



City of Hamilton
PUBLIC WORKS COMMITTEE
AGENDA

Meeting #: 23-003
Date: March 20, 2023
Time: 1:30 p.m.
Location: Council Chambers
Hamilton City Hall
71 Main Street West

Carrie McIntosh, Legislative Coordinator (905) 546-2424 ext. 2729

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2. APPROVAL OF AGENDA	
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- 7.2 Brenda Duke, GALA Community Planning Team, respecting Support for Maintenance of Gardens within the Public Parks (approved February 13, 2023)
- 7.3 Brenda Duke, GALA Community Planning Team, respecting Waste Pickup Procedures and Support for Community Cleanups (approved February 13, 2023)
- 7.4 Mymoon Bhuiyan, McMaster EcoCAR, respecting EV in Hamilton (approved February 13, 2023)

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13. NOTICES OF MOTION

14. GENERAL INFORMATION / OTHER BUSINESS

14.1 Amendments to the Outstanding Business List

a. Items Considered Complete and Needing to be Removed:

a. HSR Fare Incentives for Ridership Recovery

Addressed as Item 8, PW Report 22-015
(PW21056(a))
Item on OBL: ACC

b. Protected Bike Lane Curbs

Addressed as Item 9.4 (PW23016) (on today's
agenda)
Item on OBL: ACA

15. PRIVATE AND CONFIDENTIAL

16. ADJOURNMENT



PUBLIC WORKS COMMITTEE

MINUTES 23-002

2:00 p.m.

Monday, February 13, 2023

Council Chambers

Hamilton City Hall

71 Main Street West

Present: Councillors J. Beattie, C. Cassar, J. P. Danko, M. Francis, T. Jackson, C. Kroetsch, T. McMeekin, N. Nann, E. Pauls, A. Wilson

Absent Councillor M. Spadafora – personal
with Regrets: Councillor M. Wilson – personal

THE FOLLOWING ITEMS WERE REFERRED TO COUNCIL FOR CONSIDERATION:

1. Burlington Street Sewage Spill Update (PW22088(a)) (City Wide) (Item 8.1)

(Beattie/Jackson)

- (a) That the General Manager, Public Works be directed to notify the Mayor and City Council members via e-mailed Communication Update with the submission of all responses to the Provincial Officer's Order Number 1-142403769 (the Order) issued by the Ministry of the Environment, Conservation and Parks (MECP), at the same time that the responses to the Order are submitted to the MECP;
- (b) That the General Manager, Public Works be directed to publish all responses to the Provincial Officer's Order Number 1-142403769 (the Order) issued by the Ministry of the Environment, Conservation and Parks to the City of Hamilton website for public availability;
- (c) That the General Manager, Public Works be directed to prepare a report to the Public Works Committee, following the submission of all responses to the Provincial Officer's Order Number 1-142403769 (the Order) issued by the Ministry of the Environment, Conservation and Parks, that identifies all program changes resulting from the Order including financial and staffing requirements;

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- (d) That Appendix "F" attached to Report PW22088(s) respecting Hamilton Water Sewage Spills Communications Guideline be approved for implementation; and
- (e) That the General Manager, Public Works be directed to provide an annual update report to the Public Works Committee regarding sewage spills from City of Hamilton sewer infrastructure.

Result: MOTION, CARRIED by a vote of 10 to 0, as follows:

Not Present - Ward 1 Councillor Maureen Wilson
 Yes - Ward 2 Councillor Cameron Kroetsch
 Yes - Ward 3 Councillor Nrinder Nann
 Yes - Ward 5 Councillor Matt Francis
 Yes - Ward 6 Councillor Tom Jackson
 Yes - Ward 7 Councillor Esther Pauls
 Yes - Ward 8 Councillor J. P. Danko
 Yes - Ward 10 Councillor Jeff Beattie
 Yes - Ward 12 Councillor Craig Cassar
 Yes - Ward 13 Councillor Alex Wilson
 Not Present - Ward 14 Councillor Mike Spadafora
 Yes - Ward 15 Councillor Ted McMeekin

2. 2023 Lymantria dispar dispar (LDD)Moth Treatment Plan (PW21069(b)) (City Wide) (Outstanding Business List Item) (Item 9.1)

(Danko/Pauls)

That Report PW21069(b), respecting 2023 Lymantria dispar dispar (LDD)Moth Treatment Plan, be received.

Result: MOTION, CARRIED by a vote of 10 to 0, as follows:

Not Present - Ward 1 Councillor Maureen Wilson
 Yes - Ward 2 Councillor Cameron Kroetsch
 Yes - Ward 3 Councillor Nrinder Nann
 Yes - Ward 5 Councillor Matt Francis
 Yes - Ward 6 Councillor Tom Jackson
 Yes - Ward 7 Councillor Esther Pauls
 Yes - Ward 8 Councillor J. P. Danko
 Yes - Ward 10 Councillor Jeff Beattie
 Yes - Ward 12 Councillor Craig Cassar
 Yes - Ward 13 Councillor Alex Wilson
 Not Present - Ward 14 Councillor Mike Spadafora
 Yes - Ward 15 Councillor Ted McMeekin

3. Scenic Reservoir – Planned Maintenance Non-Event (PW23012) (Wards 1, 2, 13 and 15) (Item 9.2)

(Cassar/Pauls)

That Report PW23012, respecting Scenic Reservoir – Planned Maintenance Non-Event, be received.

Result: MOTION, CARRIED by a vote of 10 to 0, as follows:

Not Present - Ward 1 Councillor Maureen Wilson
 Yes - Ward 2 Councillor Cameron Kroetsch
 Yes - Ward 3 Councillor Nrinder Nann
 Yes - Ward 5 Councillor Matt Francis
 Yes - Ward 6 Councillor Tom Jackson
 Yes - Ward 7 Councillor Esther Pauls
 Yes - Ward 8 Councillor J. P. Danko
 Yes - Ward 10 Councillor Jeff Beattie
 Yes - Ward 12 Councillor Craig Cassar
 Yes - Ward 13 Councillor Alex Wilson
 Not Present - Ward 14 Councillor Mike Spadafora
 Yes - Ward 15 Councillor Ted McMeekin

4. White Brick Church Cemetery (PW22050(a)) (Ward12) (Item 11.1)

(Cassar/Pauls)

- (a) That the City of Hamilton voluntarily accept the administration and operation of White Brick Church Cemetery, located at 99 Garner Road East, Ancaster, ON L9G 3K9, by a transfer of the operation through the Bereavement Authority of Ontario from the White Brick Church Cemetery c/o Donna Smith to the City of Hamilton;
- (b) That the General Manager of Corporate Services be authorized and directed to acquire the lands located at 99 Garner Road East, Ancaster, ON L9G 3K9, as shown in Appendix "A" attached to Report PW22050(a), subject to the condition described in Recommendation (c) of Report PW22050(a), on an as-is, where-is basis, and assume the operation of the White Brick Church Cemetery located on the Lands, for nominal consideration and on such additional terms and conditions deemed appropriate by the General Manager of Public Works, or their delegate;
- (c) That the General Manager of Public Works be directed to determine whether, in fulfilling the direction to acquire the White Brick Church Cemetery, a smaller portion of the Lands excluding the building may be acquired by the City in conformity with the applicable Official Plan and Zoning By-law and any other applicable City policies and By-laws, and in the

event that the determination is that a smaller portion may be acquired, that the lands to be acquired in accordance with Recommendation (b) of Report PW22050(a) be reduced accordingly and staff be directed to obtain a reference plan describing the portion of the Lands to be acquired, in a form satisfactory to the City Solicitor or their delegate;

- (d) That Real Estate and Legal fees estimated at \$2,500 be funded from existing budget under Cemeteries Dept. ID 492001, and be transferred to Dept. ID 812036 (Real Estate – Admin Recovery), Account 59806 in the Planning & Economic Development Department;
- (e) That the General Manager of Public Works be authorized and directed to execute all documentation necessary to transfer ownership and operations of the White Brick Church Cemetery to the City of Hamilton, including all assets and receipt of a contribution of \$8,000.00 from the current operators into the City of Hamilton’s Care and Maintenance Trust Fund (Dept ID #120015) upon transfer of cemetery operation to the City of Hamilton; together with any ancillary documentation required to give effect to the Recommendations in (a) and (b), in a form satisfactory to the City Solicitor or their delegate;
- (f) That the City Solicitor or their delegate be authorized and directed to take all necessary steps, and execute all necessary documents to complete the transaction, including paying any necessary expenses, amending the closing, due diligence and other dates, and amending and waiving terms and conditions on such terms deemed reasonable;
- (g) That By-law 12-151 being a By-law respecting the City of Hamilton’s Cemeteries, as amended, be further amended after the transfer of operation to include the White Brick Church Cemetery in Part 2 – List of Cemeteries Owned and Operated by Hamilton Municipal Cemeteries;
- (h) That the Director of Environmental Services or their delegate be authorized to enter into a volunteer agreement with Donna and Lyle Smith for the maintenance and upkeep of the Cemetery, with such terms and conditions in a form satisfactory to the City Solicitor;
- (i) That the General Manager of Public Works be authorized and directed to approve and execute all required agreements and ancillary documents, save and except for the volunteer agreement, with such terms and conditions in a form satisfactory to the City Solicitor; and
- (j) That the Mayor and City Clerk be authorized and directed to approve and execute all required agreements and ancillary documents, save and except

for the volunteer agreement, with such terms and conditions in a form satisfactory to the City Solicitor or their delegate.

Result: MOTION, CARRIED by a vote of 10 to 0, as follows:

Not Present - Ward 1 Councillor Maureen Wilson
 Yes - Ward 2 Councillor Cameron Kroetsch
 Yes - Ward 3 Councillor Nrinder Nann
 Yes - Ward 5 Councillor Matt Francis
 Yes - Ward 6 Councillor Tom Jackson
 Yes - Ward 7 Councillor Esther Pauls
 Yes - Ward 8 Councillor J. P. Danko
 Yes - Ward 10 Councillor Jeff Beattie
 Yes - Ward 12 Councillor Craig Cassar
 Yes - Ward 13 Councillor Alex Wilson
 Not Present - Ward 14 Councillor Mike Spadafora
 Yes - Ward 15 Councillor Ted McMeekin

5. Accessible Transportation Services and the Disabled and Aged Regional Transportation Service Policy (PW23009) (City Wide) (Outstanding Business List Item) (Item 11.2)

(Jackson/Kroetsch)

That Report PW23009, respecting Accessible Transportation Services and the Disabled and Aged Regional Transportation Service Policy, be received.

Result: MOTION, CARRIED by a vote of 10 to 0, as follows:

Not Present - Ward 1 Councillor Maureen Wilson
 Yes - Ward 2 Councillor Cameron Kroetsch
 Yes - Ward 3 Councillor Nrinder Nann
 Yes - Ward 5 Councillor Matt Francis
 Yes - Ward 6 Councillor Tom Jackson
 Yes - Ward 7 Councillor Esther Pauls
 Yes - Ward 8 Councillor J. P. Danko
 Yes - Ward 10 Councillor Jeff Beattie
 Yes - Ward 12 Councillor Craig Cassar
 Yes - Ward 13 Councillor Alex Wilson
 Not Present - Ward 14 Councillor Mike Spadafora
 Yes - Ward 15 Councillor Ted McMeekin

6. Appropriation Transfer of Funds for Kenilworth Transmission Watermain Renewal (PW23010) (Ward 4 and Ward 6) (Item 11.3)**(Jackson/Francis)**

- (a) That Council approve the award of Request for Proposals Contractor Required for the Rehabilitation of the Kenilworth Trunk Watermain, pursuant to Procurement Policy #5.4 Request for Proposals, to Clearway Construction Inc. in the amount of \$5,090,699.89 (not including Contingency and Non-Refundable HST), and that the General Manager, Public Works Department be authorized to negotiate, enter into and execute any required Contract and any ancillary documents required to give effect thereto with Clearway Construction Inc., in a form satisfactory to the City Solicitor; and
- (b) That the budget and financing plan for the Kenilworth Transmission Watermain Renewal (Project ID 5141760754), totalling \$3,500,000, be amended and approved, by an increase of \$2,484,000, to be funded by a transfer from Waterworks Capital Reserve (#108015).

Result: MOTION, CARRIED by a vote of 10 to 0, as follows:

Not Present - Ward 1 Councillor Maureen Wilson
 Yes - Ward 2 Councillor Cameron Kroetsch
 Yes - Ward 3 Councillor Nrinder Nann
 Yes - Ward 5 Councillor Matt Francis
 Yes - Ward 6 Councillor Tom Jackson
 Yes - Ward 7 Councillor Esther Pauls
 Yes - Ward 8 Councillor J. P. Danko
 Yes - Ward 10 Councillor Jeff Beattie
 Yes - Ward 12 Councillor Craig Cassar
 Yes - Ward 13 Councillor Alex Wilson
 Not Present - Ward 14 Councillor Mike Spadafora
 Yes - Ward 15 Councillor Ted McMeekin

7. Investment in Trieste Bocce Club, 60 DiCenzo Drive, Hamilton (Ward 8) (Item 12.2)**(Danko/Jackson)**

WHEREAS, the majority of City of Hamilton owned facilities and park assets (buildings) in Ward 8 are maintained by the City's Facilities Operations & Maintenance Section of the Energy, Fleet & Facilities Management Division, Public Works Department;

WHEREAS, the members of the Trieste Bocce Club, located at 60 DiCenzo Drive, Hamilton, are requesting rolling door options to provide a more sheltered

environment against the cold and rain and to extend the bocce playing season;
 and

WHEREAS, potential issues identified including structural concerns with the building due to increased dead and live loads from rolling door such as Fire and Life Safety, ingress and egress of the property, *Accessibility for Ontarians with Disabilities Act (AODA)* requirements, air flow and Heating, Ventilation and Air conditioning (HVAC) requirements.

THEREFORE, BE IT RESOLVED:

- (a) That staff be authorized and directed to retain professional services to determine the feasibility of enclosing the Trieste Bocce Club, located at 60 DiCenzo Drive, Hamilton, with rolling doors, to be funded from the Ward 8 Area Rating Reserve Account (108058) to an upset limit of \$2,500;
- (b) That the Ward 8 Area Rating Reserve Account (108058) be used as required, to an upset limit of \$25,000, to fund the investigation of options to determine next steps (design options, entrance & exits, overhead lighting, HVAC systems, construction cost estimation etc.) for the Trieste Bocce Club, located at 60 DiCenzo Drive, Hamilton; and
- (c) That the Mayor and City Clerk be authorized and directed to execute any required agreement(s) and ancillary documents to retain professional services to investigate options and next steps respecting the Trieste Bocce Club, located at 60 DiCenzo Drive, Hamilton, with such terms and conditions in a form satisfactory to the City Solicitor.

Result: MOTION, CARRIED by a vote of 10 to 0, as follows:

Not Present - Ward 1 Councillor Maureen Wilson
 Yes - Ward 2 Councillor Cameron Kroetsch
 Yes - Ward 3 Councillor Nrinder Nann
 Yes - Ward 5 Councillor Matt Francis
 Yes - Ward 6 Councillor Tom Jackson
 Yes - Ward 7 Councillor Esther Pauls
 Yes - Ward 8 Councillor J. P. Danko
 Yes - Ward 10 Councillor Jeff Beattie
 Yes - Ward 12 Councillor Craig Cassar
 Yes - Ward 13 Councillor Alex Wilson
 Not Present - Ward 14 Councillor Mike Spadafora
 Yes - Ward 15 Councillor Ted McMeekin

FOR INFORMATION:

(Danko/A. Wilson)

That the Public Works Committee meeting be recessed until after the conclusion of the Board of Health Meeting.

Result: MOTION, CARRIED by a vote of 10 to 0, as follows:

Not Present - Ward 1 Councillor Maureen Wilson
 Yes - Ward 2 Councillor Cameron Kroetsch
 Yes - Ward 3 Councillor Nrinder Nann
 Yes - Ward 5 Councillor Matt Francis
 Yes - Ward 6 Councillor Tom Jackson
 Yes - Ward 7 Councillor Esther Pauls
 Yes - Ward 8 Councillor J. P. Danko
 Yes - Ward 10 Councillor Jeff Beattie
 Yes - Ward 12 Councillor Craig Cassar
 Yes - Ward 13 Councillor Alex Wilson
 Not Present - Ward 14 Councillor Mike Spadafora
 Yes - Ward 15 Councillor Ted McMeekin

(a) APPROVAL OF AGENDA (Item 2)

The Committee Clerk advised of the following changes to the agenda:

6. DELEGATION REQUESTS

6.4 Mymoon Bhuiyan, McMaster EcoCAR, respecting EV in Hamilton
 (for a future meeting)

13. NOTICES OF MOTION

13.1 Crime Prevention Through Environmental Design Review of the
 City-owned Escarpment Staircases

14. GENERAL INFORMATION/OTHER BUSINESS

14.1 Amendments to the Outstanding Business List

b. Items Requiring a New Due Date:

- a. Improving Truck Route Detouring During Construction
 Closures
 Item on OBL: ABY
 Current Due Date: March 20, 2023

Proposed New Due Date: May 15, 2023

- b. Protected Bike Lane Curbs (Hamilton Cycling Committee - Citizen Committee Report)
Item on OBL: ACA
Current Due Date: January 16, 2023
Proposed New Due Date: March 20, 2023
- c. Antonio Gallo, Gallo Ice Cream Retail, respecting Ice Cream Vendor Operation at Confederation Park
Item on OBL: ACN
Current Due Date: Q1 2023
Proposed New Due Date: March 20, 2023
- d. Roadway Safety Measures on Aberdeen Avenue from Queen Street to Longwood Road
Item on OBL: AZ
Current Due Date: Q2 2023
Proposed New Due Date: July 5, 2023

(Danko/A. Wilson)

That the Agenda for the February 13, 2023 Public Works Committee meeting be approved, as amended.

Result: MOTION, CARRIED by a vote of 9 to 0, as follows:

Not Present - Ward 1 Councillor Maureen Wilson
 Yes - Ward 2 Councillor Cameron Kroetsch
 Yes - Ward 3 Councillor Nrinder Nann
 Yes - Ward 5 Councillor Matt Francis
 Yes - Ward 6 Councillor Tom Jackson
 Not Present - Ward 7 Councillor Esther Pauls
 Yes - Ward 8 Councillor J. P. Danko
 Yes - Ward 10 Councillor Jeff Beattie
 Yes - Ward 12 Councillor Craig Cassar
 Yes - Ward 13 Councillor Alex Wilson
 Not Present - Ward 14 Councillor Mike Spadafora
 Yes - Ward 15 Councillor Ted McMeekin

(b) DECLARATIONS OF INTEREST (Item 3)

There were no declarations of interest.

(c) APPROVAL OF MINUTES OF PREVIOUS MEETING (Item 4)**(i) January 16, 2023 (Item 4.1)****(Cassar/Beattie)**

That the Minutes of the January 16, 2023 meeting of the Public Works Committee be approved, as presented.

Result: MOTION, CARRIED by a vote of 9 to 0, as follows:

Not Present - Ward 1 Councillor Maureen Wilson
 Yes - Ward 2 Councillor Cameron Kroetsch
 Yes - Ward 3 Councillor Nrinder Nann
 Yes - Ward 5 Councillor Matt Francis
 Yes - Ward 6 Councillor Tom Jackson
 Not Present - Ward 7 Councillor Esther Pauls
 Yes - Ward 8 Councillor J. P. Danko
 Yes - Ward 10 Councillor Jeff Beattie
 Yes - Ward 12 Councillor Craig Cassar
 Yes - Ward 13 Councillor Alex Wilson
 Not Present - Ward 14 Councillor Mike Spadafora
 Yes - Ward 15 Councillor Ted McMeekin

(d) DELEGATION REQUESTS (Item 6)**(Kroetsch/McMeekin)**

That the following Delegation Requests be approved for a future meeting:

- (i) Angela Zheng, respecting Funding for a Staircase to Facilitate Access to a Commuter Trail Connecting University Gardens and Westdale (Item 6.1)
- (ii) Brenda Duke, GALA Community Planning Team, respecting Support for Maintenance of Gardens within the Public parks (Item 6.2)
- (iii) Brenda Duke, GALA Community Planning Team, respecting Waste Pickup Procedures and Support for Community Cleanups (Item 6.3)
- (iv) Mymoon Bhuiyan, McMaster EcoCAR, respecting EV in Hamilton (Item 6.4)

Result: MOTION, CARRIED by a vote of 9 to 0, as follows:

Not Present - Ward 1 Councillor Maureen Wilson
 Yes - Ward 2 Councillor Cameron Kroetsch
 Yes - Ward 3 Councillor Nrinder Nann
 Yes - Ward 5 Councillor Matt Francis

Yes - Ward 6 Councillor Tom Jackson
 Not Present - Ward 7 Councillor Esther Pauls
 Yes - Ward 8 Councillor J. P. Danko
 Yes - Ward 10 Councillor Jeff Beattie
 Yes - Ward 12 Councillor Craig Cassar
 Yes - Ward 13 Councillor Alex Wilson
 Not Present - Ward 14 Councillor Mike Spadafora
 Yes - Ward 15 Councillor Ted McMeekin

(e) STAFF PRESENTATIONS (Item 8)

(i) Burlington Street Sewage Spill Update (PW22088(a)) (City Wide) (Item 8.1)

Nick Winters, Director, Hamilton Water, provided the Committee with an overview of Report PW22088(a) respecting Burlington Street Sewage Spill Update, with the aid of a PowerPoint presentation.

(Cassar/Pauls)

That the presentation from Nick Winters, Director, Hamilton Water, respecting Hamilton Burlington Street Sewage Spill Update, be received.

Result: MOTION, CARRIED by a vote of 10 to 0, as follows:

Not Present - Ward 1 Councillor Maureen Wilson
 Yes - Ward 2 Councillor Cameron Kroetsch
 Yes - Ward 3 Councillor Nrinder Nann
 Yes - Ward 5 Councillor Matt Francis
 Yes - Ward 6 Councillor Tom Jackson
 Yes - Ward 7 Councillor Esther Pauls
 Yes - Ward 8 Councillor J. P. Danko
 Yes - Ward 10 Councillor Jeff Beattie
 Yes - Ward 12 Councillor Craig Cassar
 Yes - Ward 13 Councillor Alex Wilson
 Not Present - Ward 14 Councillor Mike Spadafora
 Yes - Ward 15 Councillor Ted McMeekin

For further disposition of this matter, refer to Item 1.

(f) MOTIONS (Item 12)

(i) Removal of the City-Owned Tree Located at 1415 Trinity Church Road, Hamilton (Ward 11) (Item 12.1)

(Jackson/Pauls)

WHEREAS, the owner of 1415 Trinity Church Road, Hamilton, indicates they experience sightline concerns and impediments to deliveries safely entering and exiting their property from the large City-owned tree located at their property;

WHEREAS, the owner of 1415 Trinity Church Road has expressed their desire to the Ward Councillor and has previously appealed to Forestry staff to have the City-owned tree removed.

THEREFORE, BE IT RESOLVED:

- (a) That Forestry staff be directed to remove the City-owned tree located at 1415 Trinity Church Road, Hamilton; and
- (b) That Forestry staff be directed to waive all tree removal permit and loss of canopy fees for the removal of the City-owned tree located at 1415 Trinity Church Road, Hamilton, and to fund the tree removal costs through the Forestry section operating budget.

Result: MOTION, DEFEATED by a vote of 2 to 8, as follows:

Not Present - Ward 1 Councillor Maureen Wilson
 No - Ward 2 Councillor Cameron Kroetsch
 No - Ward 3 Councillor Nrinder Nann
 No - Ward 5 Councillor Matt Francis
 Yes - Ward 6 Councillor Tom Jackson
 Yes - Ward 7 Councillor Esther Pauls
 No - Ward 8 Councillor J. P. Danko
 No - Ward 10 Councillor Jeff Beattie
 No - Ward 12 Councillor Craig Cassar
 No - Ward 13 Councillor Alex Wilson
 Not Present - Ward 14 Councillor Mike Spadafora
 No - Ward 15 Councillor Ted McMeekin

(g) NOTICES OF MOTION (Item 13)

Councillor Nann relinquished the Chair to Councillor Pauls in order to introduce the following Notice of Motion.

(i) Crime Prevention Through Environmental Design Review of the City-owned Escarpment Staircases (Item 13.1)

WHEREAS, in the United Nations report Cities Alive: Designing Cities That Work For Women published in October 2022, it is stated that

“without a gender-responsive approach to urban planning, cities often compound gender inequalities that restrict women’s social and economic opportunities, health and wellbeing, sense of safety and security, and access to justice and equity”;
WHEREAS, the rate of police-reported sexual assaults in Canada has reached its highest levels since 1996;

WHEREAS, Hamilton’s sexual assault centre has seen a ‘dramatic increase’ in calls to their 24-hour support line over the past three years;
WHEREAS, the City of Hamilton is responsible for five escarpment staircases to provide recreational facility and active transportation links between the mountain and lower city;

WHEREAS, in December 2021, an unknown man approached a resident, Tara McFadyen, and attempted to sexually assault her during her morning daylight workout on the escarpment stairs; and

WHEREAS, other residents who have survived sexual violence that has occurred on the escarpment stairs have raised the alarm bell on the need for the City of Hamilton to do better and be responsive;

THEREFORE, BE IT RESOLVED:

- (a) That staff be directed to conduct a Crime Prevention Through Environmental Design (CPTED) review of the five City-owned escarpment staircases and report back on recommendations to improve the safety of escarpment staircase use specifically to prevent sexual violence, including any considerations to be referred to the 2024 budget process for consideration.

Councillor Nann assumed the Chair

(h) GENERAL INFORMATION / OTHER BUSINESS (Item 14)

(i) Amendments to the Outstanding Business List (Item 14.1)

(Francis/Cassar)

That the following amendments to the Public Works Committee’s Outstanding Business List, be approved.

- (1) Items Considered Complete and Needing to be Removed (Item 14.1(a))
 - (i) 2023 Lymantria dispar dispar (LDD) Moth Treatment Plan Addressed as Item 9.1 on today's Agenda - Report

PW21069(b) (Item 14.1(a)(a))
Item on OBL: ACO

- (ii) Accessible Transportation Services and the Disabled and Aged Regional Transportation Service Addressed as Item 11.2 on today's Agenda - Report PW23009 (Item 14.1(a)(b))
Item on OBL: ACT

(2) Items Requiring a New Due Date (Item 14.1(b))

- (i) Improving Truck Route Detouring During Construction Closures (Item 14.1(b)(a))
Item on OBL: ABY
Current Due Date: March 20, 2023
Proposed New Due Date: May 15, 2023
- (ii) Protected Bike Lane Curbs (Hamilton Cycling Committee - Citizen Committee Report) (Item 14.1(b)(b))
Item on OBL: ACA
Current Due Date: January 16, 2023
Proposed New Due Date: March 20, 2023
- (iii) Antonio Gallo, Gallo Ice Cream Retail, respecting Ice Cream Vendor Operation at Confederation Park (Item 14.1(b)(c))
Item on OBL: ACN
Current Due Date: Q1 2023
Proposed New Due Date: March 20, 2023
- (iv) Roadway Safety Measures on Aberdeen Avenue from Queen Street to Longwood Road (Item 14.1(b)(d))
Item on OBL: AZ
Current Due Date: Q2 2023
Proposed New Due Date: July 5, 2023

Result: MOTION, CARRIED by a vote of 9 to 0, as follows:

Not Present - Ward 1 Councillor Maureen Wilson
Not Present - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Yes - Ward 10 Councillor Jeff Beattie

Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Not Present - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

(i) ADJOURNMENT (Item 16)

(Cassar/Beattie)

That there being no further business, the meeting adjourned at 4:35 p.m.

