Street	West	Fountain to Surrey	Anytime
Green Street	North	Dublin to westerly limit	Anytime
Green Street	North	Norfolk to 37m west	9am-4pm, Mon-Fri, Exempting authorized funeral procession vehicles only
Green Street	South	Norfolk to Dublin	Anytime
Grey Oak Drive	North	Colonial Drive to 25m west thereof	Anytime
Grove Street	Both	Regent to 137m east thereof	Anytime
Grove Street	North	253m east of Metcalfe Street to 213m west of Stevenson Street	Anytime
Grove Street	North	Metcalfe to 18m west thereof	Anytime
Grove Street	North	Stevenson to 49m west thereof	Anytime
Grove Street	South	Regent to Stevenson	Anytime
Guelph Street	East	Suffolk Street to 31m south thereof	Anytime
Guelph Street	West	Paisley to 274m north thereof	Anytime
Guelph Street	West	Western to Willow	Anytime
Hadati Road	Both	88m east of Victoria to 112m east thereof	Anytime
Hadati Road	East	52m south of Upton to 27m South thereof	Anytime
Hadati Road	East	Upton to 53m south thereof	Anytime
Hadati Road	South	Cassino to 100m south thereof	Anytime
Hadati Road	West	Upton to 58m south thereof	Anytime
Hales Crescent	South	Moore Avenue to the northerly intersection of Borden Street	Anytime
Hales Crescent	South	Borden Street to 31m east thereof	Anytime

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Hales Crescent	West	Northerly intersection of Borden Street to southerly intersection of Borden Street	Anytime
Hall Avenue	East	190m west of Dominion Drive to 129m south thereof	Anytime
Hall Avenue	West	141m north of Duck Lane to 40m north thereof	Anytime
Hall Avenue	Both	Goodwin Drive to 215m north thereof	Anytime
Hands Drive	South	Gordon Street to Latenda Place	Anytime
Hands Drive	North	Hands Drive to 15m west thereof	Anytime
Hands Drive	West	Hands Drive to 15m north thereof	Anytime
Hanlon Road	Both	Clair Road to northerly limit	Anytime
Hanlon Road	Both	Southgate Drive to northerly limit	Anytime
Harris Street	West	York Road to 34m north thereof	Anytime
Harrison Avenue	East	Elora to Paisley	Anytime
Harrison Avenue	East	Foster to Robinson	Anytime
Harrison Avenue	West	Robinson to Elora	Anytime
Harvard Road	Both	Youngman to 19m north thereof	Anytime
Harvard Road	East	Youngman Drive to 53m South thereof	Anytime
Harvard Road	North	Gordon to 380m west thereof	Anytime
Harvard Road	South	Gordon Street to Youngman Drive	Anytime
Hasler Crescent (west leg)	East	179m north of Bard Boulevard to 25m east thereof	Anytime
Hasler Crescent (east leg)	West	168m north of Bard Boulevard to 26m west thereof	Anytime
Hastings Boulevard	North	102m east of Mountford Drive to 25m east thereof	Anytime
Havelock Street	East	Derry to Spring	Anytime
Havelock Street	West	Derry to Spring	8am-6pm, Mon. - Fri.
Hayes Avenue	East	York Road to the southerly limit	Anytime
Hayes Avenue	West	30m each side of the loading dock at 24 Hayes Avenue	Anytime
Hearn Avenue	West	Waterloo Avenue to Inkerman	Anytime
Heffernan Street	Both	Woolwich to C.P.R. track	Anytime
Heritage Drive	South	Gordon Street to 27m west thereof	Anytime
Hewitt Lane	South	Paisley Road to Paisley Road	Anytime
Hickory Street	West	75m north of Oak Street to 38m west thereof	Anytime
Hill Trail	East	85m north of Grange Road to 30m north thereof	Anytime
Hill Trail	South	Esker Run to Esker Run	Anytime
Hillcrest Drive	South	easterly limit to 30 m west thereof	Anytime
Hillcrest Drive	West	Grange Street to southerly limit	Anytime
Hillsdon Place	West	Chillico Drive to 40m north thereof	Anytime
Hodgson Drive	North	Goodwin Drive to Samuel Drive	Anytime

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Holland Crescent	North	East of Summerfield Drive (south leg) to 21m east thereof	Anytime
Home Street	South	Yorkshire to North	Anytime
Hood Street	Both	York to southerly limit	Anytime
Hooper Street	East	188m south of York to its southerly limit	Anytime
Hooper Street	West	York to southerly limit	Anytime
Hosking Place	Both	Scottsdale Drive to 20m west thereof	Anytime
Howden Crescent	West	Bard Street to Bard Street	Anytime
Howitt Street	North	Wyndham to Margaret	Anytime
Howitt Street	South	Neeve to Margaret	Anytime
Huron Street	East	Ontario to 122m north thereof	Anytime
Huron Street	West	118m north of Alice to Elizabeth	Anytime
Huron Street	West	Alice Street to 18m north thereof	Anytime
Huron Street	West	Ontario Street to 90m north thereof	Anytime
Imperial Road	Both	Wellington Street to northerly limits	Anytime
Independence Place	Both	Elmira Road North to westerly limit	Anytime
Industrial Street	West	York Road to Elizabeth Street	Anytime
Inverness Drive	East	Woodlawn Road East to Islington Avenue	Anytime
Ironwood Road	North	Edinburgh Road South to Scottsdale Drive	Anytime
Ironwood Road	South	115m east of Scottsdale Drive to 64m east thereof	Anytime
James Street East	North	Gordon Street to easterly limit	Anytime
James Street West	South	Gordon Street to Mary Street	Anytime
Janefield Avenue	East	177m south of Mason Court to 34m south thereof	Anytime
Janefield Avenue	East	318m south of Mason Court to 32m south thereof	Anytime
Janefield Avenue	East	College Avenue to 208 m south thereof	Anytime
Janefield Avenue	North	18m west of Torch Lane to 86m east of Torch Lane	Anytime
Janefield Avenue	North	Scottsdale Drive to 30m west thereof	Anytime
Janefield Avenue	West	College Avenue West to Mason Court	Anytime
Janefield Avenue	West	206m south of College Avenue West to 232m south thereof	Anytime
Janefield Avenue	South	Scottsdale Drive to 28m west of Torch Lane	Anytime
Jeffrey Drive	North	Starwood Drive to Summit Ridge Drive	Anytime
John Street	North	Dufferin Street to the easterly limit	Anytime
John Brabson Crescent	East, north and West	MacAlister Boulevard to MacAlister Boulevard	Anytime
John Brabson Crescent (east leg)	East	90m north of MacAlister Boulevard to 25m east thereof	Anytime
John Brabson Crescent (east leg)	West	85m north of MacAlister Boulevard to 30m west thereof	Anytime

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Johnston Street	Both	Alice Street to 109m south thereof	7:00am-6:00pm Mon-Fri
June Avenue	North	87m east of Strathmere Street to 90m east thereof	Anytime
June Avenue	South	131m east of Strathmere Street to 30m east thereof	Anytime
Kathleen Street	Both	15m north of June to 30m south thereof	Anytime
Kathleen Street	Both	22m north of Freeman Avenue to 23m south of Freeman Avenue	Anytime
Kathleen Street	East	Barton Street to 62m south thereof	Anytime
Kathleen Street	East	Division to 30m north thereof	Anytime
Kathleen Street	East	London to Division	Anytime
Kathleen Street	East	St Andrew to 19m south thereof	Anytime
Kathleen Street	West	62m south of Division to 27m south thereof	Anytime
Kathleen Street	West	Division to 30m south thereof	Anytime
Kathleen Street	West	Division to Speedvale	Anytime
Kathleen Street	West	Division to London	Anytime
Kay Crescent	East	Poppy Drive East to Dallan Drive	Anytime
Kearney St	East	Lee St to 25m north thereof	Anytime
Kearney St	West	Lee St to 30m north thereof	Anytime
Kensington	South	Stevenson to 61m east thereof	8am - 6pm Mon-Fri
Kensington Street	Both	152m north of Cathcart to 30m north thereof	Anytime
Kensington Street	North	Stevenson to 98m east thereof	Anytime
Kensington Street	South	61m east of Stevenson to 30m east thereof	Anytime
Kent Street	South	Glasgow Street South to Dublin Street South	7am to 9am, Tuesdays
Kent Street	Both	Glasgow Street North to Dublin Street North	Anytime
Kent Street	South	Glasgow Street South to Dublin Street South	Anytime, Dec 1 – Mar 31
Kent Street	North	Glasgow Street South to Dublin Street South	Anytime
Kent Street	Both	Dublin Street South to easterly limit	Anytime
Kent Street	South	Dublin Street North to easterly limit	Anytime
Kerr Street	Both	Woolwich to Dufferin	Anytime
King Edward Place	Both	Dublin to the westerly limit	Anytime
King Street	East	Eramosa to Arthur	Anytime
King Street	West	Eramosa to 30m south thereof	Anytime
King Street	West	Eramosa to Spring	Anytime
King Street	East	15m north of Norwich Street to 3m north thereof	Anytime
Kingsmill	West	Laneway Reg. Plans #340, 351, 353, 354 to southerly limit	Anytime

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Kingsmill Avenue	East	York to 64m north thereof	Anytime
Kingsmill Avenue	East	York to laneway Reg. Plans #340, 351, 353 & 354	Anytime
Kipling Avenue	North	Imperial Road North to 68m west thereof	Anytime
Kipling Avenue	South	Imperial Road North to 25m west thereof	Anytime
Kirby Court	Both	Laird Road to easterly limit	Anytime
Kirkland Street	East	Suffolk to London	Anytime
Kortright Road West	North	Hanlon Expressway to Gordon Street	Anytime
Kortright Road West	South	Hanlon Expressway to Gordon Street	Anytime
Laird Road	Both	Hanlon Parkway to Clair Road	Anytime
Landsdown Drive	North	Gordon Street to 70 metres east thereof	Anytime
Landsdown Drive	South	Gordon Street to 94 metres east thereof	Anytime
Lane Street	East	Ryan to Rosedale	Anytime
Lane Street	West	Cassino to Stevenson	Anytime
Laneway	Both	Gordon to Freshfield	Anytime
Laughland Lane	East	60m south of Goodwin Drive to 30m south thereof	Anytime
Laughland Lane	North	Goodwin Drive to Goodwin Drive	Anytime
Laverne Avenue	Both	Meyer to Callander	8 am-6 pm, Mon.-Fri.
Law Drive	East	Fleming Road to Pettitt Drive	Anytime
Lawrence Avenue	West	23m south of York Road to 17m south thereof	Anytime
Lawrence Avenue	West	York to 30m south thereof	Anytime
Leacock Avenue	North	Auden to Hadati	Anytime
Lee St	North	30m west of Kearney St to 30m east of Kearney St	Anytime
Lee St	South	20m west of Kearney St to 30m east of Kearney St	Anytime
Lee St	North	Cityview Dr to 30m east thereof	Anytime
Lee St	South	Cityview Dr to 30m east thereof	Anytime
Lemon Street	North	Queen to 36m east thereof	Anytime
Lemon Street	Both	Metcalf Street to 22m east thereof	Anytime
Lemon Street	North	Metcalf Street to 20m west thereof	Anytime
Lemon Street	South	Metcalf Street to 27m west thereof	Anytime
Lemon Street	North	St. Catharine Street to 15m east thereof	Anytime
Lewis Road	Both	Speedvale to northerly limit	Anytime
Lincoln Crescent	Both	Laverne to Meyer	8 am - 6 pm
Linke Place	North/East	Davis Street to Acker Street	Anytime
Liverpool Street	North	Glasgow to Yorkshire	Anytime
Liverpool Street	North	Norfolk to Glasgow	Anytime
Liverpool Street	South	Yorkshire to Edinburgh	Anytime
Liverpool Street	South	Dublin Street North to 20m east thereof	Anytime