Result: MOTION, CARRIED by a vote of 9 to 0, as follows:

Not Present - Ward 1 Councillor Maureen Wilson
Not Present - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Yes - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Not Present - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

Respectfully submitted,

Councillor Nann, Chair,
Public Works Committee

Carrie McIntosh
Legislative Coordinator
Office of the City Clerk



Hamilton

COMMITTEE MEMBER RESIGNATION FORM

I, Cathy Sutherland, would like to submit my resignation, effective FEBRUARY, 2023, from the HAMILTON Cycling Committee, for the following reason(s):

- My circumstances have changed and I know longer have the time to effectively participate on the Committee.
- Personal reasons.
- Other (please explain briefly):

Additional Comments (optional)

[Signature]
Signature

Feb 20 / 23
Date



Hamilton

COMMITTEE MEMBER RESIGNATION FORM

I, Marko Maric, would like to submit my resignation, effective February 15, 2023, from the Cycling Advisory Committee, for the following reason(s):

- My circumstances have changed and I know longer have the time to effectively participate on the Committee.
- Personal reasons.
- Other (please explain briefly):

I have accepted a City of Hamilton job offer and am no longer eligible to sit on a directly related advisory committee.

Additional Comments (optional)



Signature

February 15th 2023

Date



Hamilton

COMMITTEE MEMBER RESIGNATION FORM

I, Jessica Merolli, would like to submit my resignation, effective February, 2023, from the Hamilton Cycling Committee, for the following reason(s):

My circumstances have changed and I know longer have the time to effectively participate on the Committee.

Personal reasons.

Other (please explain briefly):

Additional Comments (optional)

Jessica Merolli

Signature

Feb 27, 2023

Date

6.1

Request to Speak to Committee of Council

Fri, 02/10/2023 - 15:20

==Committee Requested==

Committee: Public Works Committee

Will you be delegating in person or virtually? In person

Will you be delegating via a pre-recorded video? No

==Requestor Information==

Name of Individual: Mandi Smith

Name of Organization:

Contact Number: [REDACTED]

Email Address: [REDACTED]

Mailing Address:

[REDACTED]

Reason(s) for delegation request: To add to Brenda Duke's presentation on Monday Feb 13 to Public Works as part of her presentation.

Brenda Duke's delegation will identify the scope and vision of Beautiful Alleys. Mine is an informal discussion of the logistics of maintaining Alleys in the Barton Cannon Birch Sherman grid.

Will you be requesting funds from the City? No

Will you be submitting a formal presentation? No



Hamilton

HAMILTON CYCLING COMMITTEE (HCyC) MINUTES

Wednesday, December 7, 2022

5:45 p.m.

Room 264, 2nd Floor, City Hall

Hybrid Meeting

Present: Chair: Chris Ritsma
Vice-Chair:
Members: Kate Berry, Roman Caruk, Sharon Gibbons, Jane Jamnik,
Marko Maric, Ann McKay, Kevin Vander Meulen, Cora
Muis, William Oates, Gary Rogerson

**Absent with
Regrets:** Jeff Axisa, Dan van den Beukel, Jessica Merolli, Cathy Sutherland,
Christine Yachouh

Also Present: Evan Nopper, Active Transportation Technologist, Active Transportation
Danny Pimentel, Project Manager, Active Transportation
Peter Topalovic, Program Manager, Sustainable Mobility
Julia Hamill, Program Manager, Everyone Rides Initiative

1. CEREMONIAL ACTIVITIES

C. Ritsma recited a land acknowledgement.

2. APPROVAL OF AGENDA

(Caruk/Muis)

That the agenda of the December 7, 2022 meeting of the Hamilton Cycling
Committee be approved.

CARRIED

3. DECLARATIONS OF INTEREST

C. Ritsma is on the board of directors for Hamilton Bikeshare and will not vote on any motion related to funding of Hamilton Bikeshare.

C. Muis would be the preferred vendor related to the Cycling Without Ages funding request and will not vote on the funding request, but may provide comment/insight into the request.

4. APPROVAL OF MINUTES OF PREVIOUS MEETING

**(i) Hamilton Cycling Committee Meeting Minutes - September 7, 2022
(Item 4.1)**

(Jamnik/Maric)

That the minutes of the September 7, 2022 meeting of the Hamilton Cycling Committee be approved, as presented.

CARRIED

5. COMMUNICATIONS

(i) 2023 Procedural Handbook for Citizen Appointees (Item 5.1)

Committee members were provided the draft 2023 procedural handbook for their review and comment. Staff indicated that comments are due to Clerks by January 31, 2023. This item will be included as a discussion item at the January committee meeting.

(ii) Commercial E-Scooter Update (Item 5.2)

Committee members were advised that the Commercial E-Scooter Pilot Program Request for Proposals has been completed and Bird Canada Inc. has been awarded the contract. Staff are working with the vendor to develop a launch plan for Spring 2023. Additional details will be shared as plans are finalized.

6. PUBLIC HEARINGS / DELEGATIONS

(i) Hamilton Bike Share's Everyone Rides Initiative - 2022 Updates (Item 6.1)

J. Hamill provided an update on Hamilton Bike Share's Everyone Rides Initiative which included the adaptive bike program, rider handbook, sponsorship opportunities and surveying users. Committee members asked questions related to time of year cycling most often occurs, Gage Park adaptive bike (electric step through) program availability (April to December only), sponsorship opportunities and how city funding supports Hamilton's Bikeshare program.

(Maric/Rogerson)

That the delegation from Hamilton Bike Share, Everyone Rides Initiative, be received:

CARRIED**7. DISCUSSION ITEMS****(Caruk/Maric)**

That the following discussion items be received:

(i) 2023 Draft Cycling Workplan (Item 8.1)

Staff provided the Committee with a list of 2023 cycling projects for their review and feedback. Staff indicated that a report is being prepared to be included in a January Council meeting. Committee members asked questions regarding the following:

- Hatt St (King St to Market St): capital works project includes new raised cycle tracks. Existing separated bicycle lanes (John St to Main St) will see the same application when capital works occurs
- Highway 8 (Fifty Rd to Region of Niagara): was recently resurfaced and paved shoulders were not included. Staff will look into this and follow up with the committee
- North Waterdown Dr: update on status of project and potential of seeing the proposed design. Staff will follow up with the committee with additional information

(ii) Cycle Hamilton - Project 529 Sticker Request (Item 8.2)

Committee members reviewed and discussed a funding request proposal from Cycle Hamilton for the purchase of 55-60 stickers at a cost of \$300. Committee members asked questions regarding how this program compares to the Police one as well as how well known the initiative is. Staff will advise if bike theft prevention information can be placed and made available on the City's website.

(Muis/Maric)

That \$300 from "Supporting Community Events to Raise Awareness for Cycling" within the 2022 Cycling Committee budget, be allocated to purchase 55-60 tamper proof stickers for Project 529.

CARRIED**(iii) Cycling Without Ages Funding Request (Item 8.3)**

Committee members reviewed and discussed a funding request proposal from Cycling Without Ages for a \$10,000 financial contribution towards the purchase of a Trishaw bicycle. It was noted that the bicycle would be used for multiple years, serving multiple people.

(Berry/Oates)

That up to \$2,000 from “Special Projects” within the 2022 Cycling Committee budget, be allocated to cover cost of equipment, contingent on an invoice(s) being provided prior to the end of 2022.

CARRIED

8. MOTIONS (Item 19)

(Vander Meulen/Rogerson)

That the motion respecting Upper Wellington Environmental Assessment Network Connectivity, be deferred until a public consultation is made possible.

CARRIED

(i) Upper Wellington Environmental Assessment Network Connectivity (Item 10.1)

WHEREAS the City is currently doing an Environmental Assessment along Upper Wellington between Limeridge Road and Stone Church Road;

WHEREAS Hamilton's cycling master plan includes cycling infrastructure over the Lincoln Alexander Parkway along Upper Wellington Street;

WHEREAS it is important that cycling infrastructure connect to existing infrastructure to develop increased ridership;

WHEREAS a cycling lane over the Lincoln Alexander Parkway would connect the planned cycling infrastructure south of the Parkway to that north of the Parkway;

WHEREAS a connection over the overpass is a key component of a minimum grid of cycling infrastructure on the Hamilton mountain;

WHEREAS there is currently no north-south crossing over the Parkway closer than West 5th to the west and Upper Sherman to the east;

WHEREAS it is possible to reduce the number of car lanes on the bridge along Upper Wellington;

WHEREAS it is possible to consider having only two lanes, along with a center turning lane, all along Upper Wellington from Lime Ridge Road to

Stone Church Road to match Upper Wellington to the south of Stone Church Road;

WHEREAS having four traffic lanes and with no cycle lane does not fit the goal of balancing infrastructure on the overpass; it instead prioritizes automobile transportation with respect to north-south connections on the Hamilton mountain;

WHEREAS a multi-use pathway slows down commuter cycling traffic;

WHEREAS a multi-use pathway causes unease for both cyclists and pedestrians; and,

WHEREAS pedestrians with ear-buds do not hear the bells of cyclists

THEREFORE, BE IT RESOLVED:

(a) The road improvements on Upper Wellington Street from Limeridge Road to Stone Church Road include cycling infrastructure over the Lincoln Alexander Parkway; and,

(b) That the cycling infrastructure be clearly separated (e.g. separated facility) from the pedestrian traffic along Upper Wellington.

9. NOTICE OF MOTIONS

(i) Bay Street North

WHEREAS Bay Street North remains a truck route on the new Truck Route Masterplan;

WHEREAS the Hamilton Cycling Committee passed a motion previously that curbs and other protection be used where truck routes must remain beside bicycle infrastructure;

WHEREAS curbs improve safety, comfort and reduce bicycle lane blockage;

WHEREAS the City of Hamilton declared a Climate Emergency;

WHEREAS the City of Hamilton declared a goal of Vision Zero; and,

WHEREAS these recommendations are in line with the following mandates of the Hamilton Cycling Advisory Committee:

- To advise City Council, through the Public Works Committee, on all matters related to cycling.
- To monitor implementation of the Hamilton Cycling Plan.
- To encourage and participate in planning for bicycling facilities.
- To encourage citizens to cycle instead of drive.

THEREFORE, BE IT RESOLVED AND RECOMMENDED:

- (a) That the bicycle lanes on Bay Street, north of Cannon Street to Strachan be protected by precast curbs.
- (b) Move the bicycle lane behind parked vehicles as opposed to the current configuration which requires vehicles to cross the bicycle lane to park.
- (c) Bicycle lanes that are well used or show growth potential in the immediate term have concrete curbs added, such as Creighton

(ii) Bicycle Friendly Streets

WHEREAS the OTM Book 18 nomograph indicates in most cases that a “shared operating space” should have a maximum speed of 40km/h (note: where operating speeds diverge from posted speed limits, 95th percentile operating speeds should be used);

WHEREAS the Hamilton Complete Streets Design Manual suggests: On lower-speed streets where shared facilities are appropriate, neighbourhood bikeways may be implemented. These are a connected network of low-traffic streets that create continuous cycling routes. They often feature wayfinding signage, pavement markings, and speed management measures, and traffic diverters that prevent continuous use by motor vehicle traffic;

WHEREAS the City of Hamilton has an increasing number of injuries and deaths of cyclists and pedestrians;

WHEREAS narrowing of lane widths, intersections, turning radii and road diets have been shown to improve safety without adversely impacting automobile throughput;

WHEREAS the City of Hamilton declared a Climate emergency;

WHEREAS the City of Hamilton declared the goal of Vision Zero; And;

WHEREAS these recommendations are in line with the following mandates of the Hamilton Cycling Advisory Committee:

- To advise City Council, through the Public Works Committee, on all matters related to cycling.
- To monitor implementation of the Hamilton Cycling Plan.
- To encourage and participate in planning for bicycling facilities.
- To encourage citizens to cycle instead of drive.

THEREFORE, BE IT RESOLVED AND RECOMMENDED:

- (a) That the City of Hamilton change the speed limits of “Signed On-Street Routes” to 40km/h or 30km/h where possible.
- (b) Narrow automobile lanes along these streets to the minimum lane width (2.7m – 3.0m) when there are painted lanes.
- (c) Utilize a variety of traffic calming measures including raised sidewalks, raised intersections, bump-outs and modal filters to disallow automobile traffic and allow active transportation
- (d) Install bicycle lanes where road width allows.

(iii) Bicycle Oriented Corridor

WHEREAS the City of Hamilton has utilized Transit Oriented Zoning to encourage redevelopment that attracts transit riders in preparation for a large-scale transit project to bring riders and increase tax revenue;

WHEREAS the City of Hamilton has specified the need to move transportation away from single occupancy private automobiles;

WHEREAS the City of Hamilton is trying to attract investment and residents into infill opportunities to reduce urban boundary expansion;

WHEREAS the City of Hamilton has declared a Climate Emergency;

WHEREAS the City of Hamilton has declared the goal of Vision Zero; and

WHEREAS these recommendations are in line with the following mandates of the Hamilton Cycling Advisory Committee:

- To advise City Council, through the Public Works Committee, on all matters related to cycling.
- To monitor implementation of the Hamilton Cycling Plan.
- To encourage and participate in planning for bicycling facilities.
- To encourage citizens to cycle instead of drive.

THEREFORE, BE IT RESOLVED AND RECOMMENDED:

That the City of Hamilton institute a “Cycling Oriented Corridor” along identified corridors in the Cycling Masterplan where cycling-oriented zoning would increase cycling activity and encourage the reduction of automobile use including:

- (a) Piloting a cycling-oriented corridor on Cannon Street from Queen Street North to Ottawa Street.
- (b) 6-storey allowance for new construction within 100m of the cycling corridor.
- (c) Minimum parking ratio of 0.00 within 100m of the cycling corridor.
- (d) Maximum parking ratio of 0.75 unless less than 3 units.
- (e) Bicycle parking must be on ground floor of buildings.
- (f) Commercial units must provide exterior bicycle parking or city bicycle parking.
- (g) Working with developments with reductions in charges if there are active transportation options provided to future tenants including: HBSI hub/micromobility hub and bikes, car share space, transit pass included in rent/fees.
- (h) Introduce modal filters at quiet intersections to limit uncontrolled access to Cannon Street across the bicycle tracks/lanes.

(iv) Cycling Plan and Budgetary Items

WHEREAS the Cycling Budget is currently 00% of the capital budget;

WHEREAS the City of Hamilton defers multiple cycling projects every year;

WHEREAS bike share systems provide first and last mile connections to existing infrastructure like transit, better utilizing and increasing ridership on transit;

WHEREAS the City of Hamilton is attempting to encourage use of bicycles and other active transportation instead of automobile use;

WHEREAS the Bike Share network utilizes funded and currently build bicycle infrastructure;

WHEREAS bicycle lanes in Hamilton are regularly blocked;

WHEREAS infrastructure built by the city is being blocked in such a way to defeat the purpose of the built infrastructure;

WHEREAS the City of Hamilton declared a Climate Emergency;

WHEREAS the City of Hamilton declared the goal of Vision Zero; and

WHEREAS the current speed of implementation of the Cycling Masterplan does not match the urgency of the above issues.

THEREFORE, BE IT RESOLVED AND RECOMMENDED:

- (a) The Cycling Masterplan completion be expedited prioritizing gaps, schools, working trips and spots without infrastructure.
- (b) The Cycling Budget be increased to in line with per capita spending of other nearby cities to fund the expansion.
- (c) Funding for bike share be increased:
 - (i) Stable operational that does not decrease if the system is more successful and funding that dynamically increases with increased services.
 - (ii) Stable capital funding that accounts for the age of the bikes and allows for expansion of the service area into wards beyond the currently served
- (d) Remove exemptions to parking in the bike lane, except by permit where alternative arrangements have been made, for accessibility purposes and emergency vehicles
- (e) Increase fine for parking in bicycle lane in line with other municipalities and similar fines for blocking automobile lanes.
- (f) Hire staff or reallocate staff to enforce fining and advising individuals blocking the bike lane.

(v) Bicycle Yield at Stop Signs (Idaho Stop)

WHEREAS dangerous operation of a bicycle is already an enforceable policy;

WHEREAS the Idaho stop allows for cyclists to slow and still stop if required, but allows continuation of momentum;

WHEREAS the City of Hamilton is trying to encourage use of bicycles and other modes of transportation and reduction of the use of personal automobiles;

WHEREAS the City of Hamilton has declared a Climate Emergency; and;

WHEREAS these recommendations are in line with the following mandates of the Hamilton Cycling Advisory Committee:

- To advise City Council, through the Public Works Committee, on all matters related to cycling.
- To encourage citizens to cycle instead of drive.
- To educate on the benefits and necessities of cycling.

THEREFORE, BE IT RESOLVED AND RECOMMENDED:

(a) The City of Hamilton request the police to discontinue enforcement of requiring cyclists to make a full stop at stop signs.

(b) The City of Hamilton correspond with the province to encourage the enactment of a law where cyclists can yield at stop signs, known as an "Idaho" stop.

(vi) James Street Complete Streets

WHEREAS other similar commercial corridors meant for active transportation have lower speed limits to encourage shopping, comfort and safe use of the street both on the sidewalk and on a bike (Locke Street, Ottawa Street, Kenilworth Avenue);

WHEREAS the Complete Streets Manual that the City of Hamilton adopted indicates James Street to be most similar to a Main Street, which has a targeted speed of 30-40km/h

WHEREAS the OTM Book 18 indicates a shared on street cycling facility as per the Complete Streets Design Manual indicates for a Main Street should have a maximum speed of 40km/h;

WHEREAS James Street is a popular pedestrian and cycling street with venues, restaurants and stores that encourage the use of bicycles or parking a bicycle and walking around;

WHEREAS the City of Hamilton has declared a Climate Emergency; and,

WHEREAS the City of Hamilton has declared the goal of Vision Zero.

THEREFORE, BE IT RESOLVED AND RECOMMENDED:

(a) Lower the speed limit on James Street to 40km/h

(b) Install a speed camera on the street

10. GENERAL INFORMATION / OTHER BUSINESS

- Committee members requested an update on the recent School Streets Project in 2022. Staff noted that it was quite successful and was supported by Police and school children/parents.
- Dundas Rides will be hosting their annual Yule Tide Ride on December 16th @ 6:00 pm in Dundas.
- Members were advised that recruitment for citizens to the City of Hamilton advisory committees is scheduled to take place in late Q1 2023. #When the recruitment is launched, current members will be required to reapply if they are interested. #
- Committee members were advised that going forward E. Nopper will be the staff liaison for the cycling committee.

11. ADJOURNMENT

(Caruk/Oates)

That, there being no further business, the meeting adjourned at 7:33 p.m.

CARRIED

Respectfully submitted,

Chris Ritsma

**Hamilton Cycling Advisory Committee
Minutes**

**December 7, 2022
Page 12 of 12**

Chair, Hamilton Cycling Committee

Danny Pimentel
Project Manager, Active Transportation
Planning & Economic Development



Hamilton

**HAMILTON CYCLING COMMITTEE (HCyC)
STAFF LIAISON REPORT**

Wednesday, January 4, 2023

5:45 p.m.

Virtual Meeting

Present: Chair: Chris Ritsma
Members: Marco Maric, Ann McKay, Jessica Merolli, Cora Muis,
William Oates, and Kevin Vander Meulen.

**Absent with
Regrets:** Kate Berry, Roman Caruk, Sharon Gibbons, Jane Jamnik, Jeff Axisa,
Gary Rogerson, Cathy Sutherland, Dan van den Beukel and Christine
Yachouh.

Also Present: Juby Lee, Program Coordinator, Sustainable Mobility
Callaway Johnson, Program Coordinator, Sustainable Mobility
Peter Topalovic, Program Manager, Sustainable Mobility
Danny Pimentel, Project Manager, Sustainable Mobility
Bakir Fayad, Project Manager, Traffic Engineering
Evan Nopper, Active Transportation Technologist, Sustainable Mobility

Pursuant to Section 5.4(4) of the City of Hamilton's Procedural By-law 21-021, as amended, at 6:15 p.m. the Staff Liaison advised those in attendance that quorum had not been achieved within 30 minutes after the time set for Hamilton Cycling Advisory Committee, therefore, the Staff Liaison noted the names of those in attendance and the meeting stood adjourned.

Respectfully submitted,

Evan Nopper
Active Transportation Technologist, Sustainable Mobility
Transportation Planning, Planning & Economic Development



Hamilton

HAMILTON CYCLING COMMITTEE (HCyC) MINUTES

Wednesday, February 1, 2023

5:45 p.m.

Room 264, 2nd Floor, City Hall

Hybrid Meeting

Present: Chair: Chris Ritsma
Vice-Chair:
Members: Kate Berry, Jane Jamnik, Marko Maric, Ann McKay, Kevin Vander Meulen, Cora Muis, Gary Rogerson, Jessica Merolli

Absent with Regrets: Jeff Axisa, Dan van den Beukel, Cathy Sutherland, Christine Yachouh, Roman Caruk, Sharon Gibbons, William Oates

Also Present: Evan Nopper, Active Transportation Technologist, Active Transportation
Danny Pimentel, Project Manager, Active Transportation
Juby Lee, Sustainable Mobility Coordinator, Sustainable Mobility
Bakir Fayad, Project Manager, Pedestrian and Cycling Engineering

1. CEREMONIAL ACTIVITIES

C. Ritsma recited a land acknowledgement.

2. APPROVAL OF AGENDA

(Muis/Rogerson)

That the agenda of the February 1, 2023 meeting of the Hamilton Cycling Committee be approved.

CARRIED

3. DECLARATIONS OF INTEREST

None

4. APPROVAL OF MINUTES OF PREVIOUS MEETINGS

- (i) **Hamilton Cycling Committee Meeting Minutes - December 7, 2022 (Item 4.1)**

(Maric/Merolli)

That the minutes of the December 7, 2022 meeting of the Hamilton Cycling Committee be approved, as presented.

CARRIED

- (ii) **January 4, 2023 – Notes (Item 4.2)**

(Maric/McKay)

That the Notes of the January 4, 2023 meeting of the Hamilton Cycling Committee be approved, as presented.

CARRIED

5. COMMUNICATIONS

- (i) **2023 Ontario Bike Summit - City of Hamilton (Item 5.1)**

Committee members were advised that the City of Hamilton was chosen to host the 2023 Ontario Bike Summit on May 1st and 2nd. Staff discussed what the Ontario Bike Summit is and how the Cycling Committee can help by attending or volunteering on May 1st and 2nd, 2023. A representative will be at the next Cycling Committee meeting to provide more information and answer any questions.

Committee members discussed how they may get involved in either attending or volunteering, as well as different cycling groups they could collaborate with.

(Merolli/Maric)

That the Communication item be received.

CARRIED

6. STAFF PRESENTATIONS

- (i) **Winter Commute Month, Juby Lee – Sustainable Mobility Coordinator, Planning and Economic development (Item 6.1)**

J. Lee provided information on Winter Commute Month, Community in Motion Awards and Winter Bike Day (Friday February 10).

(Jamnik/Maric)

That the staff presentation be received.

CARRIED**7. DISCUSSION ITEMS****(Maric/Berry)**

That the following discussion items be received:

(i) Committee Code of Conduct Review and Feedback (Item 7.1)

Committee members were asked to provide comments on the code of conduct, which included:

- It was not clear what changes have been made from the previous version
- Overall, it is vague and unclear for people to understand and comprehend
- Additional details on what restrictions there are in terms of what committee members can and cannot say should be provided
- Committee members are treated and held to the same standard as city staff, but don't have the same level of influence
- Should be less strict; if so rigid, then it needs to be more clearly written
- Committee members are limited in their ability to have the influence that this code of conduct suggests
- These are complicated procedural rules and resources are not being put to the advisory committees in order to meet the high level of expectations set out in the code of conduct
- More support needed from clerks on how to properly do things. Clearly identify how do we accomplish the goals via motions, committee reports
- Integrity commissioner does not provide clear advice when members ask questions related to the code of conduct
- The chair is being held to a different standard, including potential fines if things go wrong
- Handbook is not specific enough. Is not written for lay people and therefore difficult to understand. Examples of what can and can't be said along with clarity on specific penalties, would be a suggested addition
- Should give information/guidance on how to accomplish goals through motions or citizen committee reports.

(Maric/Berry)

That the Code of Conduct for Local Boards, be received.

CARRIED

(ii) Planning and Project Update (Item 7.2)

Staff provided the Committee with an update on cycling projects for their review and feedback. Committee members asked questions regarding the following:

- Kent Street Bicycle Boulevard: project was paused in December 2022 due to construction related issues and will commence in spring of 2023.
- Open Streets Updates: J. Lee noted that this event is planned for Sunday June 18, 2023 on King St between John St and Gage Ave. The city will be working with different external organizations, as well as internal divisions to plan and implement activities.
- Victoria Avenue: D. Pimentel spoke about three floating bus bays that were recently installed on Victoria Ave. Committee members asked if traffic signals are active yet. Staff indicated a request has been made to remove the bags covering the existing bike signals.
- Accelerating the Cycling Master Plan: Staff indicated that council passed a motion for staff to report back on impacts of accelerating the implementation of the cycling master plan.

(McKay/Muis)

That the Planning and Project Update, be received.

8. MOTIONS

(i) Bicycle Yield at Stop Signs (Idaho Stop) (Added Item 8.1)

(Ritsma/Maric)

WHEREAS dangerous operation of a bicycle is already an enforceable policy;

WHEREAS the Idaho stop allows for cyclists to slow and still stop if required, but allows continuation of momentum;

WHEREAS the City of Hamilton is trying to encourage use of bicycles and other modes of transportation and reduction of the use of personal automobiles;

WHEREAS the City of Hamilton has declared a Climate Emergency; and;

WHEREAS these recommendations are in line with the following mandates of the Hamilton Cycling Advisory Committee:

- To advise City Council, through the Public Works Committee, on all matters related to cycling.
- To encourage citizens to cycle instead of drive.
- To educate on the benefits and necessities of cycling.

THEREFORE, BE IT RESOLVED AND RECOMMENDED:

The City of Hamilton correspond with the province to encourage the enactment of a law where cyclists can yield at stop signs, known as an “Idaho” stop.

CARRIED

- (ii) Support for the Cycling Master Plan (Added Item 8.2)

(Rogerson/Jamnik)

That the Hamilton Cycling Committee supports the acceleration of the Cycling Master Plan.

CARRIED

9. NOTICES OF MOTION

(ii) Bay Street North

C. Ritsma introduced the following Notice of Motion, which will be included on the next agenda:

WHEREAS Bay Street North remains a truck route on the new Truck Route Masterplan;

WHEREAS the Hamilton Cycling Committee passed a motion previously that curbs and other protection be used where truck routes must remain beside bicycle infrastructure;

WHEREAS curbs improve safety, comfort and reduce bicycle lane blockage;

WHEREAS the City of Hamilton declared a Climate Emergency;

WHEREAS the City of Hamilton declared a goal of Vision Zero; and,

WHEREAS these recommendations are in line with the following mandates of the Hamilton Cycling Advisory Committee:

- To advise City Council, through the Public Works Committee, on all matters related to cycling.
- To monitor implementation of the Hamilton Cycling Plan.
- To encourage and participate in planning for bicycling facilities.
- To encourage citizens to cycle instead of drive.

THEREFORE, BE IT RESOLVED AND RECOMMENDED:

- (a) That the bicycle lanes on Bay Street, north of Cannon Street to Strachan be protected by precast curbs;
- (b) That bicycle lanes be located behind parked vehicles as opposed to the current configuration which requires vehicles to cross the bicycle lane to park; and
- (c) That Bicycle lanes that are well used or show growth potential in the immediate term have concrete curbs added

(iii) Bicycle Friendly Streets

C. Ritsma introduced the following Notice of Motion, which will be included on the next agenda:

WHEREAS the OTM Book 18 nomograph indicates in most cases that a “shared operating space” should have a maximum speed of 40km/h (note: where operating speeds diverge from posted speed limits, 95th percentile operating speeds should be used);

WHEREAS the Hamilton Complete Streets Design Manual suggests: On lower-speed streets where shared facilities are appropriate, neighbourhood bikeways may be implemented. These are a connected network of low-traffic streets that create continuous cycling routes. They often feature wayfinding signage, pavement markings, and speed management measures, and traffic diverters that prevent continuous use by motor vehicle traffic;

WHEREAS the City of Hamilton has an increasing number of injuries and deaths of cyclists and pedestrians;

WHEREAS narrowing of lane widths, intersections, turning radii and road diets have been shown to improve safety without adversely impacting automobile throughput;

WHEREAS the City of Hamilton declared a Climate emergency;

WHEREAS the City of Hamilton declared the goal of Vision Zero; And;

WHEREAS these recommendations are in line with the following mandates of the Hamilton Cycling Advisory Committee:

- To advise City Council, through the Public Works Committee, on all matters related to cycling.
- To monitor implementation of the Hamilton Cycling Plan.
- To encourage and participate in planning for bicycling facilities.
- To encourage citizens to cycle instead of drive.

THEREFORE, BE IT RESOLVED AND RECOMMENDED:

- (a) That the City of Hamilton change the speed limits of “Signed On-Street Routes” to 40km/h or 30km/h where possible;
- (b) That Narrow automobile lanes along these streets be kept to the minimum lane width (2.7m – 3.0m) when there are painted lanes;
- (c) That a variety of traffic calming measures including raised sidewalks, raised intersections, bump-outs and modal filters to disallow automobile traffic and allow active transportation, be utilized; and
- (d) That bicycle lanes be installed where road width allows.

(iv) Bicycle Oriented Corridor

C. Ritsma introduced the following Notice of Motion, which will be included on the next agenda:

WHEREAS the City of Hamilton has utilized Transit Oriented Zoning to encourage redevelopment that attracts transit riders in preparation for a large-scale transit project to bring riders and increase tax revenue;

WHEREAS the City of Hamilton has specified the need to move transportation away from single occupancy private automobiles;

WHEREAS the City of Hamilton is trying to attract investment and residents into infill opportunities to reduce urban boundary expansion;

WHEREAS the City of Hamilton has declared a Climate Emergency;

WHEREAS the City of Hamilton has declared the goal of Vision Zero; and

WHEREAS these recommendations are in line with the following mandates of the Hamilton Cycling Advisory Committee:

- To advise City Council, through the Public Works Committee, on all matters related to cycling.
- To monitor implementation of the Hamilton Cycling Plan.
- To encourage and participate in planning for bicycling facilities.
- To encourage citizens to cycle instead of drive.

THEREFORE, BE IT RESOLVED AND RECOMMENDED:

That the City of Hamilton institute a “Cycling Oriented Corridor” along identified corridors in the Cycling Masterplan where cycling-oriented zoning would increase cycling activity and encourage the reduction of automobile use including:

- (a) Piloting a cycling-oriented corridor on Cannon Street from Queen Street North to Ottawa Street.
- (b) 6-storey allowance for new construction within 100m of the cycling corridor.
- (c) Minimum parking ratio of 0.00 within 100m of the cycling corridor.
- (d) Maximum parking ratio of 0.75 unless less than 3 units.
- (e) Bicycle parking must be on ground floor of buildings.
- (f) Commercial units must provide exterior bicycle parking or city bicycle parking.
- (g) Working with developments with reductions in charges if there are active transportation options provided to future tenants including: HBSI hub/micromobility hub and bikes, car share space, transit pass included in rent/fees.
- (h) Introduce modal filters at quiet intersections to limit uncontrolled access to Cannon Street across the bicycle tracks/lanes.

(v) Cycling Plan and Budgetary Items

C. Ritsma introduced the following Notice of Motion, which will be included on the next agenda:

WHEREAS the Cycling Budget is currently 2% of the capital budget;

WHEREAS the City of Hamilton defers multiple cycling projects every year;

WHEREAS bike share systems provide first and last mile connections to existing infrastructure like transit, better utilizing and increasing ridership on transit;

WHEREAS the City of Hamilton is attempting to encourage use of bicycles and other active transportation instead of automobile use;

WHEREAS the Bike Share network utilizes funded and currently build bicycle infrastructure;

WHEREAS bicycle lanes in Hamilton are regularly blocked;

WHEREAS infrastructure built by the city is being blocked in such a way to defeat the purpose of the built infrastructure;

WHEREAS the City of Hamilton declared a Climate Emergency;

WHEREAS the City of Hamilton declared the goal of Vision Zero; and

WHEREAS the current speed of implementation of the Cycling Masterplan does not match the urgency of the above issues.

THEREFORE, BE IT RESOLVED AND RECOMMENDED:

- (a) The Cycling Masterplan completion be expedited prioritizing gaps, schools, working trips and spots without infrastructure;
- (b) The City's Cycling Budget be increased to be in line with per capita spending of other nearby cities to fund the expansion;
- (c) That an increase in funding for the City of Hamilton Bike Share program be increased to :

- (i) Stable operational budget that does not decrease if the system is more successful and funding that dynamically increases with increased services.
- (ii) Stable capital funding that accounts for the age of the bikes and allows for expansion of the service area into wards beyond the currently served
- (d) That exemptions to parking in the bike lane, except by permit where alternative arrangements have been made, for accessibility purposes and emergency vehicles, be removed;
- (e) That fines for parking in bicycle lanes and for blocking automobile lanes, be increased to reflect fines in similar municipalities, and
- (f) That staff numbers are increased, to enforce fining and advising individuals blocking the bike lane

(Morelli/Jamnik)

That a member of the cycling committee attends the General Issues Committee (Budget) on February 6, 2023, as a delegate to voice the support of accelerating the implementation of the cycling master plan.

CARRIED

(vi) James Street Complete Streets

C. Ritsma introduced the following Notice of Motion, which will be included on the next agenda:

WHEREAS other similar commercial corridors meant for active transportation have lower speed limits to encourage shopping, comfort and safe use of the street both on the sidewalk and on a bike (Locke Street, Ottawa Street, Kenilworth Avenue);

WHEREAS the Complete Streets Manual that the City of Hamilton adopted indicates James Street to be most similar to a Main Street, which has a targeted speed of 30-40km/h

WHEREAS the OTM Book 18 indicates a shared on street cycling facility as per the Complete Streets Design Manual indicates for a Main Street should have a maximum speed of 40km/h;

WHEREAS James Street is a popular pedestrian and cycling street with venues, restaurants and stores that encourage the use of bicycles or parking a bicycle and walking around;

WHEREAS the City of Hamilton has declared a Climate Emergency; and,

WHEREAS the City of Hamilton has declared the goal of Vision Zero.

THEREFORE, BE IT RESOLVED AND RECOMMENDED:

- (a) Lower the speed limit on James Street North to 40km/h; and
- (b) That a speed camera be installed on the James Street.

10. ADJOURNMENT

(Maric/Jamnik)

That, there being no further business, the meeting adjourned at 7:53 p.m.

CARRIED

Respectfully submitted,

Chris Ritsma
Chair, Hamilton Cycling Committee

Evan Nopper
Active Transportation Technologist, Active Transportation
Planning & Economic Development



Hamilton

MINUTES
KEEP HAMILTON CLEAN AND GREEN COMMITTEE

Meeting #: 23-001
Date: January 17, 2023
Time: 5:00 p.m.
Location: Due to the COVID-19 and the Closure of City Hall
Electronic meeting can be viewed at:
City's YouTube Channel:
<https://www.youtube.com/user/InsideCityofHamilton>

Alison Kopoian, Clean and Green Coordinator (905) 546-2424 ext. 5089

Present: **Chair:** Brenda Duke
 Vice-Chair: Heather Donison
 Members: Jen Baker
 Lennox Toppin
 Marissa Di Censo

Absent: Paulina Szczepanski

Also present: Theresa Phair, Community Liaison Coordinator, Business Programs
 Florence Pirrera, Project Manager, Business Programs
 Alison Kopoian, Clean and Green Coordinator, Business Programs



MINUTES

Keep Hamilton Clean and Green Committee
Tuesday January 17, 2022

1. APPOINTMENT OF CHAIR AND VICE-CHAIR (ITEM 1)

(Toppin/Donison)

That Brenda Duke be appointed Chair of the Keep Hamilton Clean and Green Committee for 2023 until a new committee is appointed.

CARRIED

(Duke/Toppin)

That Heather Donison be appointed Vice-Chair of the Keep Hamilton Clean and Green Committee for 2023 until a new committee is appointed.

CARRIED

2. APPROVAL OF AGENDA (ITEM 2)

That the agenda for the January 17, 2023 meeting of the Hamilton Clean and Green Advisory Committee be approved, as presented.

CARRIED

3. APPROVAL OF MINUTES OF PREVIOUS MEETING (ITEM 4)

(i) September 20, 2022 (Item 4.1)

(Donison/Toppin)

That the Minutes of the September 20, 2022 meeting of the Keep Hamilton Clean and Green Advisory Committee be approved, as presented.

CARRIED

4. COMMUNICATIONS (ITEM 5)

(i) Code of Conduct Review (Item 5.1)

(Di Censo/Duke)

That the Code of Conduct be received without comment

CARRIED



MINUTES

Keep Hamilton Clean and Green Committee
Tuesday January 17, 2022

- (ii) **2023 Procedural Handbook for Citizen Appointees to City of Hamilton Local Boards (Draft October 2022) (Item 5.2)**

(Donison/Di Censo)

That the 2023 Procedural Handbook for Citizen Appointees to City of Hamilton Local Boards (Draft October 2022) be received without comment.

CARRIED

- (iii) **Council Representative – February 2023 (Item 5.3)**

The Keep Hamilton Clean and Green Committee Council Representative will be determined in February, 2023.

(Donison/Toppin)

That the update regarding the 2023 Keep Hamilton Clean and Green Council Representative be received.

CARRIED

- (iv) **2023-2026 Keep Hamilton Clean and Green Committee (Item 5.4)**

The Keep Hamilton Clean and Green Committee for the 2023-2026 term will be determined by the end of the first quarter of 2023 (March 31, 2023).

(Di Censo/Toppin)

That the update regarding the Keep Hamilton Clean and Green Committee for the 2023-2026 term be received.

CARRIED

- (v) **Member Resignations (Item 5.5)**

The following members have submitted member resignation form and therefore have resigned from the committee:

Kerry Jarvi
Michelle Tom
Diana Meskauskas
Leisha Dawson



MINUTES

Keep Hamilton Clean and Green Committee
Tuesday January 17, 2022

Felicia Van Dyk

(Toppin/Donison)

That the Member Resignations be received.

CARRIED

5. DISCUSSION ITEMS (ITEM 10)

(i) **2023 Keep Hamilton Clean and Green Grant Process (Item 10.1)**

The 2023 Keep Hamilton Clean and Green Grant will open January 16, 2023 and close February 17th, 2023 at 4:30pm.

Staff asked for three volunteers from the Committee to act as adjudicators. Committee Members, Jen Baker, Heather Donison and Brenda Duke volunteered to form the Adjudication Working Group.

An orientation meeting for the Working Group will be scheduled by Staff, to review the adjudication process and consensus meeting. Individual adjudication dates and consensus meeting to be determined.

Final adjudication scores and funding recommendations will be presented to the Committee at the March 21, 2023 meeting for discussion and approval.

(Di Censo/Toppin)

That the information respecting the 2023 Clean and Green Neighbourhood Grant and the selection of the Adjudication Working Group be approved, as presented.

CARRIED

(ii) **2023 Keep Hamilton Clean and Green Grant Communication Plan (Item 10.2)**

Staff Liaison, Alison Kopoian, Clean and Green Coordinator, provided an update on the status of the 2023 Keep Hamilton Clean and Green Communication Plan.

The 2023 Grant application is currently open on the City website, www.hamilton.ca/cleanandgreengrants. Posters have been distributed to



MINUTES

Keep Hamilton Clean and Green Committee
Tuesday January 17, 2022

City facilities and libraries. Keep Hamilton Clean and Green Committee members were sent an email including Grant information and graphics, and can begin promoting the Grant in the community.

(Donison/Di Censo)

That the 2023 Keep Hamilton Clean and Green Grant communication plan updates be received.

CARRIED

(iii) 2023 Budget Planning and Quarterly Updates (Item 10.3)

Staff Liaison, Alison Kopoian, Clean and Green Coordinator, communicated that quarterly budget updates will be provided to committee members at March, June, September and November meetings.

(Donison/Duke)

That the updates regarding quarterly budget updated be received.

CARRIED

(iv) Meeting Minutes and Rotating Secretary (Item 10.4)

The Chair asked for a volunteer to act as Secretary for the February 21, 2023 and March 21, 2023 meetings.

The Committee discussed the role of Secretary and whether or not a member should act as Secretary.

(Di Censo/Donison)

That Jen Baker be approved to act as Secretary for the Keep Hamilton Clean and Green Committee Meetings February 21, 2023 and March 21, 2023.

CARRIED



MINUTES

Keep Hamilton Clean and Green Committee
Tuesday January 17, 2022

6. GENERAL INFORMATION / OTHER BUSINESS (ITEM 13)

- (i) **Recommendation Report - 2023 Volunteer Committee Budget – Keep Hamilton Clean and Green was approved and is scheduled to be presented to Public Works Committee January 16, 2023 (Item 13.1)**

(Toppin/Di Censo)

That the updated regarding the 2023 Volunteer Committee Budget Recommendation Report be received.

CARRIED

7. ADJOURNMENT (ITEM 15)

(Toppin/Donison)


That, there being no further business, the meeting adjourn at 5:55pm.

Respectfully submitted,
Brenda Duke, Chair
Keep Hamilton Clean and Green Committee

Alison Kopoian
Staff Liaison
Keep Hamilton Clean and Green Committee



INFORMATION REPORT

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	March 20, 2023
SUBJECT/REPORT NO:	2022 Annual Drinking Water Report (PW23014) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Susan Girt (905) 546-2424 Ext. 2671
SUBMITTED BY:	Nick Winters Director, Hamilton Water Public Works Department
SIGNATURE:	

COUNCIL DIRECTION

N/A

INFORMATION

Under the Safe Drinking Water Act, there are several annual reporting requirements related to the operation and management of the City of Hamilton's (City) five (5) Drinking Water Systems (DWS) (as identified below).

Drinking Water System
Hamilton DWS (Woodward and Fifty Road Subsystems)
Freelton DWS
Greenville DWS
Carlisle DWS
Lynden DWS

OUR Vision: To be the best place to raise a child and age successfully.

OUR Mission: To provide high quality cost conscious public services that contribute to a healthy, safe and prosperous community, in a sustainable manner.

OUR Culture: Collective Ownership, Steadfast Integrity, Courageous Change, Sensational Service, Engaged Empowered Employees.

SUBJECT: 2022 Annual Drinking Water Report (PW23014) (City Wide)
- Page 2 of 6

This Information Report provides a summary of annual reporting requirements and highlights key information for the:

- *Safe Drinking Water Act, Ontario Regulation 170/03, Section 11, Drinking Water Reports,*
- *Safe Drinking Water Act, Ontario Regulation 170/03, Schedule 22, Summary Report for Municipalities, and*
- *Drinking Water Quality Management System (DWQMS) - Summary Report.*

More detailed information is provided in Appendix “A” to Report PW23014 and Appendix “B” to Report PW23014.

2022 Annual Drinking Water Quality Reports are attached as Appendix “A” to Report PW23014:

As per the *Safe Drinking Water Act, Ontario Regulation, 170/03, Section 11*, the Owner of a DWS shall ensure that an annual report is prepared and made available to the public no later than February 28 of each year. The 2022 reports have been prepared in accordance with the requirements as defined in Section 11, for each of the City’s DWSs and form part of Appendix “A” to Report PW23014. The reports are available on the City’s website and upon request, free of charge.

As per the *Safe Drinking Water Act, Ontario Regulation, 170/03, Schedule 22*, Council must receive an annual drinking water summary report by March 31st of each year. This 2022 summary report has been prepared in accordance with the requirements as defined in Schedule 22, for each of the City’s five DWSs.

Highlights:

- There were no Provincial Officer’s Orders issued in relation to any of the City’s DWS’s;
- All Adverse Test Results and Reportable Incidents were reported to the Ontario Ministry of Environment, Conservation and Parks (MECP) Spills Action Centre (SAC) and Public Health Services (PHS) and are summarized in Appendix “A” to Report PW23014;
- All water taking quantities and flow rates were within approved rated capacities and provincial water taking limits; and
- Data related to the water quantities, flow rates and monthly average and maximum daily flows (in comparison to approved flow rates) for the five (5) DWSs is also provided in the attached Appendix “A” to Report PW23014.

SUBJECT: 2022 Annual Drinking Water Report (PW23014) (City Wide)
- Page 3 of 6

The MECP Inspection Cycle spans two (2) (calendar) years from April 1 to March 31. Ratings are given upon completion of the Inspection and the issuance of the Inspection Report. Ratings for the two (2) Inspection Cycles that occurred in 2022 are as follows:

Table 1: 2021 - 2022 Inspection Cycle Ratings (Status as of December 31, 2022)

Drinking Water System	Inspection Status	Report Status	Inspection Rating (2021 - 2022)
Hamilton DWS - Woodward	Complete	Complete	100%
Hamilton DWS - Fifty Road	Complete	Complete	97.83%
Freelton	Complete	Complete	100%
Greenville	Complete	Complete	100%
Carlisle	Complete	Complete	100%
Lynden	Complete	Complete	100%

Table 2: 2022 - 2023 Inspection Cycle Ratings (Status as of December 31, 2022)

Drinking Water System	Inspection Status	Report Status	Inspection Rating (2022 - 2023)
Hamilton DWS - Woodward	Commenced	Pending	Pending
Hamilton DWS - Fifty Road	Complete	Complete	100%
Freelton	Complete	Complete	100%
Greenville	Pending	Pending	Pending
Carlisle	Complete	Complete	Pending
Lynden	Commenced	Pending	Pending

2022 Drinking Water Quality Management System (DWQMS) Summary Report attached as Appendix "B" to Report PW23014:

The submission of the DWQMS Summary Report satisfies the requirements of the Provincial DWQMS Standard V2.0.

SUBJECT: 2022 Annual Drinking Water Report (PW23014) (City Wide)
- Page 4 of 6

The purpose of the DWQMS Summary Report is to inform the Owner (Mayor and Council) of the performance and major milestones achieved in the City's DWQMS. Specifically, the Operating Authority (Hamilton Water Division) is required to inform Top Management (General Manager of Public Works and Director of Hamilton Water Division) and the Owner of the outcomes of the DWQMS audits, infrastructure and management reviews. The DWQMS Summary Report exceeds these requirements and includes additional information relating to other milestones of the DWQMS.

Risk Assessment and Review and Provision of Infrastructure:

On an annual basis, Hamilton Water (HW) undertakes formal risk assessment and infrastructure review processes. While these processes satisfy the requirements of the DWQMS Standard, more importantly they ensure that any potential hazards are identified, required control measures are in place and that risks to our drinking water system are considered as part of an overall determination of infrastructure adequacy.

The 2022 Risk Assessment and Review and Provision of Infrastructure processes concluded that although vertical and horizontal infrastructure is generally found to be adequate and available when needed, we are not keeping up with required renewals and replacements of our aging infrastructure. This results in an increased demand on maintenance staff and resources as assets remain in operation beyond their intended life cycle.

DWQMS Audits:

The DWQMS accreditation process requires both third Party (external) Accreditation Audits and annual internal audits by the Operating Authority. The cycle of external audits includes an on-site verification audit every three (3) years and an off-site documentation review annually. In May 2021, QMI-SAI Global provided re-accreditation of the City's DWQMS. In June 2022, QMI-SAI Global conducted an off-site documentation review. There were no non-conformances and one (1) opportunity for improvement identified (implemented).

The Operating Authority must conduct internal audits to evaluate the conformity of the DWQMS with the requirements of the DWQMS Standard and its procedures, at least annually. The results of the annual DWQMS Internal Audits conducted in 2022 demonstrated that the City's DWQMS is a mature system and that opportunities to improve the DWQMS continue to be identified to ensure that the system is relevant and appropriate for HW. With the timely completion of the corrective actions issued as a result of this audit, the overall conformance to V2.0 of the DWQMS Standard and the City's DWQMS is suitable, the audit process is adequate, and the implementation and maintenance effective.

SUBJECT: 2022 Annual Drinking Water Report (PW23014) (City Wide)
- Page 5 of 6

The Compliance Support Group of the Compliance and Regulations section is developing an Audit Plan for the 2023 DWQMS internal audits. The audit is to take place between March and July 2023. The plan will include a number of process and element audits. The Audit Plan will be reviewed by the Hamilton Water Senior Management Team and approved by the Systems Management Representative prior to implementation.

Management Review:

The DWQMS Standard requires that Top Management participate in a management review of the DWQMS at least once annually. The Management Review is a formal presentation of compliance, operational, water quality, communication and infrastructure data.

In 2022, the DWQMS Top Management Review (TMR) was held on September 23, 2022. Attendees included Top Management (General Manager of Public Works and Director of Hamilton Water), Directors, Section Managers, Overall Responsible Operators (OROs) for treatment and distribution, the Systems Management Representative and staff from the Compliance Support Group.

Overall, Top Management, Directors and Section Managers concluded that the DWQMS is suitable, adequate and effective.

Standard of Care Training:

Standard of Care requirements for Owners and Managers of municipal DWSs came into effect as of January 1, 2013. Standard of Care is a statutory due diligence requirement identified in Section 19 of the Safe Drinking Water Act. All Owners (Mayor and Council) received Standard of Care training in February 2023.

Financial Plan:

The need to prepare a Water Infrastructure Financial Plan is, in part, a regulatory compliance issue specific to the water licensing requirements defined within the DWQMS and more specifically detailed under Regulation 453/07 - Financial Plans made under the Safe Drinking Water Act, 2002. The required Financial Plan for water systems must address a minimum six (6)-year timeframe and be approved by City Council prior to submission to the Province of Ontario. The resulting plans must also be made freely available to the general public. Water Infrastructure Financial Plans for Hamilton have typically been developed to cover a 10-year period of time in order to reflect consistency with the current Water, Wastewater and Storm Rate budget process.

SUBJECT: 2022 Annual Drinking Water Report (PW23014) (City Wide)
- Page 6 of 6

The first Financial Plan was created in 2010 and revised in 2014. The latest revision was approved by Council on July 12, 2018. This most current plan was sent to the Ministry of Municipal Affairs and Housing on November 22, 2018. The next revision of the Financial Plan will be due in 2023.

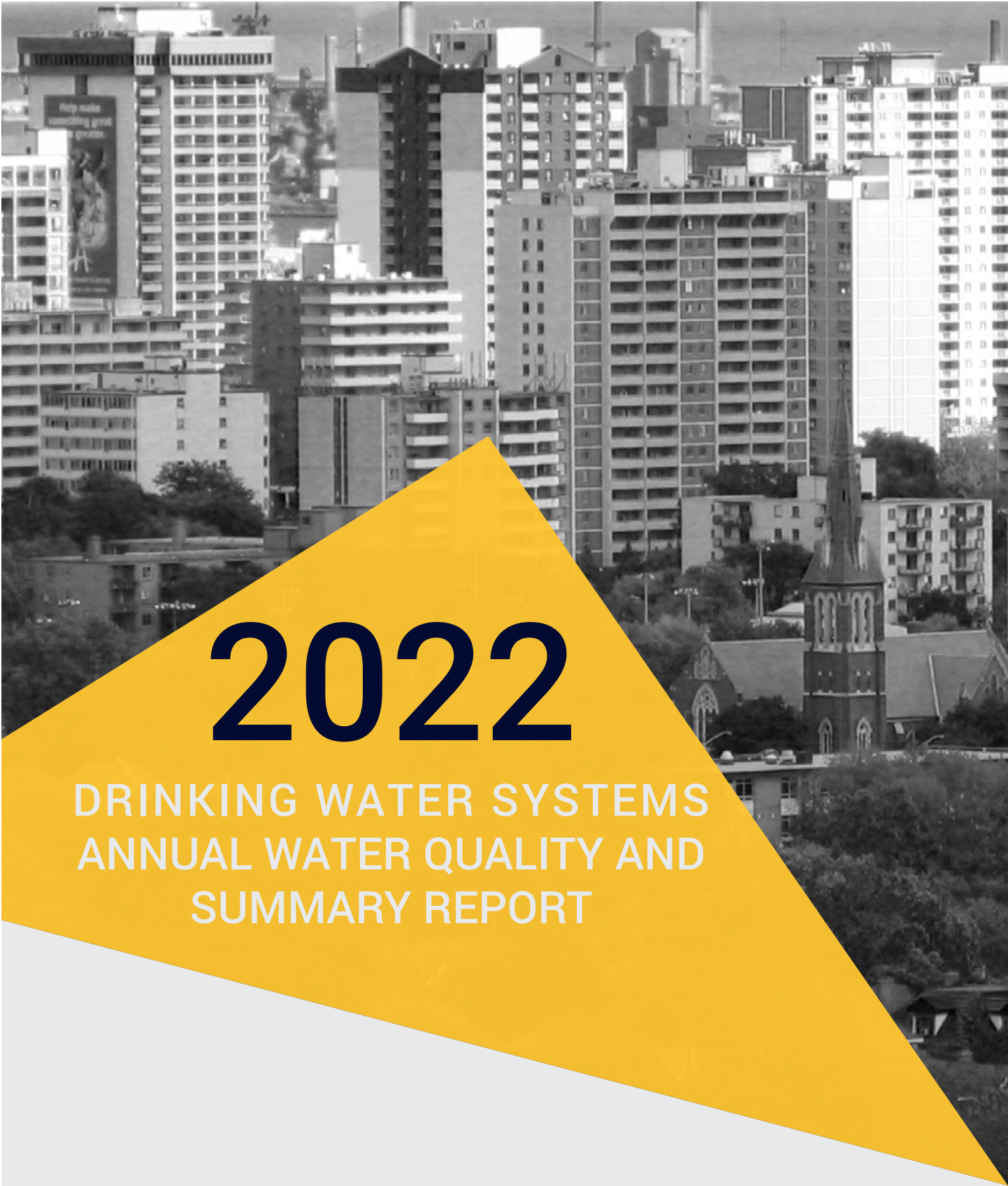
Update and Going Forward:

The outcomes from the internal and external DWQMS audit and the Management Review concluded that the DWQMS is adequate, suitable and effective and conforms to the requirements of the DWQMS Standard. Corrective action plans from the audits and action items from the Management Review will be implemented to ensure continual improvement of the DWQMS.