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Lobsinger Lane	North	Dallan Drive to Burcombe Crossing	Anytime
London Road	Both	Edinburgh to Bagot	Anytime
London Road	North	30m west of Exhibition to Edinburgh	Anytime
London Road	North	Cardigan to Woolwich	Anytime
London Road	North	Woolwich to 34m east of Exhibition	Anytime
London Road	South	16m west of Dufferin to Woolwich	Anytime
London Road	South	30m west of Exhibition to Edinburgh	Anytime
London Road	South	Dufferin to Cardigan	Anytime
London Road	South	Woolwich to 37m east of Exhibition	Anytime
Lorna Drive	South	Hands Drive to 50m east thereof	Anytime
Lovett Lane	North	209m west of Carrington Drive to 50m north thereof	Anytime
Lovett Lane	West	121m north of Ryder Avenue (east leg) to 50m north thereof	Anytime
Lovett Lane	East	113m north of Ryder Avenue (west leg) to 50m north thereof	Anytime
Lovett Lane	West	Rodgers Road to Ryder Avenue (east leg)	Anytime
Lovett Lane	South	Carrington Drive to Rodgers Road	Anytime
Lyon Avenue	West	London to Campion	Anytime
Mac Avenue	North	Woolwich to easterly limit	Anytime
MacAlister Boulevard	East, south and west	Ambrous Crescent (north leg) to Ambrous Crescent	Anytime
Macdonell Street	North	31.5m east of Wyndham to 9m east thereof	Anytime
MacAlister Boulevard	West	Ambrous Crescent (south leg) to 210m south thereof	Anytime
Macdonell Street	North	83.7m east of Wyndham to 9m east thereof	Anytime
Macdonell Street	North	Arthur to Woolwich	Anytime
Macdonell Street	North	Woolwich Street to 46m west thereof	Anytime
Macdonell Street	North	62m west of Woolwich Street to 115m west thereof	Anytime
Macdonell Street	South	Carden to Arthur	Anytime
Macdonell Street	South	Norfolk to Wilson	Anytime
Malcolm Road	Both	Elmira to westerly limit	Anytime
Manhattan Court	Both	Speedvale to southerly limit	8 am-6 pm, Mon.-Fri.
Manitoba Street	North	Huron to 30m west thereof	Anytime
Manitoba Street	South	Huron to Ontario	Anytime
Maple Street	East	Water Street to 27m south thereof	Anytime
Maple Street	West	Water Street to 27m south thereof	Anytime
Marcon Street	Both	Cardigan to Dufferin	Anytime
Marilyn Drive	South	Woolwich Street to easterly limit	Anytime
Marksam Road	Both	Speedvale Avenue West to Sanderson Drive	Anytime
Marksam Road	East	67m south of Willow Road to 48m west thereof	Anytime

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Marksam Road	West	Willow Road to 126m west thereof	Anytime
Marlborough Road	East	Emma Street to Speedvale Avenue East	Anytime, Except Friday 1pm-3pm, Nov.1-Mar.31
Martin Avenue	East	James to Forbes	Anytime
Mary Street	North	Caledonia to 60m south thereof	Anytime
Mary Street	West	Forbes Avenue to 30m south thereof	Anytime
Mason Court	Both	Southerly limit to 46m north thereof	Anytime
Massey Road	North	300 m east of Elmira Road to 300m west of Elmira Road	8:00am -6:00pm
Massey Road	North	300m west of Elmira Road to the westerly limit	Anytime
Massey Road	North	Lewis Road to 300m east of Elmira Road	Anytime
Massey Road	South	Lewis Road to westerly limit	Anytime
Maude Lane	South	Severn Drive to Davis Street	Anytime
Mayfield Avenue	Both	Monticello to Colborn	8am-6pm Mon - Fri
McArthur Street	East	70m north of Goodwin Drive to 72m west thereof	Anytime
McArthur Street	South	128m east of Beaver Meadow Drive to 46m east thereof	Anytime
McCann Drive	North	182m west of Zaduk Place to 90m west thereof	Anytime
McCrae Blvd	Both	Water Street to Gow Bridge	Anytime
McElderry Road	North	50m east of McElderry to 33m east thereof	Anytime
McElderry Road	South	44m east of McElderry to 39m east thereof	Anytime
McElderry Road	East	42m north of Crowe Street to 50m north thereof	Anytime
McGarr Court	Both	100m east of Beaver Meadow Drive to easterly limit	7am-1pm, Fri.
McGarr Drive	East	Clairfields Drive E to 25m south thereof	Anytime
McGee Street	West	Bristol to Waterloo	Anytime
McIllwraith Crescent	North	56m west of Mountford to 30m west and north thereof	Anytime
McIntyre Court	North	Dallan Drive to 175m east thereof	Anytime
McNulty Lane (west leg)	East	69m south of Summerfield Drive to 33m east thereof	Anytime
McNulty Lane (east leg)	West	106m south of Summerfield Drive to 27m west thereof	
McTague Street	North	Woolwich to 23m west thereof	Anytime
McTague Street	South	Exhibition Street to Woolwich Street	Anytime
McTague Street	South	Woolwich to Exhibition	Anytime
Meadowview Avenue	East	Waterloo Avenue to Allan Avenue	Anytime
Meldrum Street	North	Woolwich to easterly limit	Anytime
Merion Street	North	Bagot to Edinburgh	Anytime
Metcalfe Street	East	Pleasant Road to 45m south thereof	Anytime

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Metcalfe Street	West	109m south of Pleasant Road to 25m south thereof	Anytime
Metcalfe Street	West	140m south of Pleasant Road to 17m south thereof	Anytime
Metcalfe Street	West	34m north of Emma Street to 32m south of Emma Street	Anytime
Metcalfe Street	West	Pleasant Road to 36m south thereof	Anytime
Metcalfe Street	Both	Lemon Street to 22m north thereof	Anytime
Metcalfe Street	West	Lemon Street to 34m south thereof	Anytime
Metcalfe Street	East	Lemon Street to 30m south thereof	Anytime
Metcalfe Street	East	North of Gladstone Avenue to 19m north thereof	Anytime
Metcalfe Street	West	North of Emma Street to 30m north thereof	Anytime
Meyer Drive	Both	Ottawa Crescent to 17m west thereof	Anytime
Meyer Drive	North	Eramosa Road to 17m west of Ottawa Crescent	8 am-6 pm, Mon.-Fri.
Meyer Drive	South	Eramosa Road to Ottawa Crescent	Anytime
Michener Road	Both	Woodlawn to Malcolm	Anytime
Michener Road	East	Woodlawn to Massey	Anytime
Michener Road	West	Woodlawn to 86m north of Massey	Anytime
Milson Crescent (west leg)	West	Teal Drive to 22m north thereof	Anytime
Minto Road	Both	Michener to westerly limit	Anytime
Mitchell Street	East	Eramosa to Norwich	Anytime
Mitchell Street	West	Eramosa to Norwich	8 am - 6 pm Mon. - Fri
Moffat Lane	West	58m south of Doyle Drive (east leg) to 30m south thereof	Anytime
Moffat Lane	East	62m south of Doyle Drive (west leg) to 25m south thereof	Anytime
Monarch Road	Both	Southerly limit to the northerly limit	Anytime
Mont Street	North	Woolwich to Exhibition	Anytime
Mont Street	South	29m west of Woolwich to 32m west thereof	Anytime
Monticello Crescent	Both	Gordon to Mayfield	8 am-6 pm, Mon.-Fri.
Monticello Crescent	Both	Mayfield to Stone	8 am-6 pm, Mon.-Fri.
Moore Avenue	Both	Caledonia to Hales	8 am-6 pm, Mon.-Fri.
Morris Street	East	York to Beverley	Anytime
Moss Place	East	58m north of Sidney Crescent to 35m north thereof	Anytime
Mountford Drive	North	200m east of Hadati to 70m east thereof	Anytime
Mountford Drive	North	McIlwraith Crescent (south) to 9m east of Conrad Court	Anytime
Mountford Drive	South	118m east of Conrad Court to 22m east thereof	Anytime

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Mullin Drive	North	150 m west of Atto Drive to 30 m west thereof	Anytime
Mullin Drive	South/West	Atto Drive to Norma Crescent	Anytime
Municipal Street	North	Edinburgh to 88m west of Denver	Anytime
Municipal Street	South	Edinburgh to Denver	Anytime
Mussen Street	South	110m east of Victoria Road North to 23m east thereof	Anytime
Neeve Street	East	York to Fountain	Anytime
Neeve Street	West	15m north of Wellington to Howitt	Anytime
New Street	South	Arthur to Queen	Anytime
Nicklin Road	West	94m north of Burns Drive to 195m north thereof	Anytime
Niska Road	Both	Bailey Bridge to 30m east thereof	Anytime
Niska Road	Both	Downey Road to Niska Road Bridge	Anytime
Niska Road	Both	Downey Road to westerly limit	Anytime
Norfolk Street	East	Waterloo Avenue to Church Lane	Anytime
Norfolk Street	East	15m south of Suffolk Street to 9m south thereof	Anytime
Norfolk Street	West	22m south of Cork Street to 22m north of Macdonell Street	15 minute maximum (except Authorized vehicles only) 8am – 6pm
Norfolk Street	West	Green Street to 22m south of Cork Street	Anytime
Norfolk Street	West	Macdonell Street to Waterloo Avenue	Anytime
North Street	West	London Road East to Home Street	Anytime
North Street	East	63m north of Suffolk Street West to 88m north thereof	Anytime
North Street	Both	Suffolk Street West to 34m north thereof	Anytime
North Street	West	51m north of Suffolk Street West to 84m north thereof	Anytime
Northumberland Street	Both	Wilson Street to Norfolk Street	Anytime
Northumberland Street	North	Dublin Street to Yorkshire Street	Anytime
Northumberland Street	South	19.5m east of Dublin Street North to Kent Street	Anytime
Northumberland Street	North	Dublin Street North to Kent Street	Anytime
Norton Drive	East	Grange Road to Shackleton Drive	Anytime
Norton Drive	West	158m north of Severn Drive to 30m north thereof	Anytime
Norwich Street	North	132m west of Cardigan Street to Dublin Street	Anytime
Norwich Street	North	Mitchell Street to 45m west of Cardigan Street	Anytime
Norwich Street East	South	Arthur Street North to King Street	Anytime

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Norwich Street East	South	Woolwich Street to Cardigan Street	Anytime
Nottingham Street	South	Gordon Street to 56m west thereof	Anytime
Old Stone Court	Both	Monticello Crescent to westerly limit	8:00 a.m. to 6:00 p.m. Mon. - Fri.
Oliver Street	South	Arthur Street South to Huron Street	Anytime
Ontario Street	North	York Road to Neeve Street	Anytime
Oriole Crescent	Both	Edinburgh Road South to 46m west thereof	Anytime
Ottawa Crecent	North	15m east of Callander Drive to 32m west of Calgary Avenue	Anytime
Ottawa Crecent	West	23m north of Meyer Drive to 22m south of Meyer Drive	Anytime
Ottawa Crescent	South	30m east of Calgary Avenue to 73m west thereof	Anytime
Oxford Street	North	48m west of Dublin Street to 17m west thereof	Anytime Nov 1-Mar 31
Oxford Street	North	Glasgow Street to Yorkshire Street	Anytime
Oxford Street	North	Norfolk Street to 37m west thereof	Anytime
Oxford Street	South	25m east of Yorkshire Street to 28m east thereof	8 am-6 pm Mon. - Fri.
Oxford Street	South	Norfolk Street to Glasgow Street	Anytime
Paisley Road	Both	Hanlon Expressway to westerly limit	Anytime
Paisley Road	North	Edinburgh to Hanlon	Anytime
Paisley Road	South	67m east of Alma to 67m west of Alma	Anytime
Paisley Road	South	Edinburgh to 80m west thereof	Anytime
Paisley Road	South	Hanlon to Silvercreek	Anytime
Paisley Road	South	Silvercreek Parkway North to 67m West of Alma Street	Anytime except Sundays 8am-2pm and Christmas Day, New Years Day, Ash Wednesday, Good Friday and Easter Day
Paisley Street	North	Dublin Street to Edinburgh Road North	Anytime
Paisley Street	South	Norfolk Street to Edinburgh Road North	Anytime
Palmer Street	North	20m west of Jane Street to 35m east thereof	Anytime
Palmer Street	North	King Street to Queen Street	Anytime
Palmer Street	North	Queen Street to Stuart Street	Anytime
Palmer Street	South	76m east of King Street to 29m east thereof	Anytime
Palmer Street	South	King Street to 26m east thereof	Anytime
Palmer Street	South	Arthur Street North to King Street	Anytime
Palmer Street	South	Queen Street to Stevenson Street North	Anytime
Park Avenue	East	London Road West to Suffolk Street West	Anytime
Park Lane	Both	Baker Street to southerly limit	Anytime

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Parkholme Avenue	North	Jackson Street to 21m west thereof	Anytime
Parkholme Avenue	South	Metcalf Street to Jackson Street	Anytime
Pearl Street	South	King Street to Arthur Street North	Anytime
Pearson Street	East	Goodwin Drive to Wilkie Crescent	Anytime
Pettitt Drive	North	Frasson Drive to Law Drive	Anytime
Pine Ridge Drive	South	Lowes Road to 91m west of Oakridge Crescent	Anytime
Pinetree Drive	North	9m west of Crossingham Drive to 84m east thereof	Anytime
Pipe Street	North	Dufferin Street to easterly limit	Anytime
Plymouth Court	North	Alma Street North to 100m east thereof	Anytime
Poppy Drive	Both	141m south of Clair Road West to southerly limit	Anytime
Poppy Drive East	North	Dallan Drive to 334m west thereof	Anytime
Porter Court	Both	36m north of Evans Drive to northerly limit	7am-1pm, Fri.
Powell Street	North	Dufferin Street to 18m east of Exhibition Street	Anytime
Powell Street	South	67m east of Woolwich Street to 46m west of Woolwich Street	Anytime
Powell Street	South	Central Street to Exhibition Street	Anytime
Preston Street	North	76m east of Yorkshire Street to 30m west of Glasgow	Anytime
Preston Street	South	Edinburgh Road to Glasgow Street	Anytime
Price Street	South	Atto Drive to Carere Crescent	Anytime
Prospect Avenue	West	Grange Street to 27m south thereof	Anytime
Quebec Street	North	Baker Street to Yarmouth Street	Anytime
Quebec Street	South	Norfolk Street to 14m east thereof	Anytime
Queen Street	East	Arthur Street North to Derry Street	Anytime
Queen Street	West	57m north of Palmer Street to 15m south of Palmer Street	Anytime
Queen Street	West	Arthur Street to Grange Street	Anytime
Raspberry Lane	East	64m west of MacKay Street to 21m west thereof	Anytime
Ray Crescent	West	63m east of Dominion Drive to 42m east thereof	Anytime
Raymond Street	North	54m south of Bristol Street to 35m south and east thereof	Anytime
Raymond Street	South	Wellington Street to Bristol Street	Anytime
Regal Road	Both	Woodlawn Road West to northerly limit	Anytime
Regent Street	Both	Grange Street to Rose Street (lower)	Anytime
Regent Street	Both	Grange Street to Rose Street (upper)	Anytime
Revell Drive	North	53m east of Vaughan Street (south leg) to 28m east thereof	Anytime
Revell Drive	South	62m east of Vaughan Street (south leg) to 32m east thereof	Anytime

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Revell Drive	West	153m south of Vaughan Street (north leg) to 59m south thereof	Anytime
Rhonda Road	West	Willow Road to Westwood Road	Anytime
Richardson Street	North	Neeve Street to westerly limit	Anytime
Rickson Avenue	East	4m south of McElderry Road to 37m north thereof	Anytime
Rickson Avenue	East	73m north of Columbus to 213m south thereof	8am-6pm, Mon.-Fri.
Rickson Avenue	West	107m north of Keats to 212m south thereof	8am-6pm, Mon.-Fri.
Rickson Avenue	West	Edinburgh to 30m north thereof	Anytime
Rickson Avenue	West	McElderry to 26m north thereof	Anytime
Rickson Avenue	East	Hickory Street to 51m south thereof	Anytime
Riverview Drive	East	Speedvale to 62m north thereof	Anytime
Riverview Drive	West	50m north of Speedvale to 38m north thereof	Anytime
Robinson Avenue	North	Edinburgh to Harrison	Anytime
Robinson Avenue	North	Yorkshire to 37m west thereof	Anytime
Robinson Avenue	South	Edinburgh to Yorkshire	Anytime
Rochelle Drive	East	Stephanie Drive to 24m south thereof	Anytime
Rochelle Drive	South	90m east of Darby to 99m east thereof	Anytime
Rodgers Road	North	Rickson Avenue to Lovett Lane	Anytime
Rodgers Road	North	Edinburgh to 53m east thereof	Anytime
Rodgers Road	South	Edinburgh to 30m east thereof	Anytime
Rodgers Road (south)	Both	Edinburgh to 15m west thereof	Anytime
Roland Street	East	Bristol Street to Waterloo Avenue	Anytime
Rose Street	Both	Arthur to Regent	Anytime
Rosewood Avenue	East	Paisley to 29m north thereof	Anytime
Royal Road	Both	Speedvale Avenue to Woodlawn Road	Anytime
Rutherford Court	Both	Southgate Drive to Easterly limit	Anytime
Ryde Road	West	63m south of Paisley Road to 33m south thereof	Anytime
Ryde Road	East	59m north of Imperial Road South to 33m east thereof	Anytime
Ryder Avenue	South	Lovett Lane (south leg) to 60m east of Carrington Drive	Anytime
Ryder Avenue	North	Lovett Lane (south leg) to 320m east thereof	Anytime
Ryder Avenue	South	Lovett Lane (north leg) to 334m east thereof	Anytime
Sackville Street	West	Alice to northerly limit	Anytime
Samantha Court	Both	Imperial to Imperial	Anytime
Samuel Drive	West	Goodwin Drive to Clair Road East	Anytime
Schiedel Drive	West	Bowen Drive to Norma Crescent	Anytime

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Schroder Crescent	North	58m east of Thornton Street to 32m east thereof	Anytime
Schroder Crescent	North	64m west of Thornton Street to 36m west thereof	Anytime
Schroder Crescent (west leg)	East	Grange Road to 140m south thereof	Anytime
Schroder Crescent (west leg)	West	51m south of Grange Road to 48m south thereof	Anytime
Schroder Crescent (west leg)	West	114m south of Grange Road to 15m south thereof	Anytime
Scottsdale Drive	East	168m south of Wilsonview to 28m south thereof	Anytime
Scottsdale Drive	East	224m east of Janefield to 103m east thereof	Anytime
Scottsdale Drive	East	30m north of Kortright to Ironwood	8 am-6 pm, Mon.-Fri.
Scottsdale Drive	East	70m north of Wilsonview to 61m north thereof	Anytime
Scottsdale Drive	East	Kortright to 30m north thereof	Anytime
Scottsdale Drive	East	Stone Road to 153m east of Janefield Avenue	Anytime
Scottsdale Drive	West	60m north of Wilsonview to 69m north thereof	Anytime
Scottsdale Drive	West	College to 255m south thereof	Anytime
Scottsdale Drive	West	Wilsonview to 268 m south thereof	Anytime
Scottsdale Drive	Both	Kortright to 30m north of Janefield	Anytime
Scottsdale Drive	East	Wilsonview Avenue to 46m south thereof	Anytime
Shelldale Crescent	South	Dawson to 46m east of the westerly limit	Anytime
Severn Drive	East	40m north of Maude Lane to 13m north thereof	Anytime
Short Street	East	27m south of Ontario to 23m south thereof	Anytime
Sidney Crescent	West	65m south of Moss Place to 28m south thereof	Anytime
Silurian Drive	West	Chesterton Lane to Grange Road	Anytime
Silurian Drive	East/North	Grange Road to Starwood Drive	Anytime
Silvercreek Parkway	Both	621m north of Eden Street to northern city limit	Anytime
Silvercreek Parkway	Both	Waterloo Avenue to 621m North of Eden Street	Anytime except Sundays 8am-2pm
Simmonds Drive	South	66m west of Ingram Drive to 33m west thereof	Anytime
Simmonds Drive	North	58m west of Ingram Drive to 35m west thereof	Anytime
Simpson Way	Both	Gordon to the southerly limit	Anytime
Southampton Street	East	Sydenham to Paisley	Anytime
Southcreek Trail	Both	Edinburgh Road South to 23m west thereof (north leg)	Anytime

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Southcreek Trail	Both	Edinburgh Road South to 24m west thereof (south leg)	Anytime
Southcreek Trail	North	230m west of Edinburgh Road South (south intersection) to 45m west thereof	Anytime
Southcreek Trail	South	178m west of Edinburgh Road South (north intersection) to 50m west thereof	Anytime
Southgate Drive	Both	Laird Road to Laird Road	Anytime
Speedvale Avenue	Both	Silvercreek to 650m east of Eramosa	Anytime
Speedvale Avenue	Both	Westerly City limits to Hanlon	Anytime
Spring Street	South	Delhi to King	Anytime
Spring Street	North	King Street to 18m east thereof	Anytime
St Arnaud Street	West	Chadwick to Waterloo	Anytime
St. Catharine Street	West	Eramosa to Lemon	Anytime
St. Catharine Street	East	Lemon Street to 21m north thereof	Anytime
Stanley Street	North	Exhibition to Kathleen	Anytime
Stanley Street	South	Kathleen Street to 17.5m east thereof	Anytime
Stephanie Drive	East	39m north of Freshmeadow Way to 48m south thereof	Anytime
Stephanie Drive	North	116m west of Imperial Road South to 53m west of Rochelle Drive	Anytime
Stephanie Drive	South	38m west of Rochelle Drive to 65m east thereof	Anytime
Stephanie Drive	West	17m north of Freshmeadow Way to 41m south thereof	Anytime
Stephanie Drive	West	20m north of Freshmeadow Way to 37m south thereof	Anytime
Stephen Drive	North	134m west of Marksam Road to Grandridge Crescent	Anytime
Stephen Drive	South	47m west of Marksam Road to 80m west thereof	Anytime
Stevenson Street	Both	Eramosa Road to Elizabeth Street	Anytime
Stevenson Street North	Both	Emma Street to Eramosa Road	Anytime
Stevenson Street North	East	Emma Street to 53m south of Balsam Drive	Anytime
Stevenson Street North	East	24m north of Cathcart Street to Speedvale Avenue East	8 am - 6 pm
Stevenson Street North	East	50m south of Speedvale Avenue East to Emma Street	8 am - 6 pm
Stevenson Street North	East	Speedvale Avenue East to 50m south thereof	Anytime
Stevenson Street North	West	Speedvale Avenue East to Emma Street	Anytime Mon. - Sat
Stevenson Street North	Both	Waverly Drive to Speedvale Avenue East	8 am – 6pm
Stevenson Street South	East	Empire Street to York Road	8 am - 6 pm