APPENDICES AND SCHEDULES ATTACHED

Appendix "A" to Report PW23014 - 2022 City of Hamilton Drinking Water Systems
Annual Water Quality and Summary Report

Appendix "B" to Report PW23014 - 2022 Drinking Water Quality Management System
(DWQMS) - Summary Report



2022

DRINKING WATER SYSTEMS ANNUAL WATER QUALITY AND SUMMARY REPORT

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INTRODUCTION

“ A key priority of the City of Hamilton is to ensure the safe, high quality, consistent supply of drinking water to our residents. This report for municipalities has been prepared in accordance with the Safe Drinking Water Act, Ontario Regulation, 170/03, Section 11 and Schedule 22 for the 2022 reporting period. ”

The City of Hamilton is the Owner of the following five Drinking Water Systems (DWS):

DRINKING WATER SYSTEM	DRINKING WATER SYSTEM NUMBER	MUNICIPAL DRINKING WATER LICENCE NUMBER	DRINKING WATER WORKS PERMIT NUMBER	PERMIT TO TAKE WATER NUMBER (PTTW)
Hamilton DWS Woodward Subsystem	220003118	005-101	005-201	2437-BCLNEJ
Hamilton DWS Fifty Road Subsystem	260069173	005-101	005-201	N/A
Freelton DWS	220004117	005-102	005-202	4650-BB2HXG (FDF01 & FDF03)
Greensville DWS	220004126	005-103	005-203	2476-9F5KM6 (FDG01)
Carlisle DWS	220004108	005-104	005-204	2373-8F7MMJ 4347-BYPPG2 (FDC01 & FDC02)*
				8228-AJZK9H (FDC03R)
				4207-AJZJ4L (FDC05)
Lynden DWS	250001830	005-105	005-205	0634-ASERU8 (FDL01 & FDL03)

*PTTW FDC01/02 was renewed March 1, 2021

There were no Provincial Officer's Orders issued with regards to drinking water. All Adverse Water Quality Incidents (AWQI) were reported to the Ontario Ministry of Environment, Conservation and Parks (MECP) Spills Action Centre (SAC) and Public Health Services (PHS) and are provided in the report. All water taking quantities and flow rates were within approved rated capacities and provincial water taking limits.

The MECP Inspection Cycle spans two (calendar) years from April 1st to March 31st. Ratings are given upon completion of the Inspection and the issuance of the Inspection Report. Ratings for the two Inspection Cycles that occurred in 2022 are as follows.

2021 - 2022 Inspection Cycle Ratings (Status as of December 31, 2022)

DRINKING WATER SYSTEM	INSPECTION STATUS	REPORT STATUS	2021 - 2022 INSPECTION RATING
Hamilton DWS - Woodward	Complete	Complete	100%
Hamilton DWS - Fifty Road	Complete	Complete	97.83%
Freelton	Complete	Complete	100%
Greensville	Complete	Complete	100%
Carlisle	Complete	Complete	100%
Lynden	Complete	Complete	100%

2022 - 2023 Inspection Cycle Ratings (Status as of December 31, 2022)

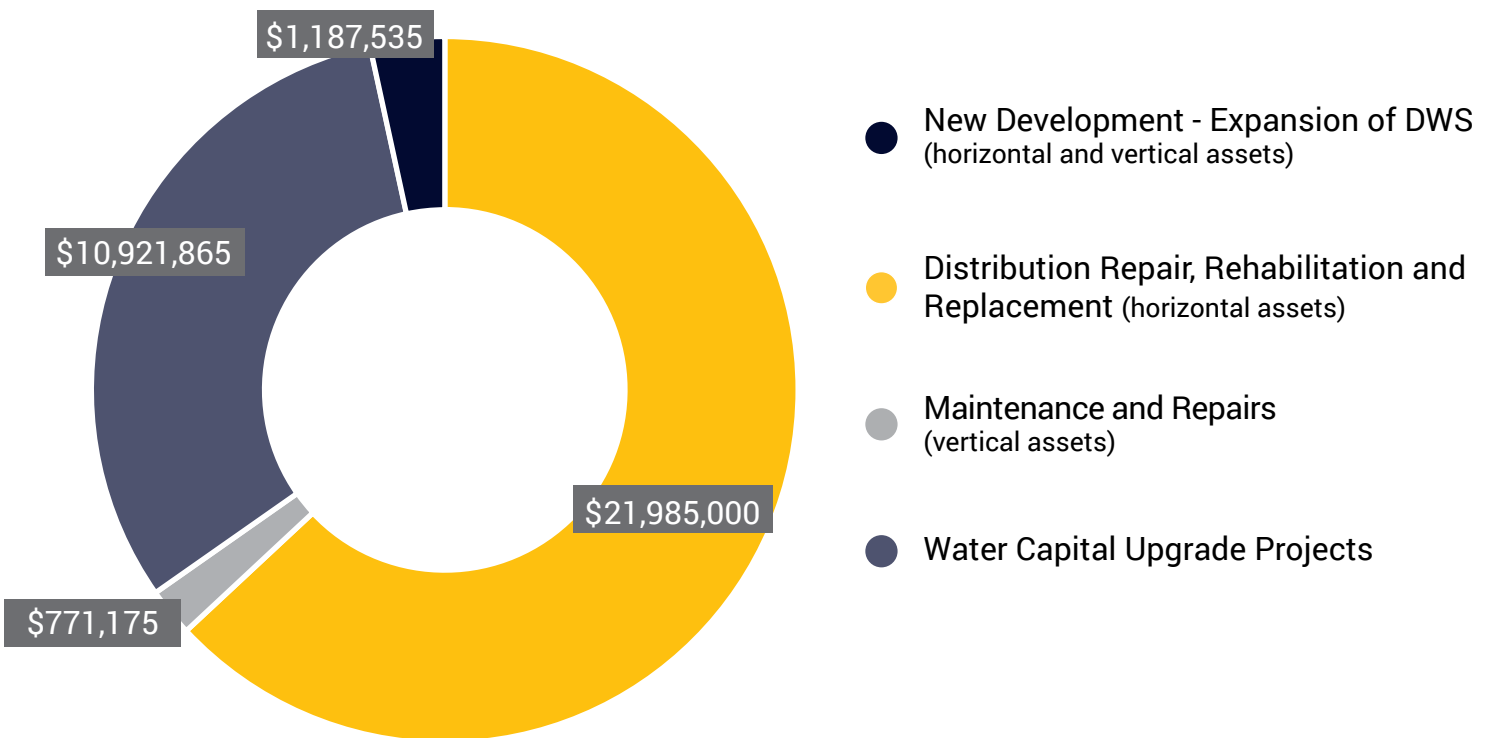
DRINKING WATER SYSTEM	INSPECTION STATUS	REPORT STATUS	2022 - 2023 INSPECTION RATING
Hamilton DWS - Woodward	Commenced	Pending	Pending
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Freelton	Complete	Complete	100%
Greensville	Pending	Pending	Pending
Carlisle	Complete	Complete	Pending
Lynden	Commenced	Pending	Pending

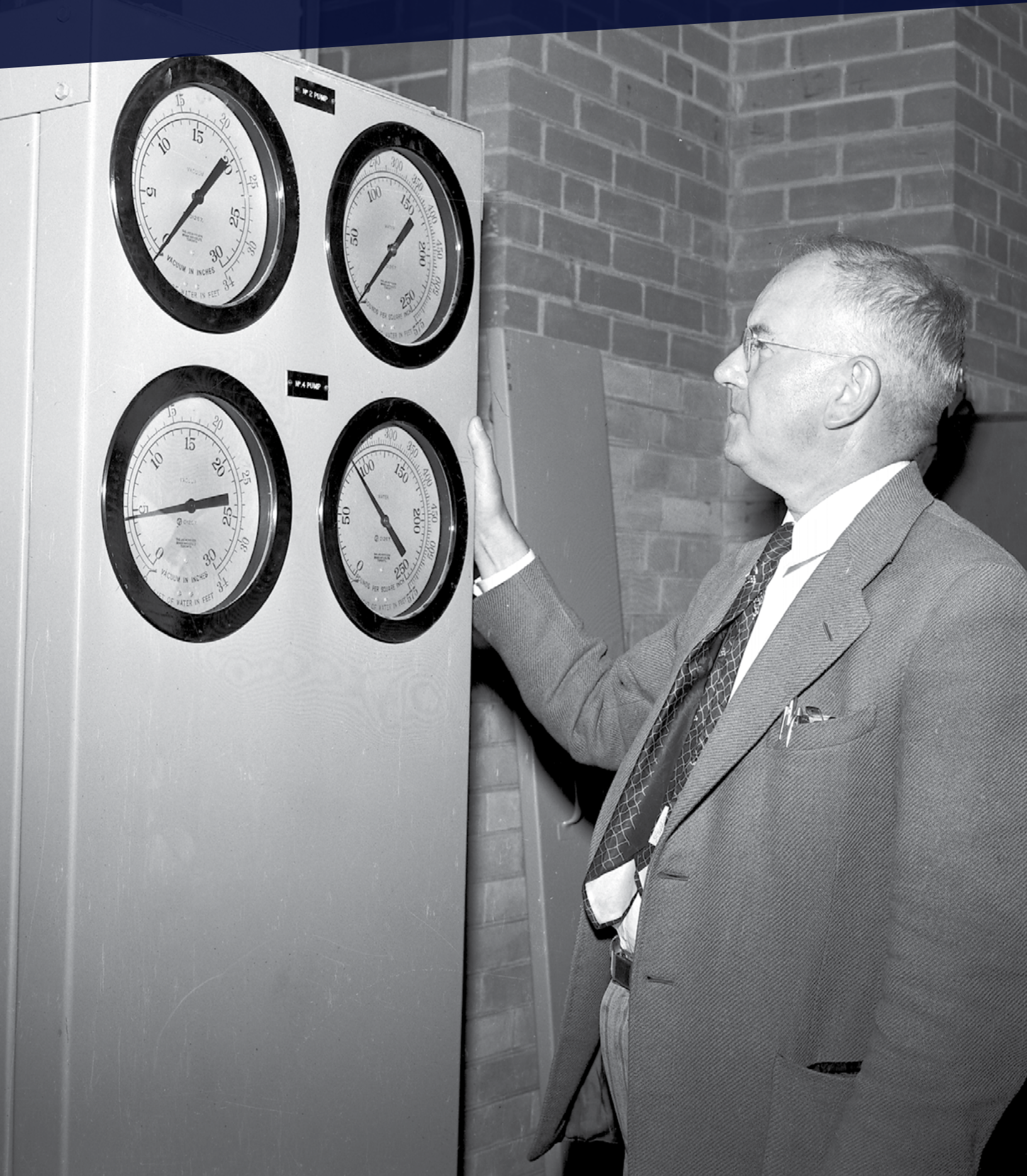
ANNUAL REPORTS

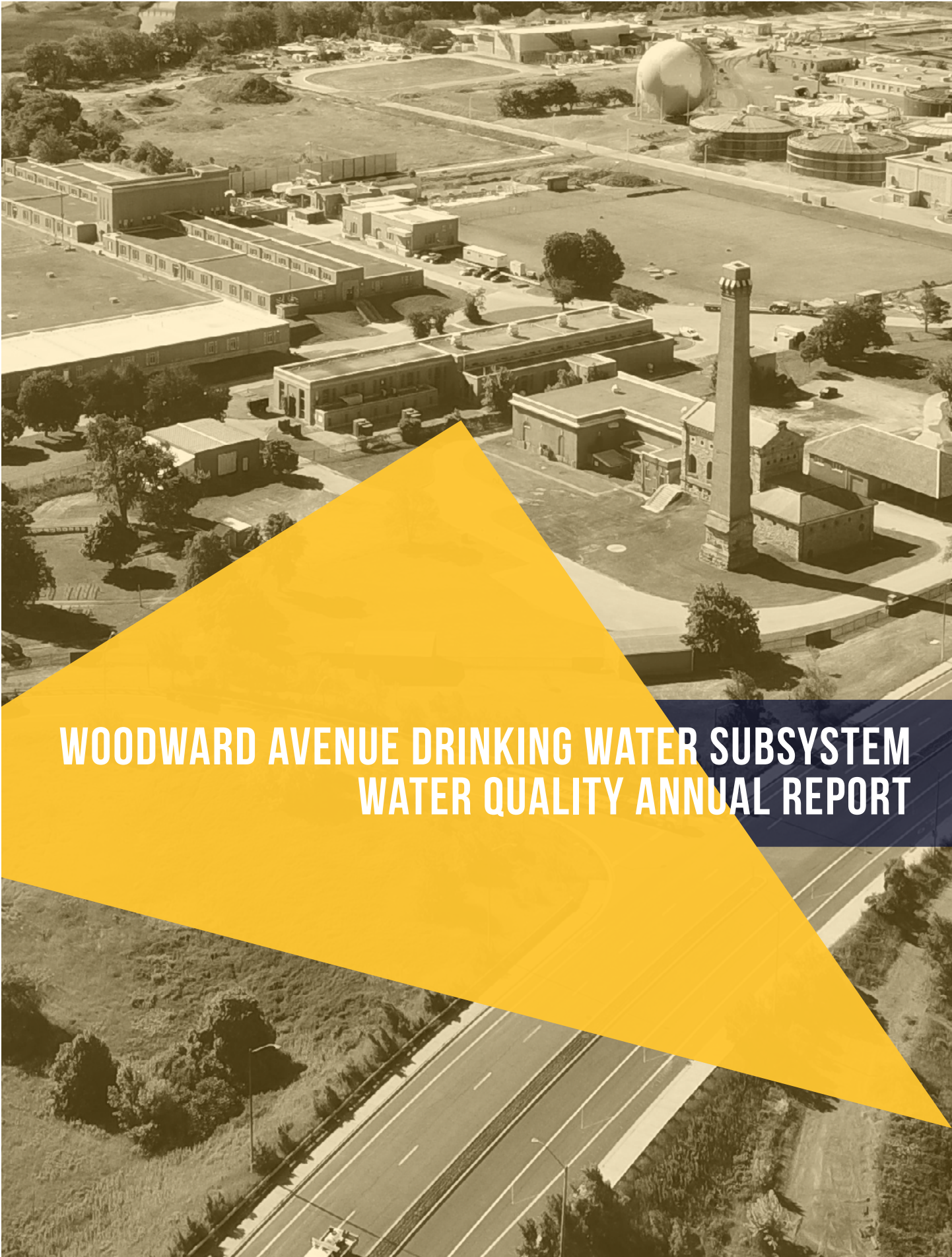
The Drinking Water Annual Report required under Ontario Regulation 170/03 Section 11 and Schedule 22 is available to the public at no charge at www.hamilton.ca/waterquality and 700 Woodward Avenue, Administration Building, Compliance Support Group.

SUMMARY OF MONETARY EXPENSES INCURRED IN 2022

In 2022, the following significant expenses were incurred to complete repairs, maintenance and upgrades to the Drinking Water Systems within City of Hamilton:







WOODWARD AVENUE DRINKING WATER SUBSYSTEM WATER QUALITY ANNUAL REPORT

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Table 1-1: Woodward Treatment Plant 2022 Monthly Production	18

GENERAL INFORMATION

The Woodward Drinking Water Subsystem is a large municipal residential system that supplies a significant portion of Hamilton's population with drinking water including Stoney Creek, Dundas, Ancaster, Waterdown, and Glanbrook. The population served is estimated at 536,917. In addition, the treatment system provides treated water to parts of Haldimand County (Caledonia, York, and Cayuga) and parts of Halton Region.

The Woodward Water Treatment Facility has three raw water intake pipes (1.22m, 1.52m and 2.44m diameter) of which two intake pipes (2.44m and 1.52m diameter) are currently in use. The raw water is drawn from Lake Ontario at distances of 640m, 915m and 945m to begin the treatment process.

TREATMENT PROCESS:

- The raw water intakes have chlorine added for zebra mussel control.
- The low lift pumping station has 3 travelling screens where screening takes place prior to the water being pumped to the water treatment plant.
- At the pre-treatment stage Polyaluminum Chloride is added to the water to coagulate suspended solids. Additional chlorine is also added at this stage to ensure disinfection.
- Clarification of the water is completed by flocculation & sedimentation.
- Chlorine, ammonia, fluoride and orthophosphate (phosphoric acid) are added before the treated water is sent to the distribution system. Ammonia is added to convert chlorine to mono-chloramine to help maintain stable chlorine residuals in the distribution system. Fluoride is added to the drinking water to promote dental health and orthophosphate (phosphoric acid) is added to help reduce lead corrosion.
- High lift pumps push the water from the Woodward Water Treatment Facility to the distribution system.

DISTRIBUTION:

The Woodward Water Distribution System is comprised of 20 pumping stations, 11 reservoirs, 4 elevated storage tanks, 1 standpipe and over 2,000 kms of watermains.

SAMPLING & ANALYSIS:

Continuous monitoring equipment such as chlorine analyzers, turbidity meters, fluoride and phosphate analyzers monitor the water 24/7 to ensure the maintenance of high-quality drinking water. Raw water is sampled and analyzed weekly; treated water is sampled and analyzed 6 days per week; distribution water is sampled and analyzed 5 days per week. In addition, chlorine residual in the distribution system is analyzed daily.

DEFINITIONS

AWQI: Adverse Water Quality Incident
 CFU: Colony Forming Unit
 HPC: Heterotrophic Plate Count
 MDWL: Municipal Drinking Water Licence
 mg/L: milligrams per litre
 mL: millilitre
 N/A: Not Applicable
 PTTW: Permit to Take Water
 ug/L: micrograms per litre
 MPN: Most Probable Number
 P/A: Present/Absent

CORROSION CONTROL PROGRAM (CCP):

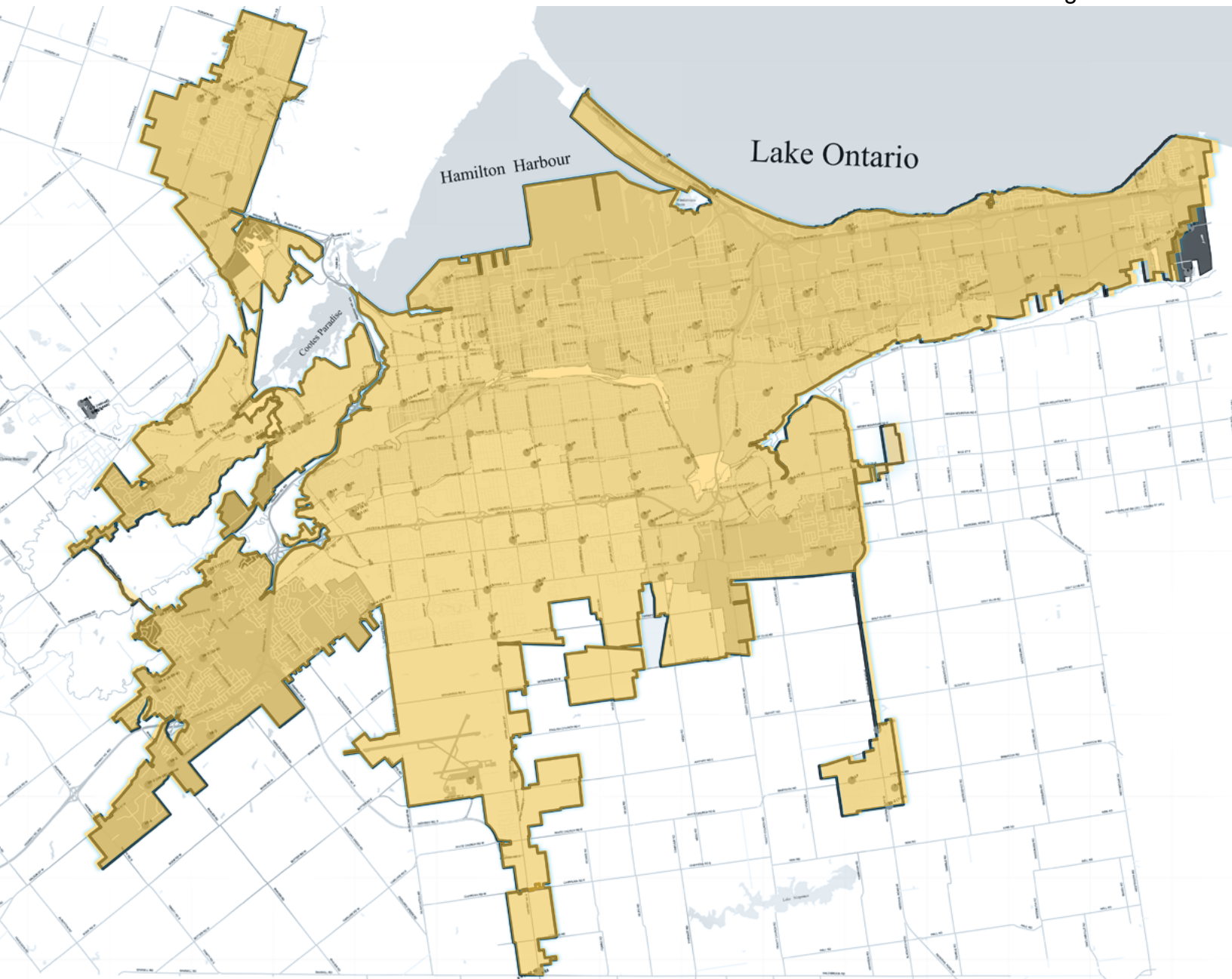
On November 8, 2018, the addition of orthophosphate commenced in the Hamilton DWS - Woodward Sub-System, including a regulatory post-implementation sampling and monitoring plan to monitor the progress and effectiveness of the program for lead control. A flushing program was also commenced to proactively manage secondary water quality impacts that may arise from the program. Since its implementation, the CCP has shown an improvement in observed lead levels with minimal secondary impacts.

Since implementation of the program, eight rounds of the Legislated Community Lead Sampling Program required by Schedule 15.1 of Ontario Regulation 170/03, have taken place in the Woodward Sub-System. The City of Hamilton (COH) received regulatory relief from sampling at residential taps for four rounds including Summer 2020 (June 15 - October 15, 2020), Winter 2020 (December 15, 2020 - April 15, 2021), Summer 2021 (June 15 - October 15, 2021), and Winter 2021 (December 15, 2021 – April 15, 2022) as a result of the COVID-19 Pandemic. This relief was granted because the samples are collected at the tap inside residents' homes and it posed a health risk to both staff and homeowners. Community Lead Sampling resumed in Summer 2022 (June 15, 2022 – October 15, 2022). The sample results continue to demonstrate a reduction in lead concentrations observed at the tap, as well as an overall decreasing trend in the percentage of samples observed to be above the Maximum Acceptable Concentration (MAC) of 10 ug/L set by Ontario Regulation 169/03.

Despite the lack of additional data from the four sampling rounds where regulatory relief was granted, the three Lead Pipe Loops installed in 2017 in the Woodward Sub-System remained in place as an additional tool to monitor the effectiveness of the program. These three pipes made from lead material were installed at 293 Highland Road West, Hamilton, 460 Parkside Drive, Waterdown and 21 Queen Street, Dundas as controlled study sites to monitor the effect of the orthophosphate on the pipes. The sampling results from the Lead Pipe Loops continue to show a decreasing trend in lead levels.

System-wide sampling continued in 2022 and provided valuable monitoring data for the entire distribution system. This branch of the monitoring program allows for surveillance of orthophosphate levels and potential secondary impacts. In the event of an elevated orthophosphate, colour or turbidity result, further sampling occurs to determine the cause of any anomaly and appropriate action is taken.

In March 2022, the MECP received the 3rd CCP Annual Report summarizing the overall effectiveness of the program. In 2022, a consultant assignment assessed the CCP and offered key findings and recommendations. The COH continues to meet the regulatory requirements of the program and strives for continual improvement, such as reviewing suggested best practices and considering recommendations as defined in the consultant's technical memorandum. The Plant Optimization Study on the orthophosphate dosing system was placed on hold due to the regulatory relief from Schedule 15.1 Community Lead Sampling. The dosing performance study will be continued once further data is collected from the Lead Sampling Program.



DRINKING WATER SYSTEM NUMBER	DRINKING WATER SYSTEM NAME	DRINKING WATER SYSTEM OWNER	DRINKING WATER SYSTEM CATEGORY	PERIOD BEING REPORTED
220003118	Woodward Subsystem of Hamilton Drinking Water System	City of Hamilton	Large Municipal Residential	January 1, 2022 to December 31, 2022

PROVISION OF DRINKING WATER TO OTHER MUNICIPALITIES

The following is a list of municipal drinking water systems which receive drinking water from the Woodward Drinking Water Subsystem:

DRINKING WATER SYSTEM NAME	DRINKING WATER SYSTEM NUMBER
Caledonia/Cayuga/York Water Distribution System	260004566
North Aldershot Water Distribution System	260086762
Snake Road Water Distribution System	260086775
Bridgeview Community Water Distribution System	260068419



A copy of this annual report is provided to all Drinking Water System owners that are connected to the system and to whom we provide drinking water.



Our customers are notified through the local newspaper that the annual report is available online free of charge at www.hamilton.ca/waterquality. A copy of the report can also be requested by contacting (905) 546-2489 or water@hamilton.ca.

WATER TREATMENT CHEMICALS USED DURING THIS REPORTING PERIOD

- Polyaluminum Chloride
- Liquid Chlorine
- Aqueous Ammonia
- Fluoride (Hydrofluorosilicic Acid)
- Orthophosphate (Phosphoric Acid)

BREAKDOWN OF SIGNIFICANT MONETARY EXPENSES

THE FOLLOWING TABLE HIGHLIGHTS THE SIGNIFICANT EXPENSES THAT WERE INCURRED FOR INSTALLING, REPAIRING AND REPLACING REQUIRED EQUIPMENT IN 2022.
Kenilworth (HDR01) & Ben Nevis (HDR1C) Reservoir Upgrades - \$6,293,569
Woodward Water Treatment Plant - Process Upgrades - \$2,354,449
Waterdown South Water Tower (HDT24) - \$1,050,593
High Lift Pumping Station Upgrades - Phase 2 - \$321,338
Glancaster & Hwy 53 Pumping Station Upgrades (HD018) - \$168,845
Upper Stoney Creek/Glanbrook Elevated Reservoir - \$126,251

ADVERSE TEST RESULTS AND REPORTABLE INCIDENTS

The following table outlines the notices submitted in accordance with subsection 18(1) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to the Ministry of Environment, Conservation and Parks (MECP) Spills Action Centre.

NOTIFICATION DATE (Y-M-D)	LOCATION OF ADVERSE	ADVERSE WATER QUALITY INCIDENT	RESOLUTION
2022-05-06	Woodward Water Treatment Plant	Sodium = 20.3 mg/L (Regulatory requirement is maximum of 20 mg/L)	Resampled adverse location. Result passed.

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ADVERSE TEST RESULTS AND REPORTABLE INCIDENTS (CONTINUED)

NOTIFICATION DATE (Y-M-D)	LOCATION OF ADVERSE	ADVERSE WATER QUALITY INCIDENT	RESOLUTION
2022-07-21	Ancaster Sampling Station C, Lower Lions Club Rd	Total Coliforms = Present (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. Result failed at the original adverse location which resulted in another AWQI on July 22nd.
2022-07-22	Ancaster Sampling Station C, Lower Lions Club Rd	Total Coliforms = 2 MPN/100 mL (Regulatory requirement is Not Detectable)	Resampled original adverse location, one upstream and one downstream location. Two consecutive sets of samples were taken 24 to 48 hours apart. All results passed.
2022-08-19	Ancaster Sampling Station C, Lower Lions Club Rd	Total Coliforms = Present (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. All results passed.
2022-10-18	Royal Summit Pumping Station, 21 Queen St., Dundas	Total Chlorine = 0.18 mg/L Free Chlorine = <0.02 mg/L Combined Chlorine = 0.18 mg/L (Regulatory requirement is minimum Combined Chlorine of 0.25 mg/L or Free Chlorine of 0.05 mg/L)	Watermain was flushed to restore chlorine. On Oct 18th at 16:34H, chlorine was restored as follows: Total Chlorine: 0.35 mg/L, Combined Chlorine: 0.29 mg/L, Free Chlorine: 0.06 mg/L.
2022-12-28	HD011 Pumping Station, Osler Dr., Dundas	Total Chlorine = 3.12 mg/L Free Chlorine = 0.03 mg/L Combined Chlorine = 3.09 mg/L (Regulatory requirement is maximum Combined Chlorine of 3.0 mg/L)	On Dec 28th between 11:27:06 and 11:27:54, the combined chlorine exceeded 3.00 mg/L as a result of maintenance done on the Sodium Hypochlorite Pumps. During the 48 second spike, the maximum combined chlorine reading was 3.09 mg/L. At 11:27:54, the combined chlorine reading was below 3.00 mg/L and continued to decrease rapidly. At 11:32:00, the chlorine readings stabilized: Total Chlorine= 1.89 mg/L, Combined Chlorine= 1.89 mg/L, Free Chlorine= 0.00 mg/L.