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Stevenson Street South	West	Elizabeth Street to Alice Street	8 am - 6 pm
Stone Road	Both	College Avenue West to east City limits	Anytime
Stuart Street	Both	Eramosa Road to 30m south thereof	Anytime
Stuart Street	West	Eramosa Road to Palmer Street	Anytime Nov 1-Mar 31
Stuart Street	West	Palmer Street to Grange Street	Anytime
Suffolk Street West	North	28m west of Park Street to Yorkshire Street North	Anytime
Suffolk Street West	North	Arnold Street to Edinburgh Road North	Anytime
Suffolk Street West	North	Park Street to 28m west thereof	Sun.
Suffolk Street West	North	Woolwich Street to Park Street	Anytime
Suffolk Street West	South	Edinburgh Road North to Yorkshire Street North	Anytime
Suffolk Street West	South	Yorkshire Street North to Dublin Street North	Mon.-Sat.
Suffolk Street West	South	Norfolk Street to 76m west thereof	Anytime
Suffolk Street West	South	Dublin Street North to 58m east thereof	Anytime
Sullivan Crescent	East	74m north of Stephanie Drive (north intersection) to 13m east thereof	Anytime
Sullivan Crescent	West	72m north of Stephanie Drive (south intersection) to 15m west thereof	Anytime
Sultan Street	North	Edinburgh Road North to C.N.R. tracks	Anytime
Summerfield Drive	East	Arkell Road to 27m south thereof	Anytime
Summerfield Drive	West	Amsterdam Crescent to Amsterdam Crescent	Anytime
Summerfield Drive	Both	Jenson Boulevard to Miller Street/Cummings Court	Anytime
Summit Crescent	South	Westmount Road to Division Street	Anytime
Summit Ridge Drive	East	55m north of Eastview Road to 40m north thereof	Anytime
Sunnylea Crescent	South	49m east of Pleasant Road to 47m east and south thereof	Anytime
Surrey Street	North	Gordon Street to Bristol Street	Anytime
Surrey Street	North	Neeve Street to Wyndham Street South	Anytime
Surrey Street	South	70m west of Gordon Street to 30m west thereof	8 am-6 pm, Mon.-Fri.
Surrey Street	South	Gordon Street to 20m west thereof	Anytime
Surrey Street	South	Gordon Street to Wyndham Street South	Anytime
Surrey Street	South	Grant Street to 30m east thereof	Anytime
Surrey Street	South	Neeve Street to Wellington Street	Anytime
Surrey Street	North	46m east of Neeve Street to Wellington Street East	Anytime
Surrey Street	South	Wyndham Street South to 66m east thereof	Anytime
Surrey Street East	South	Neeve Street to 21m west thereof	Anytime

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Surrey Street East	North	Gordon Street to 110m east thereof	Anytime (Authorized Vehicles Exempt)
Sweeney Drive	South	145m east of Cox Court to a point 26m east thereof	Anytime
Sweeney Drive	North	129m east of Cox Court to a point 40m east thereof	Anytime
Swift Crescent	North	Clythe Creek Drive to 74m east thereof	Anytime
Swift Crescent	West	59m east of Clythe Creek Drive to Fuller Drive	Anytime
Swift Crescent	South	63m west of Clythe Creed Drive to 30m south thereof	Anytime
Sydenham Street	North	Edinburgh Road North to Clinton Street	Anytime
Taggart Street	Both	Watson Road to Watson Parkway	Anytime
Terrance Lane	West	Gordon Street to southerly limit	Anytime
Terrance Lane	East	21m north of Gordon Street to southerly limit	Anytime
Terraview Crescent	East, South & West	Inner portion of the Crescent from Edinburgh Road South to 30m south thereof	Anytime
Thompson Drive	North	Starwood Drive to 30m west thereof	Anytime
Thornhill Drive	South	87m east of Greenwich Drive to 23m east thereof	Anytime
Thorp Street	North	Woolwich Street to easterly limit	Anytime
Tiffany Street	North	Exhibition Street to 43m east thereof	Anytime
Tiffany Street	North	Woolwich Street to Central Street	Anytime
Tiffany Street	North	41m east of Dufferin Street to 22m east thereof	Anytime
Tiffany Street	South	Dufferin Street to easterly limit	Anytime
Tiffany Street	South	Dufferin Street to Exhibition Street	Anytime
Tipperary Place	Both	Lyon Avenue to Kathleen Street	Anytime
Toronto Street	North	Neeve Street to York Road	Anytime
Torrance Crescent	Both	Westmount Road to 30m east thereof	Anytime
Torrance Crescent	North	30m east of Westmount Road to 58m east thereof	8:00am-4:30 Mon-Fri
Torrance Crescent	South	30m east of Westmount Road to 118m east thereof	8:00am-4:30 Mon-Fri
Torrance Crescent	South	Hardy Street to 55m east thereof	Anytime
Troy Crescent	West	152m east of Watt Street (north intersection) to 16m southerly	Anytime
Troy Crescent	West	164m east of Watt Street (south intersection) to 33m north thereof	Anytime
University Avenue East	North	129m east of Braid Place to easterly limits	Anytime
University Avenue East	North	Braid Place to 129m east thereof	8 am-6 pm, Mon.-Fri.
University Avenue East	North	Braid Place to Gordon Street	Anytime

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University Avenue East	South	Braid Place to easterly limit	Anytime
University Avenue West	South	Crawford Street to Gordon Street	Anytime
Valleyhaven Lane	East	55m south of Cedarvale Avenue to 33m south thereof	Anytime
Vancouver Drive	East	28m south of Ottawa Crescent to 41m south thereof	Anytime
Vancouver Drive	South	Victoria Road North to 131m west thereof	Anytime
Vancouver Drive	West	26m south of Ottawa Crescent to 40m south thereof	Anytime
Vanier Drive	East	College to 163m north thereof	Anytime
Vanier Drive	West	College to 40m south of Skye	Anytime
Vaughan Street	North	Gordon Street to 27m west thereof	Anytime
Vaughan Street	North	105m west of Gordon Street to 22m west thereof	Anytime
Vaughan Street	North	166m west of Gordon Street to 102m west thereof	Anytime
Vaughan Street	South/ East	57m west of Revell Drive to Zess Court	Anytime
Vaughan Street	South	57m west of Revell Drive to Gordon Street	Anytime
Verney Street	Both	Woolwich to Exhibition	Anytime
Victoria Road	East	Del Mar to north City limits	Anytime
Victoria Road	East	Grange to Del Mar	Anytime Mon. – Sat
Victoria Road	East	York Road to Grange Road	Anytime
Victoria Road	West	296m north of Delta to 164m north thereof	Anytime Mon. - Sat
Victoria Road	West	34m north of Delta to 231m north thereof	Anytime
Victoria Road	West	Drummond to north City limit	Anytime
Victoria Road	West	Vancouver to Drummond	Anytime Mon. - Sat
Victoria Road	West	York Road to Vancouver Drive	Anytime
Walter Street	East	27m south of Elizabeth to 6m south thereof	Anytime Nov 1-Mar 31
Water Street	North	34m west of Cedar to 30m west thereof	Anytime
Water Street	North	94m east of Maple to 148m west thereof	Anytime
Water Street	North	Gordon to 76m west thereof	Anytime
Water Street	South	36m east of Maple to 90m west thereof	Anytime
Water Street	South	Cedar to 71m west	Anytime
Water Street	South	Denver to 21m west thereof	8:30am-4:30 pm Mon. – Fri.
Water Street	South	Gordon to Mary	Anytime
Water Street	North	398m west of Edinburgh Road South to 50m west thereof	Anytime
Waterloo Avenue	North	90m east of Fergus to 33m west of Yorkshire	Anytime
Waterloo Avenue	North	Edinburgh to Wellington	Anytime

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Waterloo Avenue	North	Gordon to Edinburgh	Anytime
Waterloo Avenue	South	15.2m east of Yorkshire to 39m west of Dublin	8am-6pm
Waterloo Avenue	South	15m east of Woodycrest to 15m west of Alma	8am-6pm
Waterloo Avenue	South	15m east of Woodycrest to 50m west of Edinburgh	8am-6pm
Waterloo Avenue	South	15m west of Alma to 52m east thereof	Anytime
Waterloo Avenue	South	27m east of Dublin to Gordon	Anytime
Waterloo Avenue	South	33m west of St. Arnaud to 50m west of Edinburgh	8am-6pm
Waterloo Avenue	South	50m east of Edinburgh to 38.4m west of Yorkshire	8am-6pm
Waterloo Avenue	South	50m west of Edinburgh to 100m east thereof	Anytime
Waterloo Avenue	South	Wellington to 15m east of Woodycrest	Anytime
Waterworks Place	East	York to southerly limits	Anytime
Watson Parkway North	East	Watson Road North to Shackleton Drive	Anytime
Watson Parkway North	West	91m south of Fuller Drive to Watson	Anytime
Watson Parkway North	West	Grange Road to 91m south of Fuller Drive	8am-6pm, Mon-Fri
Watson Parkway North	Both	Watson Road North to York Road	Anytime
Waverley Drive	North	Balmoral to 13m south thereof	Anytime
Waverley Drive	South	46m west of Vermont to Windsor	Anytime
Waxwing Crescent	North	74m west of Pheasant Run Drive to 39m west thereof	Anytime
Waxwing Crescent	South	65m west of Pheasant Run Drive to 34m west thereof	Anytime
Wellington Street	Both	Macdonell to the west City limits	Anytime
Wells Street	Both	York to northerly limit	Anytime
West Acres Drive	North	34m west of Gateway to 41m east of Gateway	8:30am-4:30pm Mon – Fri
West Acres Drive	North	43m west of Gateway to 80m east thereof	Anytime
West Acres Drive	South	17m east of Northwood to 74m east thereof	Anytime
West Acres Drive	South	Gateway to 43m west thereof	Anytime
Westmount Road	Both	99m south of Division to Highview	Anytime
Westmount Road	East	17m south of Division To 25m south thereof	Anytime
Westmount Road	East	40m north of Torrance to London Road	8am-6pm Mon – Sat.
Westmount Road	East	54m south of Division to 45m south thereof	Anytime
Westmount Road	East	66m north of Torrance to London Road	8am-6pm Mon – Sat

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Westmount Road	East	66m north of Torrance to Summit	Anytime
Westmount Road	East	67m north of Summitt to 55m north thereof	8am-6pm Mon – Fri
Westmount Road	East	Highview to 6m south of Division	Anytime
Westmount Road	West	27m north of Torrance to 196m north thereof	Anytime
Westmount Road	West	305m south of Division to 377m north Division	Anytime
Westwood Road	Both	22m south of Wimbledon to 44m north thereof	Anytime
Westwood Road	North	Silvercreek to 33m south of Willow Road	Anytime
Westwood Road	South	Silvercreek to Rhonda	Anytime
Westwood Road	South	Willow to 33m south thereof	Anytime
Westwood Road	West	311m south of Willow to 154m south thereof	Anytime
Westwood Road	South	Bond Court to Imperial Road North	Anytime
Westwood Road	North	Bond Court to 52m east thereof	Anytime
Wheeler Avenue	West	Elizabeth to Ferguson	Anytime
Whetstone Crescent	North	East of Summerfield Drive (north leg) to 26m east thereof	Anytime
Whispering Ridge Drive	Both	Cole to Scottsdale	Anytime
Whitelaw Road	East	49m north of Shoemaker Crescent to Paisley Road	Anytime
Whitelaw Road	East	Fife Road to West Acres Drive	Anytime
Whitelaw Road	West	Paisley Road to south City limit	Anytime
Wilkie Crescent	East	Goodwin Drive (east leg) to 180m south thereof	Anytime
Wilkie Crescent	North	80m west of Pearson Street to 80m east of Pearson Street	Anytime
Wilkie Crescent	West	Goodwin Drive (west leg) to 180m south thereof	Anytime
Willow Road	Both	62m west of Westwood to 40m east of Westwood	Anytime
Willow Road	Both	Edinburgh Road to Silvercreek Parkway North	Anytime
Willow Road	North	39m west of Thistle Road to 85m west thereof	Anytime
Willow Road	North	Imperial Road North to 166m west of Elmira Road North	Anytime
Willow Road	South	203m east of Elmira Road North to 187m east thereof	Anytime
Willow Road	South	27m west of Imperial Road North to 60m west thereof	Anytime
Willow Road	North	15m west of Elmira Road North to 87m west thereof	Anytime

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Willow Road	North	57m west of Westwood Road to 205m west thereof	Anytime
Wilson Street	East	Gordon Street to Carden Street	Anytime
Wilson Street	West	Gordon Street to Northumberland Street	Anytime
Windsor Street	East	Waverley to 20m north thereof	Anytime
Wood Street	East	Ontario to Manitoba	Anytime
Wood Street	West	Manitoba to 17m south thereof	Anytime
Woodborough Road	North	68m east of Ironwood Road [south] to 21m west thereof	Anytime
Woodborough Road	North	225m west of Ironwood Road [south] to 35m east thereof	Anytime
Woodborough Road	South	313m west of Ironwood Road [south] to 23m east thereof	Anytime
Woodland Glen Drive	North	145m south of Wagoners Trail to 115m south thereof	Anytime
Woodland Glen Drive	West	69m east of Old Colony to 45m southeast thereof	Anytime
Woodlawn Road	Both	Victoria Road to west City limits	Anytime
Woodlawn Road	North	Ferndale to 19m east thereof	Anytime
Woodlawn Road	South	19m east of Ferndale to 37m west thereof	Anytime
Woodlawn Road	South	Victoria Road to 35m East thereof	Anytime
Woodlawn Road East	South	35m west of Atto Drive to 7m west thereof	Anytime
Woodridge Drive	Both	West Acres Drive to 91m north thereof	Anytime
Woodycrest Drive	Both	Waterloo Avenue to McCall	Anytime
Woolwich Street	East	Cardigan Street to 18m north thereof	Anytime
Woolwich Street	East	101m south of Norwich to 25m south thereof	Anytime
Woolwich Street	East	147m north of Macdonell to 152m north thereof	Anytime
Woolwich Street	East	30m north of London Road To McTague Street	12pm-1pm 4:30pm-6pm
Woolwich Street	East	39.9m south of Eramosa to 56m south thereof	Anytime
Woolwich Street	East	Eramosa to 28.9m south thereof	Anytime
Woolwich Street	East	Macdonell to 119m north thereof	Anytime
Woolwich Street	East	14m south of Suffolk to 14m north thereof	Anytime
Woolwich Street	East	Norwich to London	Anytime
Woolwich Street	East	Woodlawn to 91m north Of the centre line of London Road	Anytime
Woolwich Street	West	110m north of Verney to 97m north thereof	Anytime
Woolwich Street	West	Macdonell To 175m north thereof	Anytime
Woolwich Street	West	32.5m north of Douglas to 14.5m south of Douglas	Anytime Mon. – Sat.
Woolwich Street	West	Clarke to 18m north thereof	Anytime

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NO PARKING

<u>Column I</u> <u>STREET</u>	<u>Column II</u> <u>SIDE</u>	<u>Column III</u> <u>LOCATION</u>	<u>Column IV</u> <u>TIME</u>
Woolwich Street	West	Clarke to 22m south thereof	Anytime
Woolwich Street	West	Division to 18m north thereof	Anytime
Woolwich Street	West	Division to 18m south thereof	Anytime
Woolwich Street	West	Extra to 18m north thereof	Anytime
Woolwich Street	West	Extra to 18m south thereof	Anytime
Woolwich Street	West	Macdonell to 168m north thereof	Anytime
Woolwich Street	West	Macdonell to Thorp	Anytime
Woolwich Street	West	McTague to 18m north	Anytime
Woolwich Street	West	Mont to 18m north thereof	Anytime
Woolwich Street	West	Mont to 18m south thereof	Anytime
Woolwich Street	West	Powell to 54m north thereof	Anytime
Woolwich Street	West	Powell to 69m south thereof	Anytime
Woolwich Street	West	Speedvale to Woodlawn	Anytime
Woolwich Street	West	Tiffany to 18m north thereof	Anytime
Woolwich Street	West	Tiffany to 18m south thereof	Anytime
Woolwich Street	West	Verney to 18m south thereof	Anytime
Woolwich Street	West	Verney to 48m north thereof	Anytime
Woolwich Street	West	Wyndham to Suffolk	Anytime
Wyndham Street	East	4m south of Cork to 13m south thereof	Anytime
Wyndham Street	East	Carden to Howitt	Anytime
Yarmouth Street	East	Norfolk to 21 m north thereof	Anytime
Yarmouth Street	West	Norfolk to Woolwich	Anytime
Yewholme Street	Both	Oak to Renfrew	Anytime
York Road	North	60m East of Ontario to east City limits	Anytime
York Road	North	Neeve to Ontario	Anytime
York Road	North	Neeve to Wyndham(on driveway and boulevards between the curb and 2m behind the sidewalk)	Anytime
York Road	South	60m east of Ontario to Boulton	Anytime
York Road	South	Armstrong to Brockville	Anytime
York Road	South	Cityview to east city limit	Anytime
York Road	South	Wyndham to 35m east thereof	Anytime
York Road	South	115m east of Wyndham Street to 14m east thereof	Anytime
York Road	South	243m east of Wyndham Street to Hooper Street	Anytime
York Road	South	Toronto Street to Ontario Street	Anytime
York Road	South	Victoria Road South to Beaumont Crescent	Anytime
Yorkshire Street	East	Paisley Street to Liverpool Street	Anytime
Yorkshire Street	East	Suffolk Street West to 38m south thereof	Anytime
Yorkshire Street	East	Waterloo Avenue to Paisley Street	Anytime Except Sundays
Yorkshire Street	West	Paisley Street to London Road West	Anytime

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Column I <u>STREET</u>	Column II <u>SIDE</u>	Column III <u>LOCATION</u>	Column IV <u>TIME</u>
Yorkshire Street	West	33m south of Foster Street to 31m south thereof	Anytime
Youngman Drive	East	1m south of Smart street to 28m north thereof	Anytime
Youngman Drive	East	33m north of Smart to 83m north thereof	8am-6pm, Mon-Fri Sep 1-Jun 30
Youngman Drive	West	Smart Street to 28m north thereof	Anytime
Zaduk Place	West	156m east of Sweeney Drive to 56m east thereof	Anytime
Zaduk Pl	East	50m north of McCann St to 40m south of McCann St	Anytime
Zaduk Pl	West	50m north of McCann St to 40m south of McCann St	Anytime
Zaduk Pl	East	MacAlister Boulevard to 50m north thereof	Anytime
Zaduk Pl	West	MacAlister Boulevard to 82m north thereof	Anytime

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Alice Street	North	Huron to 58m westerly	8:30am-4:30pm Mon-Fri
Alma Street	Both	30m south of Alma Street to 30 north of Alma Street	Anytime
Alma Street	East	Suffolk to 23m south thereof	8:00am-4:30pm Mon-Fri
Alma Street	West	Suffolk to 29m south thereof	8:00am-4:30pm Mon-Fri
Applewood Crescent	East	21m north of Parkview34m south thereof	8:00am-4:30pm Mon-Fri
Applewood Crescent	East	Elmhurst to 22m south thereof	8:00am-4:30pm Mon-Fri
Applewood Crescent	West	22m south of Elmhurst to 38m north thereof	8:00am-4:30pm Mon-Fri
Applewood Crescent	West	Parkview to 21m north thereof	8:00am-4:30pm Mon-Fri
Arnold Street	East	15m north of Paisley to 22m south of Liverpool	8:00am-4:30pm Mon-Fri Except buses
Aspenwood Place	East	78m south of Stephanie Drive to southerly limit	8:00am-9:00am, 2:30pm-3:30pm Mon-Fri, Sept 1-Jun 30
Aspenwood Place	West	Stephanie Drive to southerly limit	8:00am-9:00am, 2:30pm-3:30pm Mon-Fri, Sept 1-Jun 30
Baker Street	West	87m north of Chapel to58m north thereof	2:00pm-10:00pm Mon-Sat
Baker Street	West	Quebec to 15m north of Chapel	Anytime
Balmoral Street	Both	36.3m east of Inverness to 65.6m west thereof	8:00am-4:30pm Mon-Fri
Beaver Meadow Drive	East	Farley Drive to 50m south thereof	8:00am-4:30pm Mon-Fri
Beaver Meadow Drive	West	Farley Drive to 12m south of Blair Drive	8:00am-4:30pm Mon-Fri
Bishop Court	North	43m south of Flanders to 51m west thereof	Anytime
Bishop Court	South	49m south of Flanders to 12m west thereof	Anytime
Bishop Court	South	71m south of Flanders to 92m west thereof	8:00am-4:30pm Mon-Fri Except buses
Bonar Place	Both	Willow Road to 45m north thereof	8:00am-4:30pm, Mon-Fri
Brant Avenue	North	43m west of Muskoka to 29m west thereof	8:00am-4:30pm Mon-Fri Except buses
Brant Avenue	North	72m west of Muskoka to 25m west thereof	8:00am-4:30pm Mon-Fri
Brant Avenue	South	64m west of Muskoka to 43m west thereof	8:00am-4:30pm Mon-Fri
Brentwood Drive	East	19m north of June to 14m south of June	8:00am-4:30pm Mon-Fri
Brentwood Drive	West	23m north of June to 17m south of June	8:00am-4:30pm Mon-Fri
Brighton Street	North	164m west of Stevenson To 10m east thereof	8:00am-4:30pm Mon-Fri