Low Lift Pumping Station

MECP INSPECTION FINDINGS AND SELF-DECLARED NON-COMPLIANCES

Please find below the summary of findings that were either issued during an MECP inspection or self-declared during the 2022 calendar year.

The 2021-2022 inspection was completed in March 2022 and findings of non-compliance and recommendations are noted in the table below.

MECP INSPECTION REPORT. MARCH 31, 2022

#	FINDING TYPE	FINDING	STATUS
1	Non-compliance	Based on the number of distribution system low chlorine AWQIs, it was recommended that the City conduct a secondary disinfection study.	Action in process
2	Non-compliance*	Records to confirm the (completed) review of sampling and test results for a 72-hour period were not captured.	Action complete
3	Recommendation	Consider UV treatment or other options for additional disinfection credits.	Action in process

*Self-declared by the City of Hamilton in 2021

The 2022-2023 inspection commenced in January 2022 and as of December 31, 2022, the Drinking Water Inspection Report and Inspection Summary Rating Record remained pending.

SELF-DECLARED NON-COMPLIANCES

#	FINDING TYPE	FINDING	STATUS
1	Self-declared Non-compliance	Watermains were put into service without prior approval as per Drinking Water Works Permit.	Action in process
2	Self-declared Non-compliance	As a result of the power failure blips, all steps required by AWWA C652-11 Disinfection of Water Storage Facilities, were not completed prior to water being discharged from a reservoir. Specifically, requirements to hold water within the reservoir for 24 hours and the subsequent collection of confirmatory bacteriological samples were not met prior to this release.	Action in process
3	Self-declared Non-compliance	Non-City contractor operated a fire hydrant without direction from certified operator.	Action in process
4	Self-declared Non-compliance	Non-City contractor performed a watermain wet tap without approval from certified operator.	Action in process

WATER PRODUCTION REPORTS - SUMMARY

The following provides a summary of daily flow rates and instantaneous peak flow rates in comparison to the capacity of the water works as identified in the Permit to Take Water. This information is tabulated in the accompanying tables.

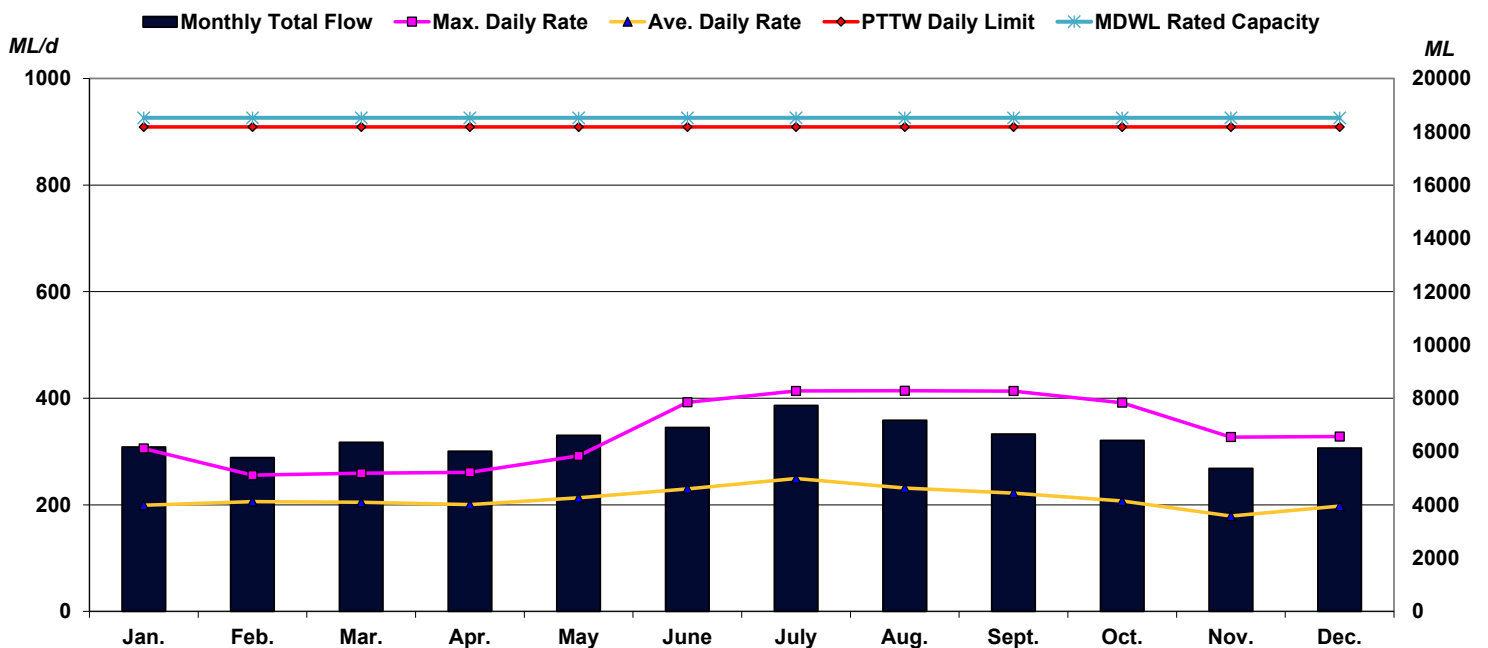
TABLE 1-1: WOODWARD TREATMENT PLANT - 2022 MONTHLY PRODUCTION (SUMMARY)

WOODWARD	UNITS	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Monthly Total Flow	ML	6,173	5,769	6,344	6,008	6,605	6,902	7,728	7,172	6,654	6,420	5,364	6,127
Average Daily Rate	ML/d	199	206	205	200	213	230	249	231	222	207	179	198
Maximum Daily Rate	ML/d	306	256	259	261	292	392	414	414	413	392	327	328
PTTW Daily Rated Capacity	ML/d	909	909	909	909	909	909	909	909	909	909	909	909
MDWL Daily Rated Capacity	ML/d	926	926	926	926	926	926	926	926	926	926	926	926



MAINTAINED COMPLIANCE

FIGURE 1-1: WOODWARD TREATMENT PLANT - 2022 MONTHLY PRODUCTION (SUMMARY)



WATER QUALITY DATA

SUMMARY OF LEAD TESTING UNDER SCHEDULE 15.1 DURING THIS REPORTING PERIOD.

LOCATION TYPE	POINTS SAMPLED	LEAD SAMPLES TAKEN	pH & ALKALINITY SAMPLES TAKEN	pH RESULTS pH UNITS	ALKALINITY RESULTS mg/L	LEAD RESULTS mg/L	LEAD AWQI	LEAD EXCEEDANCES
PLUMBING-NR	5	10	5	7.40 to 7.63	N/A	<0.0001 to 0.0330	N/A	1
PLUMBING-R	51	102	51	7.38 to 7.64	N/A	<0.0001 to 0.0152	N/A	2
DISTRIBUTION	20	20	20	7.31 to 7.87	86 to 93	<0.0001 to 0.0006	0	0

NR - Non Residential R- Residential

MICROBIOLOGICAL TESTING REQUIRED BY REGULATION 170/03, DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	NUMBER OF SAMPLES	RESULT VALUE RANGE	UNIT OF MEASURE
RAW				
E.COLI	2022-01-04 to 2022-12-27	52	0 to 7	MPN/100mL
TOTAL COLIFORM	2022-01-04 to 2022-12-27	52	0 to 14,100	MPN/100mL
TREATED				
E.COLI	2022-01-02 to 2022-12-30	484	ALL ABSENT	P/A/100mL
HPC	2022-01-02 to 2022-12-27	281	0 to 2	CFU/1mL
TOTAL COLIFORM	2022-01-02 to 2022-12-30	484	ALL ABSENT	P/A/100mL
DISTRIBUTION				
E.COLI	2022-07-21 to 2022-08-19	12	0	MPN/100mL
E.COLI	2022-01-03 to 2022-12-30	1883	ALL ABSENT	P/A/100mL
HPC	2022-01-03 to 2022-12-28	1166	0 to 810	CFU/1mL
TOTAL COLIFORM	2022-07-21 to 2022-08-19	12	0 to 2	MPN/100mL
TOTAL COLIFORM	2022-01-03 to 2022-12-30	1883	2 DETECTIONS	P/A/100mL

OPERATIONAL TESTING DONE UNDER SCHEDULE 7, 8 OR 9 OF REGULATION 170/03 DURING THE PERIOD COVERED BY THIS ANNUAL REPORT.

NOTE: If results are obtained from continuous monitors, then 8760 is reported as the number of samples.

PARAMETER - SAMPLE TYPE	NUMBER OF SAMPLES	RESULT VALUE RANGE	UNIT OF MEASURE
TURBIDITY - TREATED – FILTER 1	8760	0.009 – 0.230	NTU
TURBIDITY - TREATED – FILTER 2	8760	0.018 – 0.143	NTU
TURBIDITY - TREATED – FILTER 3	8760	0.013 – 0.153	NTU
TURBIDITY - TREATED – FILTER 4	8760	0.017 – 0.158	NTU
TURBIDITY - TREATED – FILTER 5	8760	0.014 – 0.135	NTU
TURBIDITY - TREATED – FILTER 6	8760	0.017 – 0.150	NTU
TURBIDITY - TREATED – FILTER 7	8760	0.016 – 0.135	NTU
TURBIDITY - TREATED – FILTER 8	8760	0.013 – 0.282	NTU
TURBIDITY - TREATED – FILTER 9	8760	0.017 – 0.138	NTU
TURBIDITY - TREATED – FILTER 10	8760	0.016 – 0.130	NTU
TURBIDITY - TREATED – FILTER 11	8760	0.016 – 0.132	NTU
TURBIDITY - TREATED – FILTER 12	8760	0.016 – 0.157	NTU
TURBIDITY - TREATED – FILTER 13	8760	0.020 – 0.137	NTU
TURBIDITY - TREATED – FILTER 14	8760	0.017 – 0.114	NTU
TURBIDITY - TREATED – FILTER 15	8760	0.018 – 0.159	NTU
TURBIDITY - TREATED – FILTER 16	8760	0.016 – 0.260	NTU
TURBIDITY - TREATED – FILTER 17	8760	0.017 – 0.176	NTU
TURBIDITY - TREATED – FILTER 18	8760	0.020 – 0.139	NTU
TURBIDITY - TREATED – FILTER 19	8760	0.017 – 0.176	NTU
TURBIDITY - TREATED – FILTER 20	8760	0.020 – 0.189	NTU
TURBIDITY - TREATED – FILTER 21	8760	0.021 – 0.158	NTU
TURBIDITY - TREATED – FILTER 22	8760	0.019 – 0.164	NTU
TURBIDITY - TREATED – FILTER 23	8760	0.023 – 0.220	NTU
TURBIDITY - TREATED – FILTER 24	8760	0.019 – 0.183	NTU
COMBINED CHLORINE - TREATED	8760	1.12 – 2.78	mg/L
FREE CHLORINE - DISTRIBUTION	2000	<0.02 to 0.17	mg/L
COMBINED CHLORINE - DISTRIBUTION	2000	0.51 to 2.95	mg/L
FLUORIDE – TREATED	8760	0.54 – 0.89	mg/L

SUMMARY OF ADDITIONAL TESTING AND SAMPLING CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENT OF A LICENCE, APPROVAL, ORDER OR OTHER LEGAL INSTRUMENT.

PARAMETER - SAMPLE TYPE	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE
MICROCYSTINS – RAW	2022-01-11 to 2022-12-13	<0.15	ug/L
ALKALINITY – TREATED	2022-04-26 to 2022-10-21	87	mg/L
CHLORIDE – TREATED	2022-01-11 to 2022-12-13	28.4 to 44.0	mg/L
COLOUR (APPARENT) – TREATED	2022-02-01 to 2022-10-25	<2 to 2	CU
COPPER – TREATED	2022-02-01 to 2022-10-25	0.0003 to 0.0004	mg/L
IRON – TREATED	2022-02-01 to 2022-10-25	<0.003	mg/L
LEAD – TREATED	2022-02-01 to 2022-10-25	<0.0001	mg/L
MICROCYSTINS – TREATED	2022-06-07 to 2022-10-31	<0.15	ug/L
SULPHATE – TREATED	2022-01-11 to 2022-12-13	22.5 to 25.1	mg/L
TOTAL DISSOLVED SOLIDS – TREATED	2022-02-01 to 2022-10-25	162 to 202	mg/L
COPPER – PLUMBING	2022-07-04 to 2022-07-22	0.0012 to 0.0906	mg/L
IRON – DISTRIBUTION	2022-02-01 to 2022-10-18	<0.003 to 0.062	mg/L
O-PHOSPHATE AS PO4 – DISTRIBUTION	2022-01-05 to 2022-12-29	1.76 to 10.00	mg/L
FIELD TEMPERATURE – DISTRIBUTION	2022-01-05 to 2022-12-29	4.0 to 24.3	°C
FIELD TURBIDITY – DISTRIBUTION	2022-01-05 to 2022-12-29	0.05 to 2.59	NTU

PARAMETER - SAMPLE TYPE	NUMBER OF SAMPLES	RESULT VALUE RANGE	UNIT OF MEASURE
TEMPERATURE – RAW	8760	-0.48 – 22.50	°C
pH – TREATED	8760	6.22 – 7.71	pH
ORTHOPHOSPHATE – TREATED	8760	0.68 – 6.38	mg/L
ORTHOPHOSPHATE – TREATED	365	1.48 – 2.85	mg/L

SUMMARY OF INORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
TREATED				
ANTIMONY	2022-04-26 to 2022-10-21	<0.0001 to 0.0001	mg/L	0
ARSENIC	2022-04-26 to 2022-10-21	0.0005 to 0.0007	mg/L	0
BARIUM	2022-04-26 to 2022-10-21	0.0185 to 0.0210	mg/L	0
BORON	2022-04-26 to 2022-10-21	0.020 to 0.026	mg/L	0
CADMIUM	2022-04-26 to 2022-10-21	<0.0001	mg/L	0
CHROMIUM	2022-04-26 to 2022-10-21	<0.0001	mg/L	0
FLUORIDE	2022-04-26 to 2022-10-21	0.61 to 0.64	mg/L	0
MERCURY	2022-04-26 to 2022-10-21	<0.05	ug/L	0
NITRATE AS N	2022-01-25 to 2022-10-21	0.30 to 0.40	mg/L	0
NITRITE AS N	2022-01-25 to 2022-10-21	<0.01	mg/L	0
SELENIUM	2022-04-26 to 2022-10-21	0.0001 to 0.0002	mg/L	0
SODIUM	2022-04-26 to 2022-10-21	14.1 to 17.7	mg/L	0
URANIUM	2022-04-26 to 2022-10-21	0.188 to 0.225	ug/L	0



Greenhill Reservoir

SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
TREATED				
1,1-DICHLOROETHYLENE	2022-04-26 to 2022-10-21	<0.2	ug/L	0
1,2-DICHLOROBENZENE	2022-04-26 to 2022-10-21	<0.2	ug/L	0
1,2-DICHLOROETHANE	2022-04-26 to 2022-10-21	<0.2	ug/L	0
1,4-DICHLOROBENZENE	2022-04-26 to 2022-10-21	<0.2	ug/L	0
2,3,4,6-TETRACHLOROPHENOL	2022-04-26	<0.20	ug/L	0
2,4,6-TRICHLOROPHENOL	2022-04-26	<0.25	ug/L	0
2,4-DICHLOROPHENOXYACETIC ACID	2022-04-26	<0.19	ug/L	0
2,4-DICHLOROPHENOL	2022-04-26	<0.15	ug/L	0
ALACHLOR	2022-04-26	<0.02	ug/L	0
ATRAZINE + DESETHYL-ATRAZINE	2022-04-26	0.04	ug/L	0
AZINPHOS-METHYL	2022-04-26	<0.05	ug/L	0
BENZENE	2022-04-26 to 2022-10-21	<0.2	ug/L	0
BENZO[A]PYRENE	2022-04-26	<0.004	ug/L	0
BROMOXYNIL	2022-04-26	<0.33	ug/L	0
CARBARYL	2022-04-26	<0.05	ug/L	0
CARBOFURAN	2022-04-26	<0.01	ug/L	0
CARBON TETRACHLORIDE	2022-04-26 to 2022-10-21	<0.2	ug/L	0
CHLOROBENZENE	2022-04-26 to 2022-10-21	<0.3	ug/L	0
CHLORPYRIFOS (DURSBAN)	2022-04-26	<0.02	ug/L	0
DIAZINON	2022-04-26	<0.02	ug/L	0
DICAMBA	2022-04-26	<0.20	ug/L	0
DICHLOROMETHANE	2022-04-26 to 2022-10-21	<0.5	ug/L	0
DICLOFOP-METHYL	2022-04-26	<0.40	ug/L	0
DIMETHOATE	2022-04-26	<0.06	ug/L	0
DIQUAT	2022-04-26	<1	ug/L	0
DIURON	2022-04-26	<0.03	ug/L	0
ETHYLBENZENE	2022-04-26 to 2022-10-21	<0.2	ug/L	0
GLYPHOSATE	2022-04-26	<1	ug/L	0
MALATHION	2022-04-26	<0.02	ug/L	0

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SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
TREATED				
MCPA (2-METHYL-4-CHLOROPHENOXYACETIC ACID)	2022-04-26	<0.00012	mg/L	0
METOLACHLOR	2022-04-26	<0.01	ug/L	0
METRIBUZIN (SENCOR)	2022-04-26	<0.02	ug/L	0
PARAQUAT	2022-04-26	<1	ug/L	0
PCBS TOTAL	2022-04-26	<0.04	ug/L	0
PENTACHLOROPHENOL	2022-04-26	<0.15	ug/L	0
PHORATE	2022-04-26	<0.01	ug/L	0
PICLORAM	2022-04-26	<1	ug/L	0
PROMETRYNE	2022-04-26	<0.03	ug/L	0
SIMAZINE	2022-04-26	<0.01	ug/L	0
TERBUFOS	2022-04-26	<0.01	ug/L	0
TETRACHLOROETHYLENE	2022-04-26 to 2022-10-21	<0.2	ug/L	0
TOLUENE	2022-04-26 to 2022-10-21	<0.2	ug/L	0
TRIALATE	2022-04-26	<0.01	ug/L	0
TRICHLOROETHYLENE	2022-04-26 to 2022-10-21	<0.2	ug/L	0
TRIFLURALIN	2022-04-26	<0.02	ug/L	0
VINYL CHLORIDE	2022-04-26 to 2022-10-21	<0.2	ug/L	0
XYLENE	2022-04-26 to 2022-10-21	<0.5	ug/L	0
DISTRIBUTION				
TOTAL TRIHALOMETHANES*	Running annual average for the last four quarters	18.4	ug/L	0
HALOACETIC ACIDS*	Running annual average for the last four quarters	<5.3	ug/L	0

*The Maximum Acceptable Concentration for Trihalomethanes and Haloacetic Acids in the distribution system is based on a running average of the results from all sampling events in the past four quarters. This running average can be found in the result value column.



Anti-Stagnation Valve

SUMMARY OF ADDITIONAL TESTING AND SAMPLING RELATED TO KENILWORTH RESERVOIR.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
TREATED				
1,1-DICHLOROETHYLENE	2022-01-04 to 2022-10-12	<0.2	ug/L	0
1,2-DICHLOROBENZENE	2022-01-04 to 2022-10-12	<0.2	ug/L	0
1,2-DICHLOROETHANE	2022-01-04 to 2022-10-12	<0.2	ug/L	0
1,3-DICHLOROBENZENE	2022-01-04 to 2022-10-12	<0.2	ug/L	0
1,4-DICHLOROBENZENE	2022-01-04 to 2022-10-12	<0.2	ug/L	0
BENZENE	2022-01-04 to 2022-10-12	<0.2	ug/L	0
CARBON TETRACHLORIDE	2022-01-04 to 2022-10-12	<0.2	ug/L	0
CHLOROBENZENE	2022-01-04 to 2022-10-12	<0.3	ug/L	0
DICHLOROMETHANE	2022-01-04 to 2022-10-12	<0.5	ug/L	0
TETRACHLOROETHYLENE	2022-01-04 to 2022-10-12	<0.2	ug/L	0
TRICHLOROETHYLENE	2022-01-04 to 2022-10-12	<0.2	ug/L	0
VINYL CHLORIDE	2022-01-04 to 2022-10-12	<0.2	ug/L	0
1,4-DIOXANE	2022-01-04 to 2022-10-12	<2	ug/L	0
1-CHLORONAPHTHALENE	2022-01-04 to 2022-10-12	<500	ng/L	0
1-METHYLNAPHTHALENE	2022-01-04 to 2022-10-12	<500	ng/L	0
2,3,4,6-TETRACHLOROPHENOL	2022-01-04 to 2022-07-26	<0.20	ug/L	0
2,3,5,6-TETRACHLOROPHENOL	2022-01-04 to 2022-10-12	<1	ug/L	0
2,4,5-TRICHLOROPHENOL	2022-01-04 to 2022-07-26	<0.2	ug/L	0
2,4,6-TRICHLOROPHENOL	2022-01-04 to 2022-07-26	<0.25	ug/L	0
2,4-DICHLOROPHENOXYACETIC ACID	2022-01-04 to 2022-07-26	<0.19	ug/L	0
2,4-DICHLOROPHENOL	2022-01-04 to 2022-07-26	<0.15	ug/L	0
2,4-DIMETHYLPHENOL	2022-01-04 to 2022-10-12	<5	ug/L	0
2,4-DINITROPHENOL	2022-01-04 to 2022-10-12	<10	ug/L	0
2,4-DINITROTOLUENE	2022-01-04 to 2022-10-12	<500	ng/L	0
2,6-DINITROTOLUENE	2022-01-04 to 2022-10-12	<500	ng/L	0
2-CHLORONAPHTHALENE	2022-01-04 to 2022-10-12	<500	ng/L	0
2-CHLOROPHENOL	2022-01-04 to 2022-10-12	<1	ug/L	0
2-METHYL-4,6-DINITROPHENOL	2022-01-04 to 2022-10-12	<10	ug/L	0
2-METHYLNAPHTHALENE	2022-01-04 to 2022-10-12	<500	ng/L	0
2-NITROANILINE	2022-01-04 to 2022-10-12	<1000	ng/L	0

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SUMMARY OF ADDITIONAL TESTING AND SAMPLING RELATED TO KENILWORTH RESERVOIR.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
TREATED				
2-NITROPHENOL	2022-01-04 to 2022-10-12	<1	ug/L	0
3,3'-DICHLOROBENZIDINE	2022-01-04 to 2022-07-26	<500	ng/L	0
3-NITROANILINE	2022-01-04 to 2022-10-12	<1000	ng/L	0
4-CHLORO-3-METHYLPHENOL	2022-01-04 to 2022-10-12	<1	ug/L	0
4-CHLOROANILINE	2022-01-04 to 2022-10-12	<1000	ng/L	0
4-CHLOROPHENYL PHENYL ETHER	2022-01-04 to 2022-10-12	<500	ng/L	0
4-NITROANILINE	2022-01-04 to 2022-10-12	<1000	ng/L	0
4-NITROPHENOL	2022-01-04 to 2022-10-12	<1	ug/L	0
5-NITROACENAPHTHENE	2022-01-04 to 2022-10-12	<500	ng/L	0
7H-DIBENZO(C,G)CARBAZOLE	2022-01-04 to 2022-10-12	<0.1	ug/L	0
ACENAPHTHENE	2022-01-04 to 2022-10-12	<100	ng/L	0
ACENAPHTHYLENE	2022-01-04 to 2022-10-12	<100	ng/L	0
ALACHLOR	2022-01-04 to 2022-07-26	<0.02	ug/L	0
ANILINE	2022-01-04 to 2022-10-12	<1000	ng/L	0
ANTHRACENE	2022-01-04 to 2022-10-12	<100	ng/L	0
ATRAZINE	2022-01-04 to 2022-07-26	0.01 to 0.04	ug/L	0
ATRAZINE + DESETHYL-ATRAZINE	2022-01-04 to 2022-07-26	0.01 to 0.06	ug/L	0
AZINPHOS-METHYL	2022-01-04 to 2022-07-26	<0.05	ug/L	0
AZOBENZENE	2022-01-04 to 2022-10-12	<500	ng/L	0
BENZIDINE	2022-01-04 to 2022-10-12	<1000	ng/L	0
BENZO[A]ANTHRACENE	2022-01-04 to 2022-10-12	<100	ng/L	0
BENZO[A]PYRENE	2022-01-04 to 2022-07-26	<0.004	ug/L	0
BENZO[B/J]FLUORANTHENE	2022-01-04 to 2022-10-12	<0.1	ug/L	0
BENZO[E]PYRENE	2022-01-04 to 2022-10-12	<100	ng/L	0

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SUMMARY OF ADDITIONAL TESTING AND SAMPLING RELATED TO KENILWORTH RESERVOIR.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
TREATED				
BENZO[G,H,I]PERYLENE	2022-01-04 to 2022-10-12	<200	ng/L	0
BENZO[K]FLUORANTHENE	2022-01-04 to 2022-10-12	<100	ng/L	0
BENZYL ALCOHOL	2022-01-04 to 2022-10-12	<500	ng/L	0
BENZYL BUTYL PHTHALATE	2022-01-04 to 2022-10-12	<2000	ng/L	0
BIPHENYL	2022-01-04 to 2022-10-12	<500	ng/L	0
BIS(2-CHLOROETHOXY) METHANE	2022-01-04 to 2022-10-12	<500	ng/L	0
BIS(2-CHLOROETHYL)ETHER	2022-01-04 to 2022-10-12	<500	ng/L	0
BIS(2-CHLOROISOPROPYL) ETHER	2022-01-04 to 2022-10-12	<500	ng/L	0
BIS(2-ETHYLHEXYL) PHTHALATE	2022-01-04 to 2022-10-12	<2000 to 24,500	ng/L	0
BIS(2-ETHYLHEXYL)ADIPATE	2022-01-04 to 2022-10-12	<1	ug/L	0
BISPHENOL A	2022-01-04 to 2022-10-12	<1	ug/L	0
BROMOXYNIL	2022-01-04 to 2022-07-26	<0.33	ug/L	0
CAMPHENE	2022-01-04 to 2022-10-12	<1000	ng/L	0
CARBARYL	2022-01-04 to 2022-07-26	<0.05	ug/L	0
CARBAZOLE	2022-01-04 to 2022-10-12	<5000	ng/L	0
CARBOFURAN	2022-01-04 to 2022-07-26	<0.01	ug/L	0
CHLORPYRIFOS (DURSBAN)	2022-01-04 to 2022-07-26	<0.02	ug/L	0
CHRYSENE	2022-01-04 to 2022-10-12	<100	ng/L	0
DESETHYL-ATRAZINE	2022-01-04 to 2022-07-26	<0.01 to 0.02	ug/L	0
DIAZINON	2022-01-04 to 2022-07-26	<0.02	ug/L	0
DIBENZO(A,E)PYRENE	2022-01-04 to 2022-10-12	<0.1	ug/L	0
DIBENZO(A,H)ACRIDINE	2022-01-04 to 2022-10-12	<0.1	ug/L	0
DIBENZO(A,H)PYRENE	2022-01-04 to 2022-10-12	<0.1	ug/L	0
DIBENZO(A,I)PYRENE	2022-01-04 to 2022-10-12	<0.1	ug/L	0
DIBENZO(A,J)ACRIDINE	2022-01-04 to 2022-10-12	<0.1	ug/L	0
DIBENZO[A,H]ANTHRACENE	2022-01-04 to 2022-10-12	<200	ng/L	0
DIBENZOFURAN	2022-01-04 to 2022-10-12	<500000	pg/L	0
DICAMBA	2022-01-04 to 2022-07-26	<0.20	ug/L	0
DICLOFOP-METHYL	2022-01-04 to 2022-07-26	<0.40	ug/L	0

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SUMMARY OF ADDITIONAL TESTING AND SAMPLING RELATED TO KENILWORTH RESERVOIR.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
TREATED				
DIETHYL PHTHALATE	2022-01-04 to 2022-10-12	<2000	ng/L	0
DIMETHOATE	2022-01-04 to 2022-07-26	<0.06	ug/L	0
DIMETHYL PHTHALATE	2022-01-04 to 2022-10-12	<2000	ng/L	0
DI-N-BUTYL PHTHALATE	2022-01-04 to 2022-10-12	<2000	ng/L	0
DI-N-OCTYL PHTHALATE	2022-01-04 to 2022-10-12	<2000	ng/L	0
DIPHENYL ETHER	2022-01-04 to 2022-10-12	<1000	ng/L	0
DIPHENYLAMINE/N-NITROSODIPHENYLAMINE	2022-01-04 to 2022-10-12	<2000	ng/L	0
DIQUAT	2022-01-04 to 2022-07-26	<1	ug/L	0
DIURON	2022-01-04 to 2022-07-26	<0.03	ug/L	0
F2 (C10-C16) PETROLEUM HYDROCARBONS	2022-01-04 to 2022-10-12	<100	ug/L	0
F3 (C16-C34) PETROLEUM HYDROCARBONS	2022-01-04 to 2022-10-12	<200	ug/L	0
FLUORANTHENE	2022-01-04 to 2022-10-12	<100	ng/L	0
FLUORENE	2022-01-04 to 2022-10-12	<100	ng/L	0
GLYPHOSATE	2022-01-04 to 2022-07-26	<1	ug/L	0
HEXACHLOROBENZENE	2022-01-04 to 2022-07-26	<0.01	ug/L	0
HEXACHLOROBUTADIENE	2022-01-04 to 2022-07-26	<10	ng/L	0
HEXACHLOROCYCLOPENTADIENE	2022-01-04 to 2022-10-12	<1	ug/L	0
HEXACHLOROETHANE	2022-01-04 to 2022-07-26	<10	ng/L	0
INDENO[1,2,3-CD]PYRENE	2022-01-04 to 2022-10-12	<200	ng/L	0
INDOLE	2022-01-04 to 2022-10-12	<1000	ng/L	0
ISOPHORONE	2022-01-04 to 2022-10-12	<500	ng/L	0
M+P-CRESOL (3+4-METHYLPHENOL)	2022-01-04 to 2022-10-12	<1000	ng/L	0
MALATHION	2022-01-04 to 2022-07-26	<0.02	ug/L	0
MCPA (2-METHYL-4-CHLORO-PHENOXYACETIC ACID)	2022-01-04 to 2022-07-26	<0.00012	mg/L	0
M-DINITROBENZENE	2022-01-04 to 2022-10-12	<5	ug/L	0
METOLACHLOR	2022-01-04 to 2022-07-26	<0.01	ug/L	0

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SUMMARY OF ADDITIONAL TESTING AND SAMPLING RELATED TO KENILWORTH RESERVOIR.