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Brighton Street	North	89m west of Stevenson 75m west thereof	8:00am-4:30pm Mon-Fri Except buses
Brighton Street	North	Stevenson Street to 89m West thereof	8:00am-4:30pm Mon-Fri
Brighton Street	South	Stevenson to 43m West thereof	8:00am-4:30pm Mon-Fri
Brown Street	Both	Colonial Drive to 49m west thereof	8:00am-4:30pm Mon-Fri
Buckthorn Crescent (east)	Both	Grange Road to 15m north thereof	Anytime
Calgary Avenue	Both	Ottawa Crescent to 40m south thereof	8:00am-4:30pm Mon-Fri
Callander Drive	Both	Ottawa Crescent to 15m north thereof	8:00am-4:30pm Mon-Fri
Cambridge Street	North	Dublin Street North to 9m west thereof	Anytime
Carden Street	South	Wyndham Street North to 50m east thereof	Anytime
Carden Street	North	Wyndham Street North to 82m east thereof	Anytime
Carden Street	North	82m east of Wyndham Street North to 64m east thereof	Anytime Except Buses, Taxi and Delivery Vehicles
Carden Street	North	Macdonell Street to 100m west thereof	Anytime
Clair Road West	North	Gordon Street to 42m west thereof	Anytime
Clairfields Drive East	North	37m west of Beaver Meadow Drive to 133m west thereof	8:00am-4:30pm Mon-Fri
Clairfields Drive East	South	31m east of McGarr Drive to 35m west of McGarr Drive	8:00am-4:30pm Mon-Fri
Clairfields Drive West	Both	Gordon Street to 52m west thereof	Anytime
College Avenue	Both	47m west of Scottsdale to 109m east thereof	Anytime
College Avenue	East	15m north of Conroy to 46m south thereof	8:00am-4:30pm Mon-Fri
College Avenue	East	Dovercliffe to 30m south thereof	8:00am-4:30pm Mon-Fri
College Avenue	East	Flanders to 31m south thereof	8:00am-4:30pm Mon-Fri
College Avenue	North	18m east of Janefield to Vanier	8:00am-4:30pm Mon-Fri Except buses
College Avenue	North	54.3m west of Janefield to 80m east thereof	Anytime
College Avenue	South	38m west of Janefield to 64m east thereof	Anytime
College Avenue	West	31m south of Flanders to 91m north thereof	8:00am-4:30pm Mon-Fri
College Avenue	West	Conroy to 37m south thereof	8:00am-4:30pm Mon-Fri
College Avenue	West	Dovercliffe to 14m south thereof	8:00am-4:30pm Mon-Fri
College Avenue	West	Dovercliffe to 15m south Thereof	8:00am-4:30pm Mon-Fri

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Colonial Drive	West	15m south of Brown Street to Bard Boulevard	8:00am-4:30pm Mon-Fri
Colonial Drive	East	Clough Crescent to 15m north of Brock Street	8:00am-4:30pm Mon-Fri
Colonial Drive	West	24m south of Walker Way to 100m south thereof	8:00am-4:30pm Mon-Fri
Colonial Drive	West	9m south of Baxter Drive to 64m north thereof	8:00am-4:30pm Mon-Fri
Colonial Drive	East	9m south of Baxter Drive to 67m north thereof	8:00am-4:30pm Mon-Fri
Colonial Drive	East	Lambeth Way to 40m south thereof	8:00am-4:30pm Mon-Fri
Couling Crescent	Both	Watson Parkway to Severn Drive	8:00am-4:30pm Mon-Fri, Sept 1 – June 30
Crimea Street	Both	Alma Street to 42m east Thereof	8:00am-4:30pm Mon-Fri
Crimea Street	North	127m east of Alma to 3m east thereof	Anytime
Crimea Street	North	90m east of Alma to 7m east thereof	Anytime
Dean Avenue	North	36m west of Talbot to 103m east thereof	Anytime
Dean Avenue	South	65m west of Talbot to 107m east thereof	Anytime
Delhi Street	East	323m north of Spring Street to 228m north thereof	Anytime
Delhi Street	Both	Speedvale Avenue to 25m south thereof	Anytime
Delhi Street	West	401m north of Spring Street to 114m south thereof	Anytime
Devere Drive	East	Crane to 28m south thereof	8:00am-4:30pm Mon-Fri
Devere Drive	West	18m south of Crane to 11m north of Lambert	8:00am-4:30pm Mon-Fri Except buses
Devere Drive	West	18m south of Crane to 47m north thereof	8:00am-4:30pm Mon-Fri
Division Street	Both	54m west of Exhibition to 115m east thereof	8:00am-4:30pm Mon-Fri
Douglas Street	Northwest	Wyndham to 25m east thereof	Anytime
Douglas Street	South	Wyndham to 10m east thereof	Anytime
Downey Road	Both	Hanlon Pkwy to 30m west thereof	Anytime
Downey Road	North	Woodland Glen Drive to 59m west of Niska Road	Anytime
Downey Road	South	Woodland Glen Drive to 217m west thereof	Anytime
Dublin Street	Both	15m north of Durham to 34m south thereof	8:00am-4:30pm Mon-Fri
Dublin Street	East	19m north of Cork to 31m north thereof	8:00am-4:30pm Mon-Fri Except buses

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Dublin Street	East	50m north of Cork to 52m north thereof	8:00am-4:30pm Mon-Fri
Dublin Street	West	36m south of Cambridge To 60m north thereof	8:00am-4:30pm Mon-Fri
Edinburgh Road	Both	39.8m north of Water to 67.8m south thereof	Anytime
Edinburgh Road	East	54.8m south of Forest to 90.2m north thereof	Anytime
Edinburgh Road	West	37.5m south of Forest to 72.9m north thereof	Anytime
Elizabeth Street	North	216m east of Victoria to 84m east thereof	8:00am-6:00pm except buses
Elmira Road	Both	Paisley Road to 62m north Thereof	Anytime
Elmira Road	Both	Paisley Road to 70m south Thereof	Anytime
Elmira Road	Both	Willow Rd to 65 m north thereof	8:00 am - 4:30 pm Mon-Fri
Elmira Road	Both	Willow Rd to 65 m south thereof	8:00 am - 4:30 pm Mon-Fri
Elmira Road	East	Westacres to 25m south thereof	8:00am-4:30pm Mon-Fri
Elmira Road	West	Westacres to 31m south thereof	8:00am-4:30pm Mon-Fri
Emma Street	North	Stevenson to Tamarack	8:00am-4:30pm Mon-Fri
Emma Street	South	13m east of Stevenson to 62m east thereof	8:00am-4:30pm Mon-Fri Except buses
Emma Street	South	75m east of Stevenson To 51m east thereof	8:00am-4:30pm Mon-Fri
Emma Street	South	Stevenson to 13m east thereof	8:00am-4:30pm Mon-Fri
Eramosa Road	East	13.6m north of Mitchell to 61.1m south thereof	Anytime
Eramosa Road	West	19m north of Mitchell to 87.1m south thereof	Anytime
Exhibition Street	East	Powell Street to 22m south thereof	8:00am-4:30pm Mon-Fri
Exhibition Street	East	Powell to 25m north thereof	Anytime
Exhibition Street	West	22m south of Powell to 54m north thereof	8:00am-4:30pm Mon-Fri
Farley Drive	Both	32m west of Beaver Meadow Drive to 24 m east of Beaver Meadow Drive	8:00am-4:30pm Mon-Fri
Farley Drive	East	36m south of Porter Drive to 48m south thereof	Anytime, Except Buses
Fife Road	Both	25m south of Gateway to North thereof	8:00am-4:30pm Mon-Fri
Flaherty Drive	East	Willow Road to 29m north thereof	Anytime
Flaherty Drive	West	Willow Road to 28m north thereof	Anytime
Flanders Road	North	39m east of Bishop to 71m west thereof	8:00am-4:30pm Mon-Fri
Flanders Road	South	20m west of Bishop to 66m east thereof	8:00am-4:30pm Mon-Fri

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Forest Street	South	81m east of Edinburgh Road to 61m west thereof	7:30am-4:00pm Mon-Fri Except buses
Forest Street	North	Maple Street to 40m east thereof	Anytime
Forest Street	North	Maple Street to 18m east thereof	Anytime
Freeman Avenue	Both	15m west of Kathleen Street to 15m east of Kathleen Street	8:00am-4:30pm Mon-Fri
Freshmeadow Way	North	Stephanie Drive to 21m west thereof	8:00am-4:30pm Mon-Fri
Freshmeadow Way	South	Stephanie to 20m west thereof	8:00am-4:30pm Mon-Fri
Gateway Drive	East	15m north of Queensdale To 46m north thereof	8:00am-4:30pm Mon-Fri Except buses
Gateway Drive	East	24m north of Queensdale 47m north thereof	8:00am-4:30pm Mon-Fri
Gateway Drive	East	44m south of Queensdale to 68m north thereof	8:00am-4:30pm Mon-Fri Except buses
Gateway Drive	West	Queensdale to 44m South thereof	8:00am-4:30pm Mon-Fri
Goodwin Drive	North	Tolton Drive to 62m west thereof	8:00am-4:30pm Mon-Fri
Goodwin Drive	South	Tolton Drive to 77m west thereof	8:00am-4:30pm Mon-Fri
Gordon Street	East	12m north of the City Laneway behind the Farmers Market to 65m north thereof	Anytime
Gordon Street	East	City Laneway behind the Farmers Market to 12m north thereof	Sunday-Friday
Grange Road	North	57m west of Auden Road to 156m west thereof	8:00am-4:30pm Mon-Fri
Grange Road	North	30m west of Kearney St to 30m east of Kearney St	Anytime
Grange Road	South	30m west of Kearney St to 30m east of Kearney St	Anytime
Grange Road	North	Ireland Place to 160m east thereof	8:00am-4:30pm Mon-Fri, Sep 1-Jun 30
Grange Road	North	Esker Run to 193m west thereof	8:00am-4:30pm Mon-Fri, Sep 1-Jun 30
Grange Road	North	15m west of Buckthorn Crescent (west) to 33m west of Brydges Court	Anytime
Grange Road	South	O'Connor Lane to 80m east thereof	8:00am-4:30pm Mon-Fri, Sep 1-Jun 30
Grange Road	South	130m east of O'Connor Lane to 80m east thereof	Anytime
Grange Road	South	210m east of O'Connor Lane to 40m east thereof	Anytime (except buses)
Grange Road	South	197m west of Clythe Creek Drive to 30m west thereof	8:00am-4:30pm Mon-Fri, Sep 1-Jun 30
Greengate Road	Both	Silvercreek to 36m east thereof	Anytime
Grey Oak Drive	Both	Colonial Drive to 49m west thereof	8:00am-4:30pm Mon-Fri
Guelph Street	East	Suffolk to 31m south thereof	8:00am-4:30pm Mon-Fri

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Guelph Street	West	30m north of Suffolk to 63m south thereof	8:00am-4:30pm Mon-Fri
Guelph Street	West	69m north of Paisley to 61m north thereof	8:00am-4:30pm Mon-Fri Except Buses
Hadati Road	East	Upton to 53m south thereof	8:00am-4:30pm Mon-Fri
Hall Avenue	Both	Goodwin Drive to 215m north thereof	8:00am-4:30pm Mon-Fri
Harvard Road	Both	Youngman Drive to 53m south Thereof	8:00am-4:30pm Mon-Fri
Harvard Road	East	McElderry to 24m north Thereof	8:00am-4:30pm Mon-Fri
Harvard Road	West	McElderry to 27m north Thereof	8:00am-4:30pm Mon-Fri
Harvard Road	West	Upton to 58m south thereof	8:00am-4:30pm Mon-Fri
Heritage Drive	North	Gordon Street to 45m west thereof	Anytime
Huron Street	West	18m north of Alice to 68m north thereof	8:00am-4:30pm Mon-Fri Except buses
Imperial Road	Both	From a point 68m north of Deerpath to a point 101m north thereof	Anytime
Imperial Road	North	32m west of Stephanie to 48m east thereof	8:00am-4:30pm Mon-Fri
Imperial Road	South	30m west of Stephanie to 47m east thereof	8:00am-4:30pm Mon-Fri
Imperial Road S	West	Pinetree Drive to 93m south thereof	8:00am-4:30pm Mon-Fri
Imperial Road South	Both	Wellington Street West to 62m north thereof	Anytime
Ironwood Road	Both	115m east of Scottsdale To 64m east thereof	8:00am-4:30pm Mon-Fri
June Avenue	North	47m east of Strathmere Street to 40m east thereof	8:00am-4:30pm Mon-Fri Except buses
June Avenue	North	87m east of Strathmere Street to 90m east thereof	8:00am-4:30pm Mon-Fri
June Avenue	South	131m east of Strathmere to 30m east thereof	8:00am-4:30pm Mon-Fri
Kathleen Street	Both	22m north of Freeman Avenue to 23m south of Freeman Avenue	8:00am-4:30pm Mon-Fri
Kearney Street	East	Lee St to 25m north thereof	8:00am-4:30pm Mon-Fri
Kearney Street	West	Lee St to 30m north thereof	8:00am-4:30pm Mon-Fri
Kensington Street	North	Stevenson to the easterly limit	8:00am-4:30pm Mon-Fri
Kortright Road East	Both	Gordon Street to 47m east thereof	Anytime
Lee Street	North	Cityview Drive to 30m east of Kearney Street	8:00am-4:30pm Mon-Fri September 1 – June 30
Lee Street	South	Cityview Drive to 30m east of Kearney Street	8:00am-4:30pm Mon-Fri September 1 – June 30
Lemon Street	Both	Metcalf Street to 22m east thereof	8:00am-4:30pm Mon-Fri September 1 – June 30

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Lemon Street	North	Metcalf Street to 20m west thereof	8:00am-4:30pm Mon-Fri September 1 – June 30
Lemon Street	South	Metcalf Street to 27m west thereof	8:00am-4:30pm Mon-Fri September 1 – June 30
Lemon Street	North	St. Catharine Street to 15m east thereof	8:00am-4:30pm Mon-Fri September 1 – June 30
London Road	North	30m west of Exhibition to 64m east thereof	Anytime
London Road	South	30m west of Exhibition to 67m east thereof	Anytime
Lynwood Avenue	East	College Avenue West to Lynwood Place	8:00am-4:30pm Mon-Fri
McCann Drive	North	182m west of Zaduk Place to 90m west thereof	8:00am-4:30pm Mon-Fri September 1 – June 30
McCann Drive	South	Kirvan Drive to Zaduk Place	8:00am-4:30pm Mon-Fri September 1 – June 30
Macdonell Street	North	5m west of Carden to 51m west thereof	Anytime
Macdonell Street	North	162m east of Norfolk Street to 14m east thereof	Anytime
Macdonell Street	North	46m east of Norfolk Street to 28m east thereof	Anytime
Macdonell Street	North	96m east of Norfolk Street to 33m east thereof	Anytime Except Buses
Macdonell Street	South	Wilson Street to 20m east thereof	Anytime, except buses
Maple Street	East	Water Street to 100m south thereof	8:00am-4:30pm Mon-Fri except buses
Maple Street	West	Water Street to 67m south thereof	8:00am-4:30pm Mon-Fri
McElderry Road	North	50m east of McElderry to 33m east thereof	8:00am-4:30pm Mon-Fri
McElderry Road	South	44m east of McElderry to 39m east thereof	8:00am-4:30pm Mon-Fri
McGarr Drive	East	Clairfields Drive E to 25m south thereof	8:00am-4:30pm Mon-Fri
McGarr Drive	West	Clairfields Drive E to 15m south thereof	8:00am-4:30pm Mon-Fri
Metcalf Street	Both	Emma to 18m north thereof	8:00am-4:30pm Mon-Fri
Metcalf Street	Both	Palmer to 15m north thereof	8:00am-4:30pm Mon-Fri
Metcalf Street	East	Lemon to Bennett	8:00am-4:30pm Mon-Fri September 1 – June 30
Metcalf Street	West	Lemon to Bennett	8:00am-4:30pm Mon-Fri September 1 – June 30
Metcalf Street	West	Lemon Street to 34m south thereof	8:00am-4:30pm Mon-Fri September 1 – June 30
Metcalf Street	East	Lemon Street to 30m south thereof	8:00am-4:30pm Mon-Fri September 1 – June 30

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Meyer Drive	Both	Ottawa Crescent to 17m west thereof	8:00am-4:30pm Mon-Fri
Meyer Drive	West	142m south of Laverne to 60m south thereof	8:00am-4:30pm Mon-Fri Except buses
Norfolk Street	West	45m south of Commercial to Waterloo	Anytime
Norfolk Street	West	Norwich to Oxford	8:00am-4:30pm Mon-Fri
Norfolk Street	West	Paisley to 19m south of Commercial	Anytime
Northumberland	Both	Dublin to 30m west	8:00am-4:30pm Mon-Fri
Ontario Street	South	30m west of Wood Street to 46m west of Wood Street	Anytime
Ottawa Crecent	North	15m east of Callander Drive to 32m west of Calgary Avenue	8:00am-4:30pm Mon-Fri
Ottawa Crecent	West	23m north of Meyer Drive to 22m south of Meyer Drive	8:00am-4:30pm Mon-Fri
Ottawa Crescent	North	29m east of Calgary to Meyer Drive	8:00am-4:30pm Mon-Fri
Ottawa Crescent	North	32m west of Calgary Avenue to 34m west thereof	8:00am-4:30pm Mon-Fri Except buses
Ottawa Crescent	North	40m west of Calgary to 30m west thereof	8:00am-4:30pm Mon-Fri Except buses
Ottawa Crescent	North	70m west of Calgary to 47m west thereof	8:00am-4:30pm Mon-Fri
Ottawa Crescent	South	117m west of Calgary to 30m east of Calgary	8:00am-4:30pm Mon-Fri
Paisley Road	Both	Elmira Road to 36m West thereof	Anytime
Paisley Road	Both	Elmira Road to 56m east thereof	Anytime
Paisley Road	North	30m west of Alma Street to 30m west of Alma Street	Anytime
Paisley Road	South	115m east of Goldie Avenue to 30m east of Alma Street	Anytime
Paisley Road	South	9m east of Goldie Avenue to 61m east thereof	Anytime, except Sundays, 8:00 am – 2:00 pm
Paisley Road	South	Goldie Avenue to 9m east thereof	Anytime
Palmer Street	Both	20m west of Jane to 35m east thereof	8:00am-4:30pm Mon-Fri
Poppy Drive East	North	37m west of Hawkins Drive to 15m west thereof	Anytime, Buses Excepted
Poppy Drive East	North	16m east of Gordon Street to 31m east thereof	Anytime, Buses Excepted
Powell Street	North	18m east of Exhibition to 81m east thereof	8:00am-4:30pm Mon-Fri Except buses
Powell Street	North	99m east of Exhibition to Central	8:00am-4:30pm Mon-Fri
Powell Street	North	Exhibition to 18m east thereof	Anytime
Powell Street	South	Exhibition to Central	8:00am-4:30pm Mon-Fri
Quebec Street	South	Norfolk to 53m east thereof	8:00am-4:30pm Mon-Fri
Rickson Avenue	East	4m south of McElderry to 37m north thereof	8:00am-4:30pm Mon-Fri

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being new Schedule XVI
to By-law Number (2002) – 17017
NO STOPPING

<u>Column I</u> <u>STREET</u>	<u>Column II</u> <u>SIDE</u>	<u>Column III</u> <u>LOCATION</u>	<u>Column IV</u> <u>TIME</u>
Rickson Avenue	West	38m north of McCurdy Road to 38m north thereof	8:00am-4:30pm Mon-Fri
Rickson Avenue	West	McElderry to 26m north thereof	8:00am-4:30pm Mon-Fri
Rickson Avenue	West	27m south of Darnell Road to 88m north thereof	Anytime
Rickson Avenue	East	29m south of Darnell Road to 91m north thereof	Anytime
Rochelle Drive	East	Stephanie Drive to 24m south thereof	8:00am-4:30pm Mon-Fri
Rochelle Drive	East	Suzanna Drive to 24m south of Stephanie Drive	8:00am-9:00am, 2:30pm-3:30pm Mon-Fri, Sept 1-Jun 30
Rochelle Drive	West	Stephanie Drive to 15m south thereof	8:00am-4:30pm Mon-Fri
Rosewood Avenue	East	51m north of Paisley to 49m north thereof	8:00am-4:30pm Mon-Fri Except buses
Scottsdale Drive	West	255m south of College to 43m south thereof	8:00am-4:30pm Mon-Fri Except buses
Shallmar Court	East	64m south of Stephanie Drive to southerly limit	8:00am-9:00am, 2:30pm-3:30pm Mon-Fri, Sept 1-Jun 30
Shallmar Court	West	Stephanie Drive to southerly limit	8:00am-9:00am, 2:30pm-3:30pm Mon-Fri, Sept 1-Jun 30
Speedvale Avenue	Both	40m west of Renfield to 75m east thereof	Anytime
Speedvale Avenue	Both	Silvercreek to Hanlon	Anytime
Speedvale Avenue	North	47m west of Renfield to 73m east thereof	Anytime
Speedvale Avenue	South	47m west of Renfield to 78m east thereof	Anytime
St. Catharine Street	East	70m north of Lemon to 114m south of Eramosa	8:00am-4:30pm Mon-Fri Except buses
St. Catharine Street	West	Lemon Street to 24m north thereof	8:00am-4:30pm Mon-Fri September 1 – June 30
St. Catharine Street	East	Lemon Street to 21m north thereof	8:00am-4:30pm Mon-Fri September 1 – June 30
Stephanie Drive	East	39m north of Freshmeadow Way to 48m south thereof	8:00am-4:30pm Mon-Fri
Stephanie Drive	North	116m west of Imperial Road South to 30m west of Rochelle Drive	8:00am-4:30pm Mon-Fri
Stephanie Drive	North	30m west of Imperial Road South to 86m west thereof	8:00am-9:00am, 2:30pm-3:30pm Mon-Fri, Sept 1-Jun 30
Stephanie Drive	North	30m west of Rochelle Drive to 23m west thereof	8:00am-4:30pm Mon-Fri Except buses
Stephanie Drive	South	28m east of Rochelle Drive to 25m west of Imperial Road South	8:00am-9:00am, 2:30pm-3:30pm Mon-Fri, Sept 1-Jun 30
Stephanie Drive	South	34m west of Rochelle Drive to 28m east of Rochelle Drive	8:00am-4:30pm Mon-Fri