PARAMETER	SAMPLE DATE	RESULT VALUE	UNIT OF MEASURE	NO. OF AWQI
TREATED				
METRIBUZIN (SENCOR)	2022-01-04 to 2022-07-26	<0.02	ug/L	0
NAPHTHALENE	2022-01-04 to 2022-10-12	<0.5	ug/L	0
NDMA	2022-01-04 to 2022-07-26	<0.0008 to 0.00170	ug/L	0
NITROBENZENE	2022-01-04 to 2022-10-12	<1000	ng/L	0
N-NITROSODI-N-PROPYLAMINE	2022-01-04 to 2022-10-12	<500	ng/L	0
O-CRESOL (2-METHYLPHENOL)	2022-01-04 to 2022-10-12	<1000	ng/L	0
OCTACHLOROSTYRENE	2022-01-04 to 2022-10-12	<500	ng/L	0
O-DINITROBENZENE	2022-01-04 to 2022-10-12	<5	ug/L	0
PARAQUAT	2022-01-04 to 2022-07-26	<1	ug/L	0
PCBS TOTAL	2022-01-04 to 2022-07-26	<0.04	ug/L	0
P-DINITROBENZENE	2022-01-04 to 2022-10-12	<5	ug/L	0
PENTACHLOROPHENOL	2022-01-04 to 2022-07-26	<0.15	ug/L	0
PERYLENE	2022-01-04 to 2022-10-12	<500	ng/L	0
PHENANTHRENE	2022-01-04 to 2022-10-12	<100	ng/L	0
PHENOL	2022-01-04 to 2022-08-30	<1	ug/L	0
PHORATE	2022-01-04 to 2022-07-26	<0.01	ug/L	0
PICLORAM	2022-01-04 to 2022-07-26	<1	ug/L	0
PROMETRYNE	2022-01-04 to 2022-07-26	<0.03	ug/L	0
PYRENE	2022-01-04 to 2022-10-12	<100	ng/L	0
PYRIDINE	2022-01-04 to 2022-10-12	<2000	ng/L	0
SIMAZINE	2022-01-04 to 2022-07-26	<0.01	ug/L	0
TERBUFOS	2022-01-04 to 2022-07-26	<0.01	ug/L	0
TRIALATE	2022-01-04 to 2022-07-26	<0.01	ug/L	0
TRIFLURALIN	2022-01-04 to 2022-07-26	<0.02	ug/L	0
ALUMINUM	2022-01-04 to 2022-10-12	0.012 to 0.402	mg/L	0
ANTIMONY	2022-01-04 to 2022-10-12	<0.0001 to 0.0002	mg/L	0
ARSENIC	2022-01-04 to 2022-10-12	0.0005 to 0.0008	mg/L	0
BARIUM	2022-01-04 to 2022-10-12	0.0170 to 0.0264	mg/L	0
BERYLLIUM	2022-01-04 to 2022-10-12	<0.0001	mg/L	0

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SUMMARY OF ADDITIONAL TESTING AND SAMPLING RELATED TO KENILWORTH RESERVOIR.

PARAMETER	SAMPLE DATE	RESULT VALUE	UNIT OF MEASURE	NO. OF AWQI
TREATED				
BISMUTH	2022-01-04 to 2022-10-12	<0.0001	mg/L	0
BORON	2022-01-04 to 2022-10-12	0.018 to 0.031	mg/L	0
CADMIUM	2022-01-04 to 2022-10-12	<0.0001	mg/L	0
CALCIUM	2022-01-04 to 2022-10-12	31.6 to 37.2	mg/L	0
CHROMIUM	2022-01-04 to 2022-10-12	<0.0001 to 0.0003	mg/L	0
COBALT	2022-01-04 to 2022-10-12	<0.0001	mg/L	0
COPPER	2022-01-04 to 2022-10-12	0.0002 to 0.0022	mg/L	0
IRON	2022-01-04 to 2022-10-12	<0.003 to 0.031	mg/L	0
LEAD	2022-01-04 to 2022-10-12	<0.0001	mg/L	0
LITHIUM	2022-01-04 to 2022-10-12	0.0018 to 0.0023	mg/L	0
MAGNESIUM	2022-01-04 to 2022-10-12	8.57 to 10.00	mg/L	0
MANGANESE	2022-01-04 to 2022-10-12	<0.0001 to 0.0009	mg/L	0
MOLYBDENUM	2022-01-04 to 2022-10-12	0.0011 to 0.0096	mg/L	0
NICKEL	2022-01-04 to 2022-10-12	0.0004 to 0.0007	mg/L	0
PHOSPHORUS TOTAL	2022-01-04 to 2022-10-12	0.647 to 0.943	mg/L	0
POTASSIUM	2022-01-04 to 2022-10-12	1.47 to 1.89	mg/L	0
SELENIUM	2022-01-04 to 2022-10-12	0.0001 to 0.0002	mg/L	0
SILICON	2022-01-04 to 2022-10-12	0.25 to 0.79	mg/L	0
SILVER	2022-01-04 to 2022-10-12	<0.0001	mg/L	0
SODIUM	2022-01-04 to 2022-10-12	13.1 to 22.6	mg/L	1
STRONTIUM	2022-01-04 to 2022-10-12	0.163 to 0.193	mg/L	0
THALLIUM	2022-01-04 to 2022-10-12	<0.0003	mg/L	0
TIN	2022-01-04 to 2022-10-12	<0.0001	mg/L	0
TITANIUM	2022-01-04 to 2022-10-12	0.0002 to 0.0005	mg/L	0
TUNGSTEN	2022-01-04 to 2022-10-12	<0.0001 to 0.0001	mg/L	0
URANIUM	2022-01-04 to 2022-10-12	0.174 to 0.322	ug/L	0
VANADIUM	2022-01-04 to 2022-10-12	0.0001 to 0.0003	mg/L	0
ZINC	2022-01-04 to 2022-10-12	<0.001	mg/L	0
ZIRCONIUM	2022-01-04 to 2022-10-12	<0.0004	mg/L	0

SUMMARY OF ADDITIONAL TESTING AND SAMPLING RELATED TO KENILWORTH RESERVOIR

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
DISTRIBUTION				
1,1-DICHLOROETHYLENE	2022-01-06 to 2022-10-10	<0.2	ug/L	0
1,2-DICHLOROBENZENE	2022-01-06 to 2022-10-10	<0.2	ug/L	0
1,2-DICHLOROETHANE	2022-01-06 to 2022-10-10	<0.2	ug/L	0
1,3-DICHLOROBENZENE	2022-01-06 to 2022-10-10	<0.2	ug/L	0
1,4-DICHLOROBENZENE	2022-01-06 to 2022-10-10	<0.2	ug/L	0
BENZENE	2022-01-06 to 2022-10-10	<0.2	ug/L	0
CARBON TETRACHLORIDE	2022-01-06 to 2022-10-10	<0.2	ug/L	0
CHLOROBENZENE	2022-01-06 to 2022-10-10	<0.3	ug/L	0
DICHLOROMETHANE	2022-01-06 to 2022-10-10	<0.5	ug/L	0
TETRACHLOROETHYLENE	2022-01-06 to 2022-10-10	<0.2	ug/L	0
TRICHLOROETHYLENE	2022-01-06 to 2022-10-10	<0.2	ug/L	0
VINYL CHLORIDE	2022-01-06 to 2022-10-10	<0.2	ug/L	0
1,4-DIOXANE	2022-01-06 to 2022-10-10	<2	ug/L	0
1-CHLORONAPHTHALENE	2022-01-06 to 2022-10-10	<500	ng/L	0
1-METHYLNAPHTHALENE	2022-01-06 to 2022-10-10	<500	ng/L	0
2,3,4,6-TETRACHLOROPHENOL	2022-01-06 to 2022-07-25	<0.20	ug/L	0
2,3,5,6-TETRACHLOROPHENOL	2022-01-06 to 2022-10-10	<1	ug/L	0
2,4,5-TRICHLOROPHENOL	2022-01-06 to 2022-07-25	<0.2	ug/L	0
2,4,6-TRICHLOROPHENOL	2022-01-06 to 2022-07-25	<0.25 to 0.45	ug/L	0
2,4-DICHLOROPHENOXYACETIC ACID	2022-01-06 to 2022-07-25	<0.19	ug/L	0
2,4-DICHLOROPHENOL	2022-01-06 to 2022-07-25	<0.15	ug/L	0
2,4-DIMETHYLPHENOL	2022-01-06 to 2022-10-10	<5	ug/L	0
2,4-DINITROPHENOL	2022-01-06 to 2022-10-10	<10	ug/L	0
2,4-DINITROTOLUENE	2022-01-06 to 2022-10-10	<500	ng/L	0
2,6-DINITROTOLUENE	2022-01-06 to 2022-10-10	<500	ng/L	0
2-CHLORONAPHTHALENE	2022-01-06 to 2022-10-10	<500	ng/L	0
2-CHLOROPHENOL	2022-01-06 to 2022-10-10	<1	ug/L	0

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SUMMARY OF ADDITIONAL TESTING AND SAMPLING RELATED TO KENILWORTH RESERVOIR

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
DISTRIBUTION				
2-METHYL-4,6-DINITROPHENOL	2022-01-06 to 2022-10-10	<10	ug/L	0
2-METHYLNAPHTHALENE	2022-01-06 to 2022-10-10	<500	ng/L	0
2-NITROANILINE	2022-01-06 to 2022-10-10	<1000	ng/L	0
2-NITROPHENOL	2022-01-06 to 2022-10-10	<1	ug/L	0
3,3'-DICHLOROBENZIDINE	2022-01-06 to 2022-07-25	<500	ng/L	0
3-NITROANILINE	2022-01-06 to 2022-10-10	<1000	ng/L	0
4-CHLORO-3-METHYLPHENOL	2022-01-06 to 2022-10-10	<1	ug/L	0
4-CHLOROANILINE	2022-01-06 to 2022-10-10	<1000	ng/L	0
4-CHLOROPHENYL PHENYL ETHER	2022-01-06 to 2022-10-10	<500	ng/L	0
4-NITROANILINE	2022-01-06 to 2022-10-10	<1000	ng/L	0
4-NITROPHENOL	2022-01-06 to 2022-10-10	<1	ug/L	0
5-NITROACENAPHTHENE	2022-01-06 to 2022-10-10	<500	ng/L	0
7H-DIBENZO(C,G)CARBAZOLE	2022-01-06 to 2022-10-10	<0.1	ug/L	0
ACENAPHTHENE	2022-01-06 to 2022-10-10	<100	ng/L	0
ACENAPHTHYLENE	2022-01-06 to 2022-10-10	<100	ng/L	0
ALACHLOR	2022-01-06 to 2022-07-25	<0.02	ug/L	0
ANILINE	2022-01-06 to 2022-10-10	<1000	ng/L	0
ANTHRACENE	2022-01-06 to 2022-10-10	<100	ng/L	0
ATRAZINE	2022-01-06 to 2022-07-25	0.01 to 0.04	ug/L	0
ATRAZINE + DESETHYL-ATRAZINE	2022-01-06 to 2022-07-25	0.01 to 0.05	ug/L	0
AZINPHOS-METHYL	2022-01-06 to 2022-07-25	<0.05	ug/L	0
AZO BENZENE	2022-01-06 to 2022-10-10	<500	ng/L	0
BENZIDINE	2022-01-06 to 2022-10-10	<1000	ng/L	0
BENZO[A]ANTHRACENE	2022-01-06 to 2022-10-10	<100	ng/L	0
BENZO[A]PYRENE	2022-01-06 to 2022-07-25	<0.004	ug/L	0
BENZO[B/J]FLUORANTHENE	2022-01-06 to 2022-10-10	<0.1	ug/L	0
BENZO[E]PYRENE	2022-01-06 to 2022-10-10	<100	ng/L	0

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SUMMARY OF ADDITIONAL TESTING AND SAMPLING RELATED TO KENILWORTH RESERVOIR

PARAMETER	SAMPLE DATE	RESULT VALUE	UNIT OF MEASURE	NO. OF AWQI
DISTRIBUTION				
BENZO[G,H,I]PERYLENE	2022-01-06 to 2022-10-10	<200	ng/L	0
BENZO[K]FLUORANTHENE	2022-01-06 to 2022-10-10	<100	ng/L	0
BENZYL ALCOHOL	2022-01-06 to 2022-10-10	<500 to 2,100	ng/L	0
BENZYL BUTYL PHTHALATE	2022-01-06 to 2022-10-10	<2000	ng/L	0
BIPHENYL	2022-01-06 to 2022-10-10	<500	ng/L	0
BIS(2-CHLOROETHOXY) METHANE	2022-01-06 to 2022-10-10	<500	ng/L	0
BIS(2-CHLOROETHYL)ETHER	2022-01-06 to 2022-10-10	<500	ng/L	0
BIS(2-CHLOROISOPROPYL) ETHER	2022-01-06 to 2022-10-10	<500	ng/L	0
BIS(2-ETHYLHEXYL) PHTHALATE	2022-01-06 to 2022-10-10	<2000	ng/L	0
BIS(2-ETHYLHEXYL)ADIPATE	2022-01-06 to 2022-10-10	<1	ug/L	0
BISPHENOL A	2022-01-06 to 2022-10-10	<1	ug/L	0
BROMOXYNIL	2022-01-06 to 2022-07-25	<0.33	ug/L	0
CAMPHENE	2022-01-06 to 2022-10-10	<1000	ng/L	0
CARBARYL	2022-01-06 to 2022-07-25	<0.05	ug/L	0
CARBAZOLE	2022-01-06 to 2022-10-10	<5000	ng/L	0
CARBOFURAN	2022-01-06 to 2022-07-25	<0.01	ug/L	0
CHLORPYRIFOS (DURSBAN)	2022-01-06 to 2022-07-25	<0.02	ug/L	0
CHRYSENE	2022-01-06 to 2022-10-10	<100	ng/L	0
DESETHYL-ATRAZINE	2022-01-06 to 2022-07-25	<0.01 to 0.02	ug/L	0
DIAZINON	2022-01-06 to 2022-07-25	<0.02	ug/L	0
DIBENZO(A,E)PYRENE	2022-01-06 to 2022-10-10	<0.1	ug/L	0
DIBENZO(A,H)ACRIDINE	2022-01-06 to 2022-10-10	<0.1	ug/L	0
DIBENZO(A,H)PYRENE	2022-01-06 to 2022-10-10	<0.1	ug/L	0
DIBENZO(A,I)PYRENE	2022-01-06 to 2022-10-10	<0.1	ug/L	0
DIBENZO(A,J)ACRIDINE	2022-01-06 to 2022-10-10	<0.1	ug/L	0
DIBENZO[A,H]ANTHRACENE	2022-01-06 to 2022-10-10	<200	ng/L	0
DIBENZOFURAN	2022-01-06 to 2022-10-10	<500000	pg/L	0
DICAMBA	2022-01-06 to 2022-07-25	<0.20	ug/L	0
DICLOFOP-METHYL	2022-01-06 to 2022-07-25	<0.40	ug/L	0

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SUMMARY OF ADDITIONAL TESTING AND SAMPLING RELATED TO KENILWORTH RESERVOIR

PARAMETER	SAMPLE DATE	RESULT VALUE	UNIT OF MEASURE	NO. OF AWQI
DISTRIBUTION				
DIETHYL PHTHALATE	2022-01-06 to 2022-10-10	<2000	ng/L	0
DIMETHOATE	2022-01-06 to 2022-07-25	<0.06	ug/L	0
DIMETHYL PHTHALATE	2022-01-06 to 2022-10-10	<2000	ng/L	0
DI-N-BUTYL PHTHALATE	2022-01-06 to 2022-10-10	<2000	ng/L	0
DI-N-OCTYL PHTHALATE	2022-01-06 to 2022-10-10	<2000	ng/L	0
DIPHENYL ETHER	2022-01-06 to 2022-10-10	<1000	ng/L	0
DIPHENYLAMINE/N-NITROSODIPHENYLAMINE	2022-01-06 to 2022-10-10	<2000	ng/L	0
DIQUAT	2022-01-06 to 2022-07-25	<1	ug/L	0
DIURON	2022-01-06 to 2022-07-25	<0.03	ug/L	0
F2 (C10-C16) PETROLEUM HYDROCARBONS	2022-01-06 to 2022-10-10	<100	ug/L	0
F3 (C16-C34) PETROLEUM HYDROCARBONS	2022-01-06 to 2022-10-10	<200	ug/L	0
FLUORANTHENE	2022-01-06 to 2022-10-10	<100	ng/L	0
FLUORENE	2022-01-06 to 2022-10-10	<100	ng/L	0
GLYPHOSATE	2022-01-06 to 2022-07-25	<1	ug/L	0
HEXACHLOROBENZENE	2022-01-06 to 2022-07-25	<0.01	ug/L	0
HEXACHLOROBUTADIENE	2022-01-06 to 2022-07-25	<10	ng/L	0
HEXACHLOROCYCLOPENTADIENE	2022-01-06 to 2022-10-10	<1	ug/L	0
HEXACHLOROETHANE	2022-01-06 to 2022-07-25	<10	ng/L	0
INDENO[1,2,3-CD]PYRENE	2022-01-06 to 2022-10-10	<200	ng/L	0
INDOLE	2022-01-06 to 2022-10-10	<1000	ng/L	0
ISOPHORONE	2022-01-06 to 2022-10-10	<500	ng/L	0
M+P-CRESOL (3+4-METHYLPHENOL)	2022-01-06 to 2022-10-10	<1000	ng/L	0
MALATHION	2022-01-06 to 2022-07-25	<0.02	ug/L	0
MCPA (2-METHYL-4-CHLORO-PHENOXYACETIC ACID)	2022-01-06 to 2022-07-25	<0.00012	mg/L	0
M-DINITROBENZENE	2022-01-06 to 2022-10-10	<5	ug/L	0
METOLACHLOR	2022-01-06 to 2022-07-25	<0.01	ug/L	0

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SUMMARY OF ADDITIONAL TESTING AND SAMPLING RELATED TO KENILWORTH RESERVOIR

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
DISTRIBUTION				
METRIBUZIN (SENCOR)	2022-01-06 to 2022-07-25	<0.02	ug/L	0
NAPHTHALENE	2022-01-06 to 2022-10-10	<0.5	ug/L	0
NDMA	2022-01-06 to 2022-07-25	<0.0008 to 0.00390	ug/L	0
NITROBENZENE	2022-01-06 to 2022-10-10	<1000	ng/L	0
N-NITROSODI-N-PROPYLAMINE	2022-01-06 to 2022-10-10	<500	ng/L	0
O-CRESOL (2-METHYLPHENOL)	2022-01-06 to 2022-10-10	<1000	ng/L	0
OCTACHLOROSTYRENE	2022-01-06 to 2022-10-10	<500	ng/L	0
O-DINITROBENZENE	2022-01-06 to 2022-10-10	<5	ug/L	0
PARAQUAT	2022-01-06 to 2022-07-25	<1	ug/L	0
PCBS TOTAL	2022-01-06 to 2022-07-25	<0.04	ug/L	0
P-DINITROBENZENE	2022-01-06 to 2022-10-10	<5	ug/L	0
PENTACHLOROPHENOL	2022-01-06 to 2022-07-25	<0.15	ug/L	0
PERYLENE	2022-01-06 to 2022-10-10	<500	ng/L	0
PHENANTHRENE	2022-01-06 to 2022-10-10	<100	ng/L	0
PHENOL	2022-01-06 to 2022-08-29	<1	ug/L	0
PHORATE	2022-01-06 to 2022-07-25	<0.01	ug/L	0
PICLORAM	2022-01-06 to 2022-07-25	<1	ug/L	0
PROMETRYNE	2022-01-06 to 2022-07-25	<0.03	ug/L	0
PYRENE	2022-01-06 to 2022-10-10	<100	ng/L	0
PYRIDINE	2022-01-06 to 2022-10-10	<2000	ng/L	0
SIMAZINE	2022-01-06 to 2022-07-25	<0.01	ug/L	0
TERBUFOS	2022-01-06 to 2022-07-25	<0.01	ug/L	0
TRIALATE	2022-01-06 to 2022-07-25	<0.01	ug/L	0
TRIFLURALIN	2022-01-06 to 2022-07-25	<0.02	ug/L	0
ALUMINUM	2022-01-06 to 2022-10-10	0.015 to 11.400	mg/L	0
ANTIMONY	2022-01-06 to 2022-10-10	<0.0001 to 0.0002	mg/L	0
ARSENIC	2022-01-06 to 2022-10-10	0.0005 to 0.0014	mg/L	0
BARIUM	2022-01-06 to 2022-10-10	0.0198 to 0.1200	mg/L	0
BERYLLIUM	2022-01-06 to 2022-10-10	<0.0001	mg/L	0
BISMUTH	2022-01-06 to 2022-10-10	<0.0001 to 0.0011	mg/L	0

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SUMMARY OF ADDITIONAL TESTING AND SAMPLING RELATED TO KENILWORTH RESERVOIR

PARAMETER	SAMPLE DATE	RESULT VALUE	UNIT OF MEASURE	NO. OF AWQI
DISTRIBUTION				
BORON	2022-01-06 to 2022-10-10	0.022 to 0.031	mg/L	0
CADMIUM	2022-01-06 to 2022-10-10	<0.0001	mg/L	0
CALCIUM	2022-01-06 to 2022-10-10	31.9 to 39.8	mg/L	0
CHROMIUM	2022-01-06 to 2022-10-10	<0.0001 to 0.0009	mg/L	0
COBALT	2022-01-06 to 2022-10-10	<0.0001	mg/L	0
COPPER	2022-01-06 to 2022-10-10	0.0027 to 0.0720	mg/L	0
IRON	2022-01-06 to 2022-10-10	0.009 to 2.740	mg/L	0
LEAD	2022-01-06 to 2022-10-10	<0.0001 to 0.0018	mg/L	0
LITHIUM	2022-01-06 to 2022-10-10	0.0018 to 0.0028	mg/L	0
MAGNESIUM	2022-01-06 to 2022-10-10	8.64 to 9.78	mg/L	0
MANGANESE	2022-01-06 to 2022-10-10	0.0002 to 0.0110	mg/L	0
MOLYBDENUM	2022-01-06 to 2022-10-10	0.0011 to 0.0092	mg/L	0
NICKEL	2022-01-06 to 2022-10-10	0.0004 to 0.0011	mg/L	0
PHOSPHORUS TOTAL	2022-01-06 to 2022-10-10	0.667 to 7.170	mg/L	0
POTASSIUM	2022-01-06 to 2022-10-10	1.51 to 1.98	mg/L	0
SELENIUM	2022-01-06 to 2022-10-10	0.0001 to 0.0002	mg/L	0
SILICON	2022-01-06 to 2022-10-10	0.30 to 0.78	mg/L	0
SILVER	2022-01-06 to 2022-10-10	<0.0001	mg/L	0
SODIUM	2022-01-06 to 2022-10-10	13.9 to 23.6	mg/L	0
STRONTIUM	2022-01-06 to 2022-10-10	0.167 to 0.212	mg/L	0
THALLIUM	2022-01-06 to 2022-10-10	<0.0003	mg/L	0
TIN	2022-01-06 to 2022-10-10	<0.0001 to 0.0004	mg/L	0
TITANIUM	2022-01-06 to 2022-10-10	0.0003 to 0.0034	mg/L	0
TUNGSTEN	2022-01-06 to 2022-10-10	<0.0001 to 0.0001	mg/L	0
URANIUM	2022-01-06 to 2022-10-10	0.178 to 1.580	ug/L	0
VANADIUM	2022-01-06 to 2022-10-10	0.0002 to 0.0004	mg/L	0
ZINC	2022-01-06 to 2022-10-10	<0.001 to 0.009	mg/L	0
ZIRCONIUM	2022-01-06 to 2022-10-10	<0.0004	mg/L	0

Parameters Exceeding Prescribed Half-Standard

There were no Schedule 23 or 24 parameters that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards (O.Reg. 169/03).



FIFTY ROAD DRINKING WATER SUBSYSTEM WATER QUALITY ANNUAL REPORT

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GENERAL INFORMATION

The treated water supply for this area comes from the Town of Grimsby Water Distribution System and serves a population of approximately 200 people. Water is provided from Grimsby west along Highway 8, then south on Fifty Road to Concession Road and to an underground, 1,100m³ storage reservoir operated by the City of Hamilton. The reservoir supplies water to residences on Reservoir Park Road.

A pump, running continuously, maintains the distribution system water pressure. Water pumped in excess of water system demand is circulated back to the reservoir. Fluoridation is not carried out on the water supplied by the Town of Grimsby. The reservoir water chlorine residual is maintained by a rechlorination system at the reservoir. Distribution water is sampled and analyzed one day per week. Chlorine residual in the distribution system is analyzed twice per week.

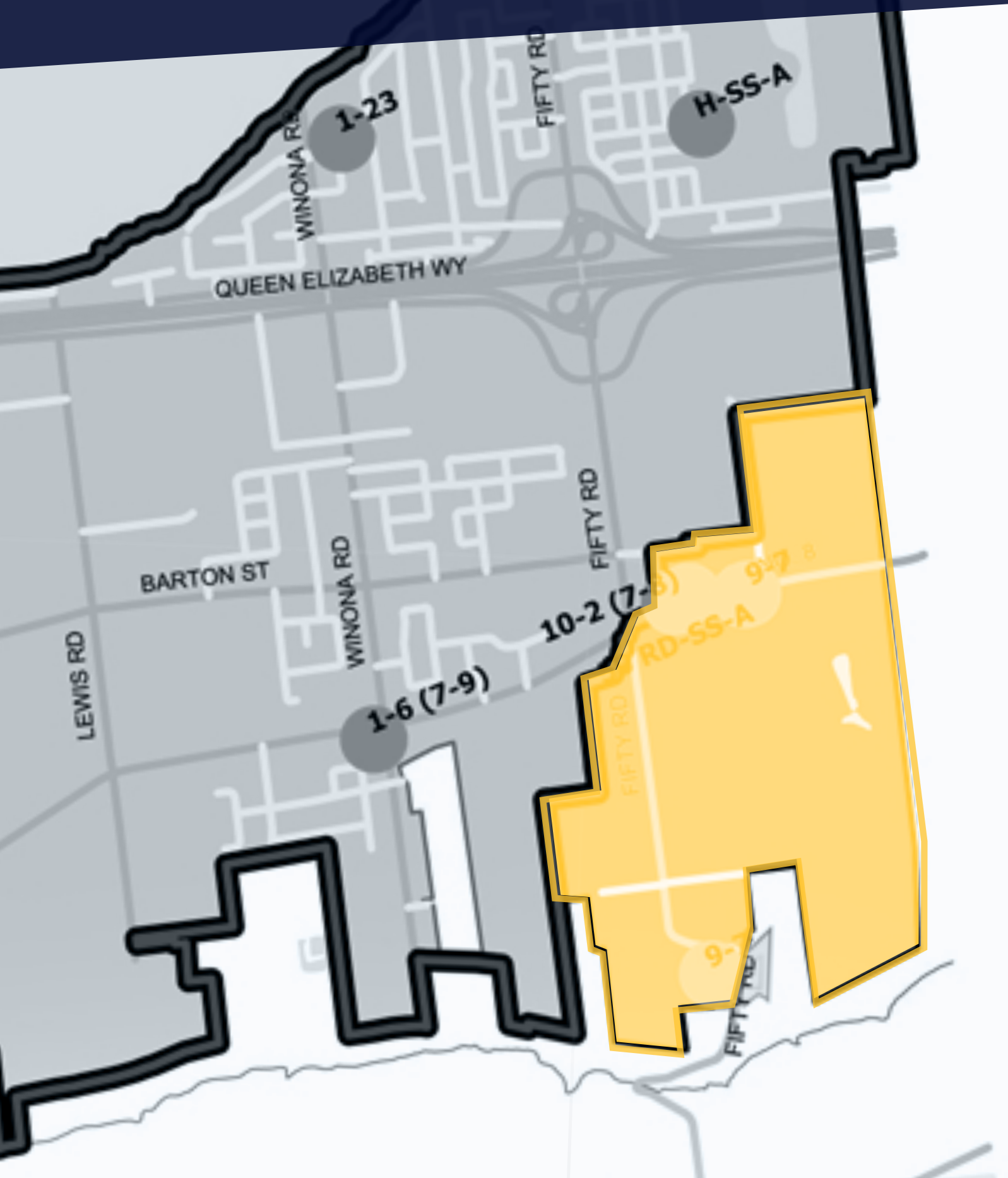
DEFINITIONS

- AWQI: Adverse Water Quality Incident
- CFU: Colony Forming Unit
- HPC: Heterotrophic Plate Count
- MDWL: Municipal Drinking Water Licence
- mg/L: milligrams per litre
- mL: millilitre
- N/A: Not Applicable
- PTTW: Permit to Take Water
- ug/L: micrograms per litre
- MPN: Most Probable Number
- P/A: Present/Absent

For more information on the Town of Grimsby's Quality Management System, DWQMS Policy, Licenses/Permits, Operational Plan and Annual Drinking Water Quality Reports, please visit:

www.grimsby.ca

DRINKING WATER SYSTEM NUMBER	DRINKING WATER SYSTEM NAME	DRINKING WATER SYSTEM OWNER	DRINKING WATER SYSTEM CATEGORY	PERIOD BEING REPORTED
260069173	Fifty Road Subsystem of Hamilton Drinking Water System	City of Hamilton	Small Municipal Residential	January 1, 2022 to December 31, 2022



PROVISION OF DRINKING WATER TO OTHER MUNICIPALITIES

The following is a list of municipal drinking water systems which receive drinking water from the Fifty Road Drinking Water Subsystem:

DRINKING WATER SYSTEM NAME	DRINKING WATER SYSTEM NUMBER
None	N/A



A copy of this annual report is provided to all Drinking Water System owners that are connected to the system and to whom we provide drinking water.



Our customers are notified through the local newspaper that the annual report is available online free of charge at www.hamilton.ca/waterquality. A copy of the report can also be requested by contacting (905) 546-2489 or water@hamilton.ca.

WATER TREATMENT CHEMICALS USED DURING THIS REPORTING PERIOD

- Sodium Hypochlorite

BREAKDOWN OF SIGNIFICANT MONETARY EXPENSES

There were no significant expenses incurred for installing, repairing and replacing required equipment in 2022. There were no significant projects initiated or expenses to highlight for the Fifty Road Subsystem in 2022.

ADVERSE TEST RESULTS AND REPORTABLE INCIDENTS

The following table outlines the notices submitted in accordance with subsection 18(1) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to the Ministry of Environment, Conservation and Parks (MECP) Spills Action Centre.

NOTIFICATION DATE (Y-M-D)	LOCATION OF ADVERSE	ADVERSE WATER QUALITY INCIDENT	RESOLUTION
We are pleased to announce that there were no Adverse Water Quality Incidents for the period of January 1, 2022 to December 31, 2022.			

MECP INSPECTION FINDINGS AND SELF-DECLARED NON-COMPLIANCES

Please find below the summary of findings that were either issued during an MECP inspection or self-declared during the 2022 calendar year.

The 2021-2022 inspection was completed in November 2021 and findings of non-compliance were reported in the 2021 Drinking Water Annual Report.

The 2022-2023 inspection commenced in May 2022 and was completed in July 2022. There were no findings of non-compliance and the Fifty Road Subsystem received a final Inspection Rating of 100%.

There were no self-declared non-compliances reported for the Fifty Road Subsystem in 2022.

WATER PRODUCTION REPORTS - SUMMARY

The Memorandum of Understanding between Grimsby and Hamilton does not include a rated capacity. Hamilton Water is working with Grimsby to negotiate a Water Supply Agreement.



WATER QUALITY DATA

MICROBIOLOGICAL TESTING REQUIRED BY REGULATION 170/03, DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	NUMBER OF SAMPLES	RESULT VALUE RANGE	UNIT OF MEASURE
DISTRIBUTION				
E.COLI	2022-01-03 to 2022-12-26	105	ALL ABSENT	P/A/100mL
HPC	2022-01-03 to 2022-12-26	104	0 to 14	CFU/1mL
TOTAL COLIFORM	2022-01-03 to 2022-12-26	105	ALL ABSENT	P/A/100mL

OPERATIONAL TESTING DONE UNDER SCHEDULE 7, 8 OR 9 OF REGULATION 170/03 DURING THE PERIOD COVERED BY THIS ANNUAL REPORT.

NOTE: If results are obtained from continuous monitors, then 8760 is reported as the number of samples.

PARAMETER - SAMPLE TYPE	NUMBER OF SAMPLES	RESULT VALUE RANGE	UNIT OF MEASURE
FREE CHLORINE - DISTRIBUTION	158	0.64 to 2.30	mg/L

SUMMARY OF ADDITIONAL TESTING AND SAMPLING CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENT OF A LICENCE, APPROVAL, ORDER OR OTHER LEGAL INSTRUMENT.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE
N/A	-	-	-

SUMMARY OF INORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
N/A	-	-	-	-

SUMMARY OF LEAD TESTING UNDER SCHEDULE 15.1 DURING THIS REPORTING PERIOD.

LOCATION TYPE	POINTS SAMPLED	LEAD SAMPLES TAKEN	pH & ALKALINITY SAMPLES TAKEN	pH RESULTS pH UNITS	ALKALINITY RESULTS mg/L	LEAD RESULTS mg/L	LEAD AWQI	LEAD EXCEEDANCES
PLUMBING-NR	1	2	1	7.54	N/A	0.0001 to 0.0002	N/A	0
PLUMBING-R	5	10	5	7.45 to 7.66	N/A	<0.0001 to 0.0007	N/A	0
DISTRIBUTION	2	2	2	7.52 to 7.59	88 to 89	<0.0001 to 0.0002	0	N/A

NR - Non Residential R - Residential

SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE	UNIT OF MEASURE	NO. OF AWQI
DISTRIBUTION				
TOTAL TRIHALOMETHANES*	Running annual average for the last four quarters	26.9	ug/L	0
HALOACETIC ACIDS*	Running annual average for the last four quarters	24.0	ug/L	0

* The Maximum Acceptable Concentration for Trihalomethanes and Haloacetic acids in the distribution system is based on a running average of the results from all sampling events in the past four quarters. This running average can be found in the result value column.

PARAMETERS EXCEEDING PRESCRIBED HALF-STANDARD

There were no Schedule 23 or 24 parameters that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards (O.Reg. 169/03).



FREELTON DRINKING WATER SYSTEM WATER QUALITY ANNUAL REPORT

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GENERAL INFORMATION

The Freelton water supply system consists of two wells, one elevated water storage tank, treatment, sampling and analysis which services a population of approximately 804 people. The water source for the community of Freelton is ground water.

Water Wells:

- Freelton Well FDF01 is a 250mm diameter, approximately 21-metre-deep drilled ground water well.
- Freelton Well FDF03 is a 300mm diameter, approximately 50-metre-deep drilled ground water well.

Treatment:

- Sodium hypochlorite (chlorine) is used for disinfection within a chlorine contact chamber to ensure disinfection of the water prior to entering the distribution system.
- Fluoridation is not carried out at any of the Freelton community wells.

Water Storage:

An elevated water storage tank with an operating capacity of 2,840m³ is available for peak hour water demand equalization as well as fire and emergency storage.

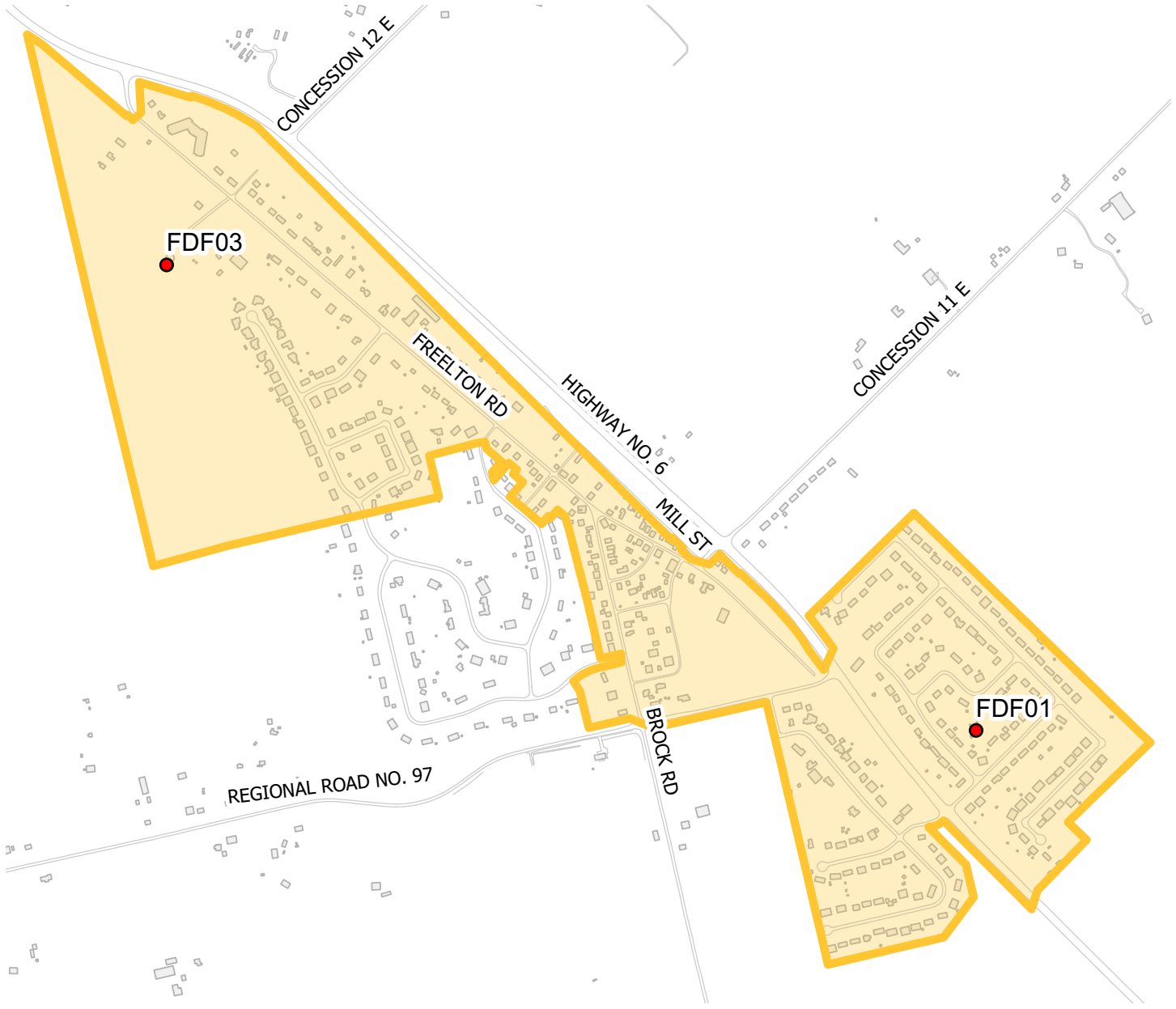
Sampling & Analysis:

All wells are equipped with on-line chlorine residual analyzers and turbidity analyzers that continually monitor the treated water quality. Raw, treated and distribution water is sampled and analyzed weekly. In addition, chlorine residual in the distribution system is analyzed daily.

DEFINITIONS

- AWQI: Adverse Water Quality Incident
- CFU: Colony Forming Unit
- HPC: Heterotrophic Plate Count
- MDWL: Municipal Drinking Water Licence
- mg/L: milligrams per litre
- mL: millilitre
- N/A: Not Applicable
- PTTW: Permit to Take Water
- ug/L: micrograms per litre
- MPN: Most Probable Number
- P/A: Present/Absent

DRINKING WATER SYSTEM NUMBER	DRINKING WATER SYSTEM NAME	DRINKING WATER SYSTEM OWNER	DRINKING WATER SYSTEM CATEGORY	PERIOD BEING REPORTED
220004117	Freelton Drinking Water System FDF01, FDF03	City of Hamilton	Large Municipal Residential	January 1, 2022 to December 31, 2022



PROVISION OF DRINKING WATER TO OTHER MUNICIPALITIES

The following is a list of municipal drinking water systems which receive drinking water from the Freelon System:

DRINKING WATER SYSTEM NAME	DRINKING WATER SYSTEM NUMBER
None	N/A



A copy of this annual report is provided to all Drinking Water System owners that are connected to the system and to whom we provide drinking water.



Our customers are notified through the local newspaper that the annual report is available online free of charge at www.hamilton.ca/waterquality. A copy of the report can also be requested by contacting (905) 546-2489 or water@hamilton.ca.

WATER TREATMENT CHEMICALS USED DURING THIS REPORTING PERIOD

- Sodium Hypochlorite

BREAKDOWN OF SIGNIFICANT MONETARY EXPENSES

There were no significant expenses incurred for installing, repairing and replacing required equipment in 2022. There were no significant projects initiated or expenses to highlight for the Freelon Drinking Water System in 2022.

ADVERSE TEST RESULTS AND REPORTABLE INCIDENTS

The following table outlines the notices submitted in accordance with subsection 18(1) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to the Ministry of Environment, Conservation and Parks (MECP) Spills Action Centre.

NOTIFICATION DATE (Y-M-D)	LOCATION OF ADVERSE	ADVERSE WATER QUALITY INCIDENT	RESOLUTION
2022-06-29	Freelton Sampling Station B, Logan Ct and Wildan Dr	Total Coliforms = Present (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. All results passed.
2022-07-20	Freelton Sampling Station B, Logan Ct and Wildan Dr	Total Coliforms = Present (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. All results passed.

MECP INSPECTION FINDINGS AND SELF-DECLARED NON-COMPLIANCES

Please find below the summary of findings that were either issued during an MECP inspection or self-declared during the 2022 calendar year.

The 2021-2022 inspection was completed in February 2022 and there were no findings of non-compliance.

The 2022-2023 inspection was completed in October 2022. There were no findings of non-compliance and the Freelton System received a final inspection rating of 100%. One recommendation identified in the inspection report is summarized below.

There were no self-declared non-compliances reported for the Freelton DWS in 2022.

MECP INSPECTION REPORT, OCTOBER 12, 2022

#	FINDING TYPE	FINDING	STATUS
1	Recommendation	Floors deteriorating in the treatment building.	Action in process

WATER PRODUCTION REPORTS - SUMMARY

The following provides a summary of daily flow rates and instantaneous peak flow rates in comparison to the capacity of the water works as identified in the Permit to Take Water. This information is tabulated in the accompanying tables.

TABLE 3-1: FREELTON WELL (FDF01) - 2022 MONTHLY PRODUCTION (SUMMARY)

FDF01	UNITS	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Total Monthly Flow	m ³	4,867	4,474	5,006	5,219	6,324	8,382	9,086	8,403	7,537	8,041	8,334	6,145
Average Daily Rate	m ³ /d	157	160	161	174	204	279	293	271	251	259	278	198
Maximum Daily Rate	m ³ /d	514	536	680	452	693	690	699	696	684	693	699	700
PTTW Daily Rated Capacity	m ³ /d	1,584	1,584	1,584	1,584	1,584	1,584	1,584	1,584	1,584	1,584	1,584	1,584
MDWL Daily Rated Capacity	m ³ /d	878	878	878	878	878	878	878	878	878	878	878	878



MAINTAINED COMPLIANCE

FIGURE 3-1: FREELTON WELL (FDF01) - 2022 MONTHLY PRODUCTION (SUMMARY)

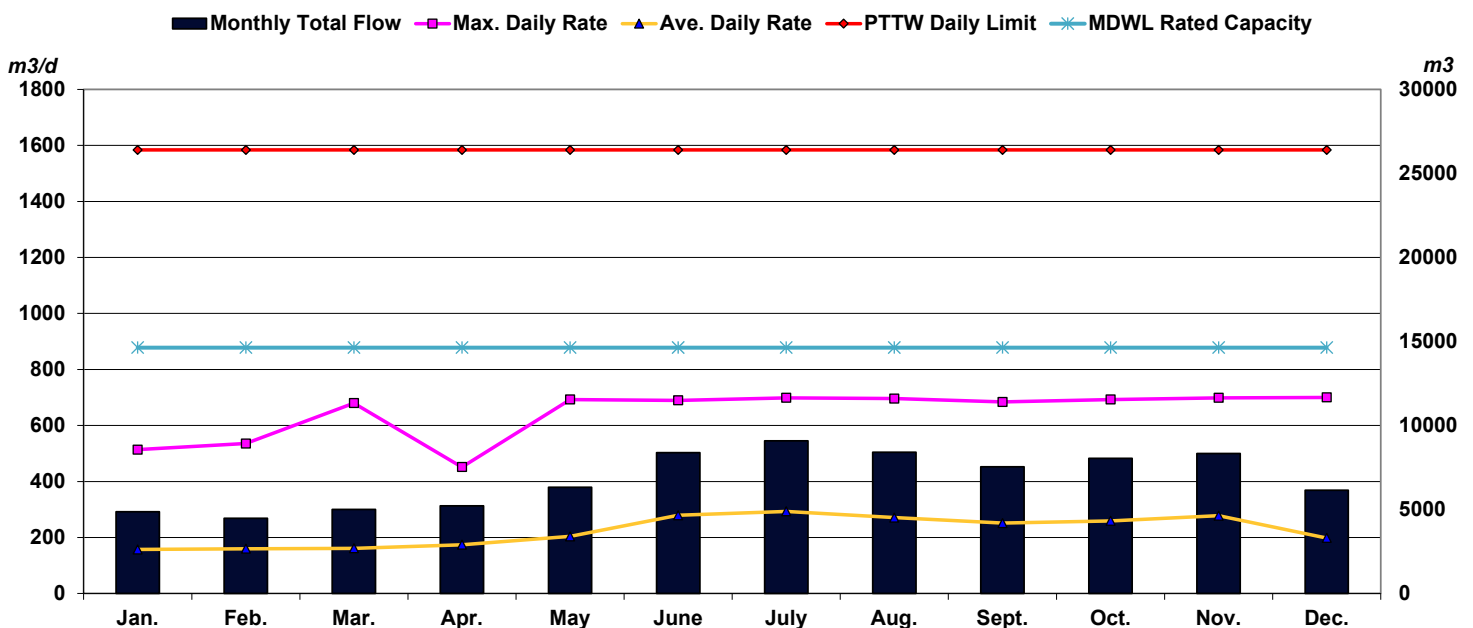


TABLE 3-2: FREELTON WELL (FDF03) - 2022 MONTHLY PRODUCTION (SUMMARY)

FDF03	UNITS	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Total Monthly Flow	m ³	4,827	5,004	4,947	5,933	8,211	9,284	11,195	9,232	7,352	2,928	1,798	7,819
Average Daily Rate	m ³ /d	156	179	160	198	265	309	361	298	245	94	60	252
Maximum Daily Rate	m ³ /d	591	594	557	599	715	745	909	766	681	499	506	707
PTTW & MDWL Daily Rated Capacity	m ³ /d	1,607	1,607	1,607	1,607	1,607	1,607	1,607	1,607	1,607	1,607	1,607	1,607



MAINTAINED COMPLIANCE

FIGURE 3-2: FREELTON WELL (FDF03) - 2022 MONTHLY PRODUCTION (SUMMARY)

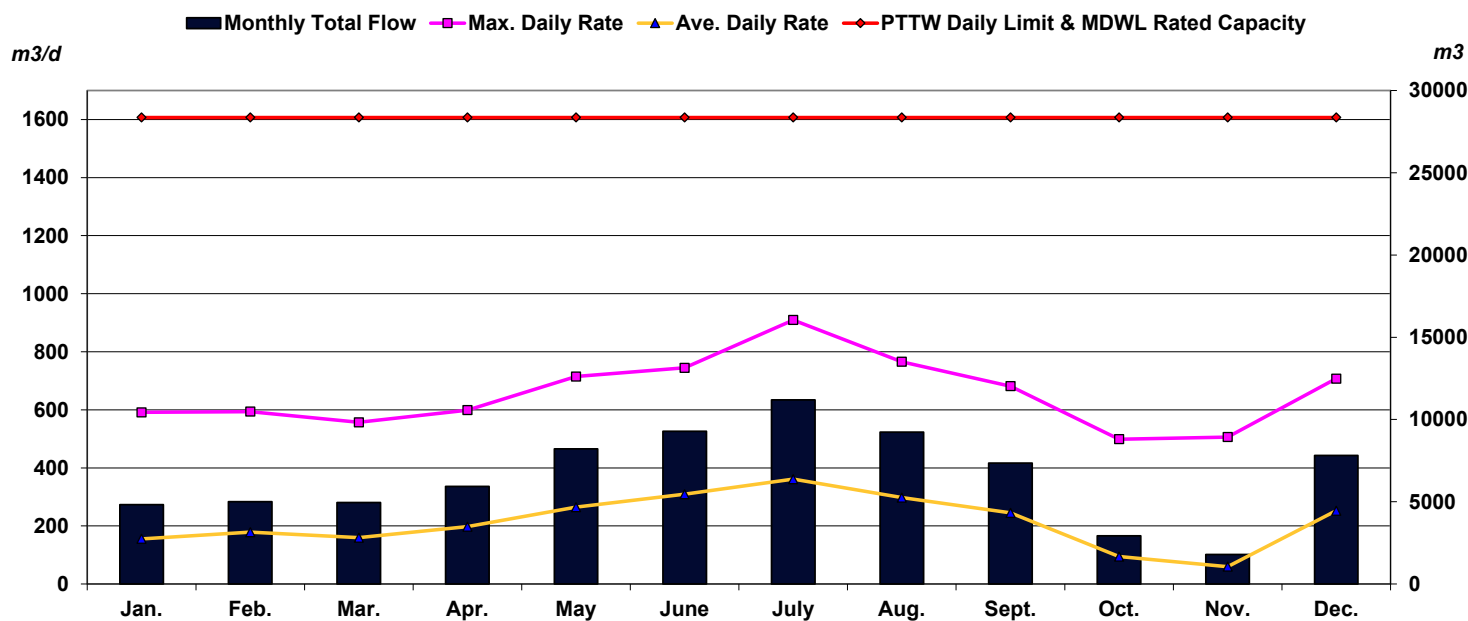


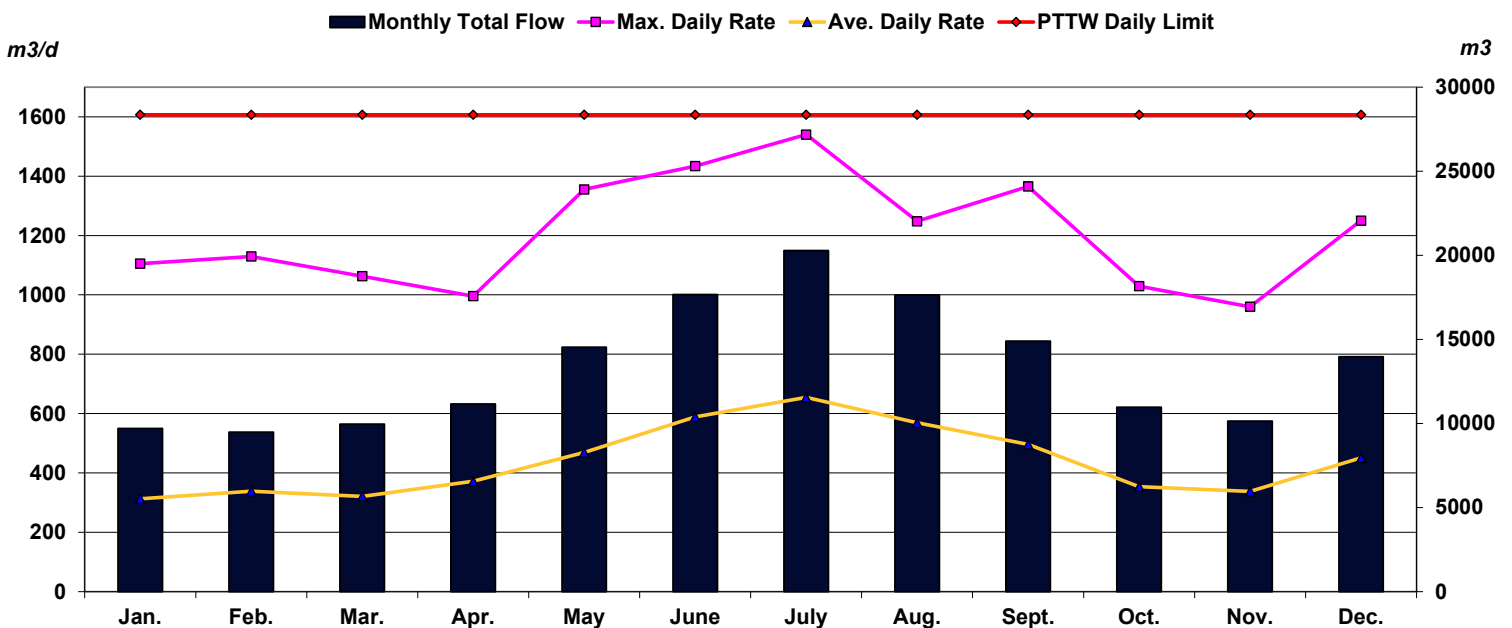
TABLE 3-3: FREELTON WELL (FDF01 & FDF03) - 2022 MONTHLY PRODUCTION (SUMMARY)

FDF01 & 03	UNITS	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Total Monthly Flow	m ³	9,694	9,478	9,953	11,152	14,536	17,666	20,281	17,636	14,889	10,970	10,132	13,964
Average Daily Rate	m ³ /d	313	339	321	372	469	589	654	569	496	354	338	450
Maximum Daily Rate	m ³ /d	1,105	1,130	1,063	996	1,356	1,434	1,540	1,248	1,365	1,029	960	1,250
PTTW Daily Rated Capacity	m ³ /d	1,607	1,607	1,607	1,607	1,607	1,607	1,607	1,607	1,607	1,607	1,607	1,607



MAINTAINED COMPLIANCE

FIGURE 3-3: FREELTON WELL (FDF01 & FDF03) - 2022 MONTHLY PRODUCTION (SUMMARY)



WATER QUALITY DATA

MICROBIOLOGICAL TESTING REQUIRED BY REGULATION 170/03, DURING THIS REPORTING PERIOD.