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<u>Column I</u> <u>STREET</u>	<u>Column II</u> <u>SIDE</u>	<u>Column III</u> <u>LOCATION</u>	<u>Column IV</u> <u>TIME</u>
Stephanie Drive	South	Aspenwood Place to 34m west of Rochelle Drive	8:00am-9:00am, 2:30pm-3:30pm Mon-Fri, Sept 1-Jun 30
Stephanie Drive	West	20m north of Freshmeadow Way to 37m south thereof	8:00am-4:30pm, Mon-Fri
Stevenson Street North	Both	Eramosa Road to 50m south thereof	Anytime
Stevenson Street North	East	50m south of Speedvale Avenue East to 28m north of Balsam Drive	8:00am-4:30pm Mon-Fri Except buses
Stevenson Street North	East	Balsam Drive to 53m south thereof	8:00am-4:30pm Mon-Fri Except buses
Stevenson Street North	East	Speedvale Avenue East to 50m south thereof	Anytime
Stevenson Street South	East	Empire Street to Elizabeth Street	Anytime
Suffolk Street	North	21m west of Dublin to 48m east thereof	8:00am-4:30pm Mon-Fri
Suffolk Street West	South	42m east of Dublin Street to 71m west thereof	8:00am-4:30pm Mon-Fri
Vancouver Drive	East	Ottawa Crescent to 64m south thereof	8:00am-4:30pm Mon-Fri
Vancouver Drive	West	Ottawa Crescent to 62m South thereof	8:00am-4:30pm Mon-Fri
Victoria Road	East	191m north of Brant to 38m north thereof	8:00am-4:30pm Mon-Fri Except buses
Victoria Road	East	40m north of Greenview to 65m south thereof	Anytime
Victoria Road	East	96.8m north of Grange to 60.2m north thereof	Anytime
Victoria Road	West	40m north of Greenview to 62m south thereof	Anytime
Victoria Road S	Both	York Road to Eramosa River	Anytime
Victoria Road North	East	635m north of Mussen Street to 34m north thereof	Anytime
Victoria Road North	West	516m north of Goldenview Drive to 34m north thereof	Anytime
Water Street	Both	Edinburgh Road to 33m west thereof	Anytime
Water Street	North	36m east of Maple Street to 90m west thereof	8:00am-4:30pm Mon-Fri
Water Street	North	43m west of Maple Street to 123m west thereof	8:00am-4:30pm Mon-Fri Except buses
Water Street	South	Maple Street to 110m west thereof	8:00am-4:30pm Mon-Fri, Sept 1 – June 30
Water Street	South	Maple Street to 36m east thereof	8:00am-4:30pm Mon-Fri
Waterloo Avenue	Both	39m west of Dublin to 66m east thereof	Anytime

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Waterloo Avenue	North	33m west of Yorkshire Street to 59m east thereof	Anytime
Waterloo Avenue	North	Alma Street to 32m east thereof	8:00am-4:30pm Mon-Fri
Waterloo Avenue	North	Fergus Street to 7m east thereof	8:00am-4:30pm Mon-Fri
Waterloo Avenue	South	15m west of Alma Street to 52m east thereof	8:00am-4:30pm Mon-Fri
Watson Parkway	Both	Couling Crescent (south) to 127m south thereof	8:00am-4:30pm Mon-Fri, Sept 1 – June 30
Waterloo Avenue	South	38.4m west of Yorkshire Street to 53.6m east thereof	Anytime
Waverley Drive	North	114m west of Vermont Street to 62m west thereof	8:00am-4:30pm Mon-Fri Except buses
Waverley Drive	North	51m west of Vermont Street to 63m west thereof	8:00am-4:30pm Mon-Fri
Waverley Drive	North	Windsor Street to 20m east thereof	8:00am-4:30pm Mon-Fri
Waverley Drive	North	Windsor Street to 27m west thereof	8:00am-4:30pm Mon-Fri
Waverley Drive	South	46m west of Vermont Street to Windsor Street	8:00am-4:30pm Mon-Fri
Wellington Street West	Both	Imperial Road South to 165m east thereof	Anytime
West Acres Drive	North	43m west of Gateway Drive to 80m east thereof	8:00am-4:30pm Mon-Fri
West Acres Drive	South	Gateway Drive to 43m west thereof	8:00am-4:30pm Mon-Fri
Westmount Road	East	66m north of Torrance Crescent to 128m north thereof	8:00am-4:30pm Mon-Fri
Westmount Road	West	57m north of Torrance Crescent to 99m north thereof	8:00am-4:30pm Mon-Fri
Westmount Road	West	78m south of Division Street to 53m south thereof	8:00am-9:00 am and 2:30pm-4:00pm, Mon-Fri
Westwood Road	West	37m north of Willow Road to 221m north thereof	8:00am-4:30pm Mon-Fri
Willow Road	North	96m east of Westwood Road to 51m east thereof	8:00am-4:30pm, Mon-Fri (except buses)
Willow Road	North	225m east of Elmira Road North to 318m east thereof	8:00am-4:30pm Mon-Fri
Willow Road	South	203m east of Elmira Road North to 187m east thereof	8:00am-4:30pm Mon-Fri
Willow Road	South	95m east of Elmira Road North to 50m east thereof	Anytime (except buses)
Wilson Street	West	Macdonell Street to 16.5m south thereof	Anytime
Wilson Street	West	Northumberland Street to 15.3m north thereof	Anytime
Wilton Road	West	Simmonds Drive to 94m south thereof	8:30am-4:30pm Mon-Fri
Wimbledon Road	East	Easterly intersection of Westwood Road to 73m north thereof	8:00am-4:30pm Mon-Fri September 1 –June 30

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Windsor Street	Both	Waverley Drive to 50m north thereof	8:00am-4:30pm Mon-Fri
Woodlawn Road West	North	Imperial Rd to West City Limits	Anytime
Woodlawn Road East	North	Ferndale Avenue to 19m east thereof	8:00am-4:30pm Mon-Fri
Woodlawn Road East	South	19m east of Ferndale Avenue to 37m west thereof	8:00am-4:30pm Mon-Fri
Woodlawn Road West	Both	30m west of Nicklin Road to 165m east of Nicklin Road	Anytime
Woolwich Street	Both	54m north of Clarence Street to 71m south thereof	Anytime
Woolwich Street	East	32.4m north of Cardigan Street to 27m north thereof	Anytime
Woolwich Street	East	32.5m south of Douglas Street to 82m south thereof	Anytime
Woolwich Street	East	London Road to 37.7m north thereof	Anytime
Woolwich Street	West	14.6m south of Douglas Street to Guelph Centre Laneway	Anytime
Woolwich Street	West	34m north of Division Street to 62m north thereof	Anytime
Woolwich Street	West	Division Street to 31.7m south thereof	Anytime
Woolwich Street	West	Edwin Street to McTague Street	Anytime
Woolwich Street	West	Guelph Centre Laneway to 30m south thereof	Anytime (except buses)
Woolwich Street	West	Norwich Street to Charles Street	Anytime
Woolwich Street	West	Speedvale Avenue to 150m south thereof	Anytime
Woolwich Street	West	Wyndham Street to 47.8m north of Baker Street	Anytime
Wyndham Street	West	Woolwich Street to 47m south thereof	Anytime Except buses
Wyndham Street	Both	Carden to Farquhar	Anytime
Wyndham Street	West	Quebec Street to Cork Street	Anytime Except buses
Wyndham Street	East	Douglas Street to 85m south thereof	Anytime Except buses
Wyndham Street	Both	Carden Street to Wellington Street East	Anytime
York Road	North	27.6m west of Toronto Street to 50.6m east thereof	Anytime
York Road	South	47m west of Toronto Street to 76.3m east thereof	Anytime
York Road	South	Brockville Avenue to 37m east thereof	Anytime
Youngman Drive	East	9m south of Smart Street to 43m north thereof	8:30am-4:30pm Mon-Fri

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Column I <u>STREET</u>	Column II <u>SIDE</u>	Column III <u>LOCATION</u>	Column IV <u>TIME</u>
Youngman Drive	North	Harvard to 24m west thereof	8:30am-4:30pm Mon-Fri
Youngman Drive	South	Harvard to 24m west thereof	8:30am-4:30pm Mon-Fri
Youngman Drive	West	Smart Street to 126m north thereof	8:30am-4:30pm Mon-Fri
Zaduk Pl	East	105m north of McCann St to 40m south of McCann St	8:00am-4:30pm Mon-Fri
Zaduk Place	West	40m south of McCann Street to 70m north thereof	8:00am-4:30pm Mon-Fri
Zaduk Place	East	87m north of McCann Street to 40m north thereof	Anytime
Zaduk Place	West	87m north of McCann Street to 42m north thereof	Anytime

THE CORPORATION OF THE CITY OF GUELPH

By-Law Number (2020) – 20480

A By-law to stop up and close part of Dublin Street described as Part of Dublin Street, Plan 8, designated as Part 1, Reference Plan 61R-21723, City of Guelph.

WHEREAS by virtue of Section 34(1) of the Municipal Act, 2001 the Council may pass by-laws for stopping up and closing any highway or part thereof;

NOW THEREFORE THE COUNCIL OF THE CORPORATION OF THE CITY OF GUELPH ENACTS AS FOLLOWS:

1. That the land described as Part of Dublin Street, Plan 8, designated as Part 1, Reference Plan 61R-21723, City of Guelph, is hereby stopped up and closed.
2. And that this by-law shall take effect upon registration of a copy of this by-law, certified under the hand of the Clerk and the seal of the Corporation, in the Registry Office for the Land Titles Division of Wellington No. 61.
3. The office of the City Solicitor is authorized to execute by electronic means the documents requiring registration to give effect to Section 1 and 2 herein.

PASSED this TWENTY-THIRD of MARCH, 2020.

CAM GUTHRIE – MAYOR

STEPHEN O'BRIEN – CITY CLERK

THE CORPORATION OF THE CITY OF GUELPH

By-law Number (2020) – 20487

A by-law to authorize the execution of an agreement between The Corporation of the City of Guelph and Her Majesty the Queen in Right of the Province of Ontario, represented by the Minister of Transportation for the Province of Ontario. (Dedicated Gas Tax Funds for Public Transportation Program).

**THE COUNCIL OF THE CORPORATION OF THE CITY OF GUELPH
ENACTS AS FOLLOWS:**

1. THAT the Mayor and Clerk are hereby authorized to execute on behalf of The Corporation of the City of Guelph and seal with the corporate seal, an Agreement between The Corporation of the City of Guelph and Her Majesty the Queen in Right of the Province of Ontario, represented by the Minister of Transportation for the Province of Ontario. (Dedicated Gas Tax Funds for Public Transportation Program).

PASSED this TWENTY-THIRD day of MARCH, 2020.

CAM GUTHRIE – MAYOR

STEPHEN O'BRIEN - CITY CLERK

THE CORPORATION OF THE CITY OF GUELPH

By-law Number (2020) – 20488

A by-law to confirm the proceedings of a meeting of Guelph City Council held March 23, 2020.

**THE COUNCIL OF THE CORPORATION OF THE CITY OF GUELPH ENACTS
AS FOLLOWS:**

1. Subject to Section 3 of this by-law, every decision of Council taken at the meeting at which this by-law is passed, and every resolution passed at that meeting, shall have the same force and effect as if each and every one of them had been the subject matter of a separate by-law duly enacted.
2. The execution and delivery of all such documents as are required to give effect to the decisions taken at the meeting at which this by-law is passed and the resolutions passed at this meeting, are hereby authorized.
3. Nothing in this by-law has the effect of giving to any decision or resolution the status of a by-law where any legal prerequisite to the enactment of a specific by-law has not been satisfied.
4. Any member of Council who disclosed a pecuniary interest at the meeting at which this by-law is passed, shall be deemed to have disclosed that interest in this confirmatory by-law as it relates to the item in which the pecuniary interest was disclosed.

PASSED this TWENTY-THIRD day of MARCH, 2020.

CAM GUTHRIE - MAYOR

STEPHEN O'BRIEN – CITY CLERK