PARAMETER - SAMPLE TYPE	SAMPLE DATE	NUMBER OF SAMPLES	RESULT VALUE RANGE	UNIT OF MEASURE
FREELTON WELL FDF01 - RAW				
E.COLI	2022-01-03 to 2022-12-26	52	0	MPN/100mL
TOTAL COLIFORM	2022-01-03 to 2022-12-26	52	0	MPN/100mL
FREELTON WELL FDF03 - RAW				
E.COLI	2022-01-04 to 2022-12-27	49	0	MPN/100mL
TOTAL COLIFORM	2022-01-04 to 2022-12-27	49	0	MPN/100mL
FREELTON WELL FDF01 - TREATED				
E.COLI	2022-01-03 to 2022-12-26	52	ALL ABSENT	P/A/100mL
HPC	2022-01-03 to 2022-12-26	52	0 to 3	CFU/1mL
TOTAL COLIFORM	2022-01-03 to 2022-12-26	52	ALL ABSENT	P/A/100mL
FREELTON WELL FDF03 - TREATED				
E.COLI	2022-01-04 to 2022-12-27	49	ALL ABSENT	P/A/100mL
HPC	2022-01-04 to 2022-12-27	48	0 to 1	CFU/1mL
TOTAL COLIFORM	2022-01-04 to 2022-12-27	49	ALL ABSENT	P/A/100mL
DISTRIBUTION				
E.COLI	2022-06-29 to 2022-07-20	6	0	MPN/100mL
E.COLI	2022-01-03 to 2022-12-27	175	ALL ABSENT	P/A/100mL
HPC	2022-01-03 to 2022-12-27	208	0 to 3	CFU/1mL
TOTAL COLIFORM	2022-06-29 to 2022-07-20	6	0	MPN/100mL
TOTAL COLIFORM	2022-01-03 to 2022-12-27	175	2 DETECTIONS	P/A/100mL

OPERATIONAL TESTING DONE UNDER SCHEDULE 7, 8 OR 9 OF REGULATION 170/03 DURING THE PERIOD COVERED BY THIS ANNUAL REPORT.

NOTE: If results are obtained from continuous monitors, then 8760 is reported as the number of samples.

PARAMETER - SAMPLE TYPE	NUMBER OF SAMPLES	RESULTS VALUE RANGE	UNIT OF MEASURE
TURBIDITY - RAW - FDF01	52	0.04 – 0.53	NTU
TURBIDITY - RAW - FDF03	47	0.05 – 0.62	NTU
FREE CHLORINE - TREATED - FDF01	8760	0.80 – 3.76	mg/L
FREE CHLORINE - TREATED - FDF03	8760	0.23 – 3.48	mg/L
FREE CHLORINE - DISTRIBUTION	364	1.03 – 2.10	mg/L

SUMMARY OF ADDITIONAL TESTING AND SAMPLING CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENT OF A LICENCE, APPROVAL, ORDER OR OTHER LEGAL INSTRUMENT.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE
N/A	-	-	-

SUMMARY OF INORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
FREELTON WELL FDF01 - TREATED				
ANTIMONY	2022-04-27 to 2022-10-18	<0.0001 to 0.0001	mg/L	0
ARSENIC	2022-04-27 to 2022-10-18	0.0001	mg/L	0
BARIUM	2022-04-27 to 2022-10-18	0.0658	mg/L	0
BORON	2022-04-27 to 2022-10-18	0.019 to 0.026	mg/L	0
CADMIUM	2022-04-27 to 2022-10-18	<0.0001	mg/L	0
CHROMIUM	2022-04-27 to 2022-10-18	<0.0001	mg/L	0
FLUORIDE	2022-04-27 to 2022-10-18	0.08	mg/L	0
MERCURY	2022-04-27 to 2022-10-18	<0.05	ug/L	0
NITRATE AS N	2022-01-25 to 2022-10-18	1.75 to 2.23	mg/L	0
NITRITE AS N	2022-01-25 to 2022-10-18	<0.01	mg/L	0
SELENIUM	2022-04-27 to 2022-10-18	0.0003	mg/L	0
SODIUM	2022-04-27 to 2022-10-18	50.4 to 56.2	mg/L	0
URANIUM	2022-04-27 to 2022-10-18	0.294 to 0.303	ug/L	0

SUMMARY OF INORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
FREELTON WELL FDF03 - TREATED				
ANTIMONY	2022-04-27 to 2022-10-18	0.0001	mg/L	0
ARSENIC	2022-04-27 to 2022-10-18	0.0001 to 0.0032	mg/L	0
BARIUM	2022-04-27 to 2022-10-18	0.0637 to 0.0736	mg/L	0
BORON	2022-04-27 to 2022-10-18	0.019 to 0.020	mg/L	0
CADMIUM	2022-04-27 to 2022-10-18	<0.0001	mg/L	0
CHROMIUM	2022-04-27 to 2022-10-18	<0.0001	mg/L	0
FLUORIDE	2022-04-27 to 2022-10-18	0.08 to 0.17	mg/L	0
MERCURY	2022-04-27 to 2022-10-18	<0.05	ug/L	0
NITRATE AS N	2022-01-25 to 2022-10-18	0.04 to 1.72	mg/L	0
NITRITE AS N	2022-01-25 to 2022-10-18	<0.01	mg/L	0
SELENIUM	2022-04-27 to 2022-10-18	<0.0001 to 0.0003	mg/L	0
SODIUM	2022-04-27 to 2022-10-18	47.9 to 49.5	mg/L	0
URANIUM	2022-04-27 to 2022-10-18	0.283 to 0.296	ug/L	0

SUMMARY OF LEAD TESTING UNDER SCHEDULE 15.1 DURING THIS REPORTING PERIOD.

LOCATION TYPE	POINTS SAMPLED	LEAD SAMPLES TAKEN	pH & ALKALINITY SAMPLES TAKEN	pH RESULTS pH UNITS	ALKALINITY RESULTS mg/L	LEAD RESULTS mg/L	LEAD AWQI	LEAD EXCEEDANCES
PLUMBING-NR	1	2	1	7.62	N/A	0.0008 to 0.0015	N/A	0
PLUMBING-R	10	20	10	7.24 to 7.62	N/A	0.0001 to 0.0021	N/A	0
DISTRIBUTION	4	4	4	7.24 to 7.70	307 to 320	0.0003 to 0.0010	0	N/A

NR - Non Residential R- Residential

SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
FREELTON WELL FDF01 - TREATED				
1,1-DICHLOROETHYLENE	2022-04-27 to 2022-10-19	<0.2	ug/L	0
1,2-DICHLOROBENZENE	2022-04-27 to 2022-10-19	<0.2	ug/L	0
1,2-DICHLOROETHANE	2022-04-27 to 2022-10-19	<0.2	ug/L	0
1,4-DICHLOROBENZENE	2022-04-27 to 2022-10-19	<0.2	ug/L	0
2,3,4,6-TETRACHLOROPHENOL	2022-04-27	<0.20	ug/L	0
2,4,6-TRICHLOROPHENOL	2022-04-27	<0.25	ug/L	0
2,4-DICHLOROPHENOXYACETIC ACID	2022-04-27	<0.19	ug/L	0
2,4-DICHLOROPHENOL	2022-04-27	<0.15	ug/L	0
ALACHLOR	2022-04-27	<0.02	ug/L	0
ATRAZINE + DESETHYL-ATRAZINE	2022-04-27	<0.01	ug/L	0
AZINPHOS-METHYL	2022-04-27	<0.05	ug/L	0
BENZENE	2022-04-27 to 2022-10-19	<0.2	ug/L	0
BENZO[A]PYRENE	2022-04-27	<0.004	ug/L	0
BROMOXYNIL	2022-04-27	<0.33	ug/L	0
CARBARYL	2022-04-27	<0.05	ug/L	0
CARBOFURAN	2022-04-27	<0.01	ug/L	0
CARBON TETRACHLORIDE	2022-04-27 to 2022-10-19	<0.2	ug/L	0
CHLOROBENZENE	2022-04-27 to 2022-10-19	<0.3	ug/L	0
CHLORPYRIFOS (DURSBAN)	2022-04-27	<0.02	ug/L	0
DIAZINON	2022-04-27	<0.02	ug/L	0
DICAMBA	2022-04-27	<0.20	ug/L	0
DICHLOROMETHANE	2022-04-27 to 2022-10-19	<0.5	ug/L	0
DICLOFOP-METHYL	2022-04-27	<0.40	ug/L	0
DIMETHOATE	2022-04-27	<0.06	ug/L	0
DIQUAT	2022-04-27	<1	ug/L	0
DIURON	2022-04-27	<0.03	ug/L	0
ETHYLBENZENE	2022-04-27 to 2022-10-19	<0.2	ug/L	0
GLYPHOSATE	2022-04-27	<1	ug/L	0
MALATHION	2022-04-27	<0.02	ug/L	0

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SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
FREELTON WELL FDF01 - TREATED				
MCPA (2-METHYL-4-CHLOROPHENOXYACETIC ACID)	2022-04-27	<0.00012	mg/L	0
METOLACHLOR	2022-04-27	<0.01	ug/L	0
METRIBUZIN (SENCOR)	2022-04-27	<0.02	ug/L	0
PARAQUAT	2022-04-27	<1	ug/L	0
PCBS TOTAL	2022-04-27	<0.04	ug/L	0
PENTACHLOROPHENOL	2022-04-27	<0.15	ug/L	0
PHORATE	2022-04-27	<0.01	ug/L	0
PICLORAM	2022-04-27	<1	ug/L	0
PROMETRYNE	2022-04-27	<0.03	ug/L	0
SIMAZINE	2022-04-27	<0.01	ug/L	0
TERBUFOS	2022-04-27	<0.01	ug/L	0
TETRACHLOROETHYLENE	2022-04-27 to 2022-10-19	<0.2	ug/L	0
TOLUENE	2022-04-27 to 2022-10-19	<0.2	ug/L	0
TRIALATE	2022-04-27	<0.01	ug/L	0
TRICHLOROETHYLENE	2022-04-27 to 2022-10-19	<0.2	ug/L	0
TRIFLURALIN	2022-04-27	<0.02	ug/L	0
VINYL CHLORIDE	2022-04-27 to 2022-10-19	<0.2	ug/L	0
XYLENE	2022-04-27 to 2022-10-19	<0.5	ug/L	0

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SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
FREELTON WELL FDF03 - TREATED				
1,1-DICHLOROETHYLENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
1,2-DICHLOROBENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
1,2-DICHLOROETHANE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
1,4-DICHLOROBENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
2,3,4,6-TETRACHLOROPHENOL	2022-04-27	<0.20	ug/L	0
2,4,6-TRICHLOROPHENOL	2022-04-27	<0.25	ug/L	0
2,4-DICHLOROPHENOXY-ACETIC ACID	2022-04-27	<0.19	ug/L	0
2,4-DICHLOROPHENOL	2022-04-27	<0.15	ug/L	0
ALACHLOR	2022-04-27	<0.02	ug/L	0
ATRAZINE + DESETHYL-ATRAZINE	2022-04-27	<0.01	ug/L	0
AZINPHOS-METHYL	2022-04-27	<0.05	ug/L	0
BENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
BENZO[A]PYRENE	2022-04-27	<0.004	ug/L	0
BROMOXYNIL	2022-04-27	<0.33	ug/L	0
CARBARYL	2022-04-27	<0.05	ug/L	0
CARBOFURAN	2022-04-27	<0.01	ug/L	0
CARBON TETRACHLORIDE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
CHLOROBENZENE	2022-04-27 to 2022-10-18	<0.3	ug/L	0
CHLORPYRIFOS (DURSBAN)	2022-04-27	<0.02	ug/L	0
DIAZINON	2022-04-27	<0.02	ug/L	0
DICAMBA	2022-04-27	<0.20	ug/L	0
DICHLOROMETHANE	2022-04-27 to 2022-10-18	<0.5	ug/L	0
DICLOFOP-METHYL	2022-04-27	<0.40	ug/L	0
DIMETHOATE	2022-04-27	<0.06	ug/L	0
DIQUAT	2022-04-27	<1	ug/L	0
DIURON	2022-04-27	<0.03	ug/L	0
ETHYLBENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
GLYPHOSATE	2022-04-27	<1	ug/L	0
MALATHION	2022-04-27	<0.02	ug/L	0

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SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
FREELTON WELL FDF03 - TREATED				
MCPA (2-METHYL-4-CHLOROPHENOXYACETIC ACID)	2022-04-27	<0.00012	mg/L	0
METOLACHLOR	2022-04-27	<0.01	ug/L	0
METRIBUZIN (SENCOR)	2022-04-27	<0.02	ug/L	0
PARAQUAT	2022-04-27	<1	ug/L	0
PCBS TOTAL	2022-04-27	<0.04	ug/L	0
PENTACHLOROPHENOL	2022-04-27	<0.15	ug/L	0
PHORATE	2022-04-27	<0.01	ug/L	0
PICLORAM	2022-04-27	<1	ug/L	0
PROMETRYNE	2022-04-27	<0.03	ug/L	0
SIMAZINE	2022-04-27	<0.01	ug/L	0
TERBUFOS	2022-04-27	<0.01	ug/L	0
TETRACHLOROETHYLENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
TOLUENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
TRIALATE	2022-04-27	<0.01	ug/L	0
TRICHLOROETHYLENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
TRIFLURALIN	2022-04-27	<0.02	ug/L	0
VINYL CHLORIDE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
XYLENE	2022-04-27 to 2022-10-18	<0.5	ug/L	0
DISTRIBUTION				
TOTAL TRIHALOMETHANES*	Running annual average for the last four quarters	9.0	ug/L	0
HALOACETIC ACIDS*	Running annual average for the last four quarters	<5.3	ug/L	0

* The Maximum Acceptable Concentration for Trihalomethanes and Haloacetic Acids in the distribution system is based on a running average of the results from all sampling events in the past four quarters. This running average can be found in the result value column.

PARAMETERS EXCEEDING PRESCRIBED HALF-STANDARD

There were no Schedule 23 or 24 parameters that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards (O.Reg. 169/03).



GREENSVILLE DRINKING WATER SYSTEM WATER QUALITY ANNUAL REPORT

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Figure 4-1: Greenville Well (FDG01) 2022 Monthly Production	68
Table 4-1: Greenville Well (FDG01) 2022 Monthly Production	68

GENERAL INFORMATION

The Greensville water supply system consists of one well, one well station, treatment, sampling and analysis which services a population of approximately 108 people.

Water Well:

- Greensville Well FDG01 is a 150mm diameter, approximately 12-metre-deep drilled ground water well under the influence of surface water (GUDI).

Treatment:

- Water passes through 2-stage cartridge filters, is disinfected using ultraviolet light and sodium hypochlorite (chlorine) prior to entering the distribution system.
- A chlorine contact chamber is used to ensure disinfection of the water.
- Fluoridation is not carried out at the Greensville community well.

Well Station:

Within the Well Station, water treatment takes place, well water level, discharge pressure and flow are monitored. Hydropneumatic pressure tanks are used to control system pressures.

Sampling & Analysis:

The well is equipped with on-line chlorine residual and turbidity analyzers that continually monitor the treated water quality at the well station. Raw, treated and distribution water is sampled and analyzed weekly. In addition, chlorine residual in the distribution system is analyzed daily.

DEFINITIONS

AWQI: Adverse Water Quality Incident

CFU: Colony Forming Unit

HPC: Heterotrophic Plate Count

MDWL: Municipal Drinking Water Licence

mg/L: milligrams per litre

mL: millilitre

N/A: Not Applicable

PTTW: Permit to Take Water

ug/L: micrograms per litre

MPN: Most Probable Number

P/A: Present/Absent

DRINKING WATER SYSTEM NUMBER	DRINKING WATER SYSTEM NAME	DRINKING WATER SYSTEM OWNER	DRINKING WATER SYSTEM CATEGORY	PERIOD BEING REPORTED
220004126	Greensville Drinking Water System FDG01	City of Hamilton	Small Municipal Residential	January 1, 2022 to December 31, 2022



PROVISION OF DRINKING WATER TO OTHER MUNICIPALITIES

The following is a list of municipal drinking water systems which receive drinking water from the Greensville System:

DRINKING WATER SYSTEM NAME	DRINKING WATER SYSTEM NUMBER
None	N/A



A copy of this annual report is provided to all Drinking Water System owners that are connected to the system and to whom we provide drinking water.



Our customers are notified through the local newspaper that the annual report is available online free of charge at www.hamilton.ca/waterquality. A copy of the report can also be requested by contacting (905) 546-2489 or water@hamilton.ca.

WATER TREATMENT CHEMICALS USED DURING THIS REPORTING PERIOD

- Sodium Hypochlorite

BREAKDOWN OF SIGNIFICANT MONETARY EXPENSES

There were no significant expenses incurred for installing, repairing and replacing required equipment in 2022. There were no significant projects initiated or expenses to highlight for the Greensville Drinking Water System in 2022.

ADVERSE TEST RESULTS AND REPORTABLE INCIDENTS

The following table outlines the notices submitted in accordance with subsection 18(1) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to the Ministry of Environment, Conservation and Parks (MECP) Spills Action Centre.

NOTIFICATION DATE (Y-M-D)	LOCATION OF ADVERSE	ADVERSE WATER QUALITY INCIDENT	RESOLUTION
We are pleased to announce that there were no Adverse Water Quality Incidents for the period of January 1, 2022 to December 31, 2022			

MECP INSPECTION FINDINGS AND SELF-DECLARED NON- COMPLIANCES

The 2021-2022 inspection was completed in March 2022 and there was one finding of non-compliance identified in the inspection report summarized below.

The 2022-2023 inspection remained pending as of December 31, 2022.

There were no self-declared non-compliances reported for Greenville DWS in 2022.

MECP INSPECTION REPORT, MARCH 16, 2022

#	FINDING TYPE	FINDING	STATUS
1	Non-compliance	During emergency pump replacement the well was chlorinated but was not allowed to rest for 12 hours before taking samples and was placed back into service before obtaining samples results as required per AWWA C654 - Standards for Disinfection of Wells.	Action complete



WATER PRODUCTION REPORTS - SUMMARY

The following provides a summary of daily flow rates and instantaneous peak flow rates in comparison to the capacity of the water works as identified in the Permit to Take Water. This information is tabulated in the accompanying tables.

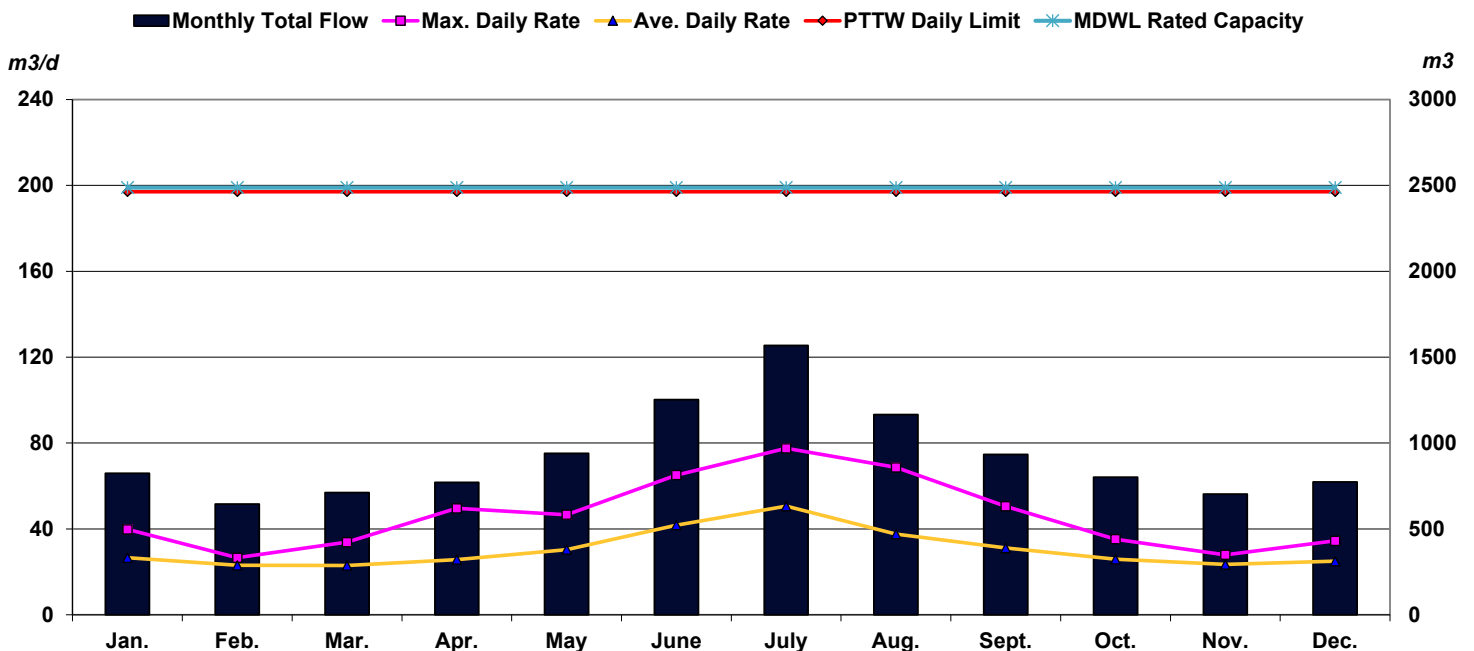
TABLE 4-1: GREENSVILLE WELL (FDG01) - 2022 MONTHLY PRODUCTION (SUMMARY)

FDG01	UNITS	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Monthly Total Flow	m ³	824	644	711	771	940	1,252	1,568	1,165	933	802	703	773
Average Daily Rate	m ³ /d	27	23	23	26	30	42	51	38	31	26	23	25
Maximum Daily Rate	m ³ /d	40	27	34	50	47	65	78	69	51	35	28	34
PTTW Daily Rated Capacity	m ³ /d	197	197	197	197	197	197	197	197	197	197	197	197
MDWL Daily Rated Capacity	m ³ /d	199	199	199	199	199	199	199	199	199	199	199	199



MAINTAINED COMPLIANCE

FIGURE 4-1: GREENSVILLE WELL (FDG01) - 2022 MONTHLY PRODUCTION (SUMMARY)



WATER QUALITY DATA

MICROBIOLOGICAL TESTING REQUIRED BY REGULATION 170/03, DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	NUMBER OF SAMPLES	RESULT VALUE RANGE	UNIT OF MEASURE
GREENSVILLE WELL FDG01 - RAW				
E.COLI	2022-01-05 to 2022-12-28	52	0	MPN/100mL
TOTAL COLIFORM	2022-01-05 to 2022-12-28	52	0	MPN/100mL
GREENSVILLE WELL FDG01 - TREATED				
E.COLI	2022-01-05 to 2022-12-28	52	ALL ABSENT	P/A/100mL
HPC	2022-01-05 to 2022-12-28	52	0 to 2	CFU/1mL
TOTAL COLIFORM	2022-01-05 to 2022-12-28	52	ALL ABSENT	P/A/100mL
DISTRIBUTION				
E.COLI	2022-01-05 to 2022-12-28	81	ALL ABSENT	P/A/100mL
HPC	2022-01-05 to 2022-12-28	81	0 to 1	CFU/1mL
TOTAL COLIFORM	2022-01-05 to 2022-12-28	81	ALL ABSENT	P/A/100mL

OPERATIONAL TESTING DONE UNDER SCHEDULE 7, 8 OR 9 OF REGULATION 170/03 DURING THE PERIOD COVERED BY THIS ANNUAL REPORT.

NOTE: If results are obtained from continuous monitors, then 8760 is reported as the number of samples.

PARAMETER - SAMPLE TYPE	NUMBER OF SAMPLES	RESULT VALUE RANGE	UNIT OF MEASURE
TURBIDITY - TREATED - FDG01	8760	0.04 – 3.33	NTU
FREE CHLORINE - TREATED	8760	0.21 – 5.00	mg/L
FREE CHLORINE - DISTRIBUTION	363	1.25 – 3.18	mg/L

SUMMARY OF ADDITIONAL TESTING AND SAMPLING CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENT OF A LICENCE, APPROVAL, ORDER OR OTHER LEGAL INSTRUMENT.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE
N/A	-	-	-

SUMMARY OF INORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
GREENSVILLE WELL FDG01 - TREATED				
ANTIMONY	2022-04-26 to 2022-10-19	<0.0001	mg/L	0
ARSENIC	2022-04-26 to 2022-10-19	0.0001	mg/L	0
BARIUM	2022-04-26 to 2022-10-19	0.141 to 0.158	mg/L	0
BORON	2022-04-26 to 2022-10-19	0.038 to 0.043	mg/L	0
CADMIUM	2022-04-26 to 2022-10-19	<0.0001	mg/L	0
CHROMIUM	2022-04-26 to 2022-10-19	0.0002	mg/L	0
FLUORIDE	2022-04-26 to 2022-10-19	0.11	mg/L	0
MERCURY	2022-04-26 to 2022-10-19	<0.05	ug/L	0
NITRATE AS N	2022-01-05 to 2022-11-09	5.49 to 7.10	mg/L	0
NITRITE AS N	2022-01-05 to 2022-11-09	<0.05	mg/L	0
SELENIUM	2022-04-26 to 2022-10-19	0.0002 to 0.0003	mg/L	0
SODIUM	2022-04-26 to 2022-10-19	132 to 148	mg/L	0
URANIUM	2022-04-26 to 2022-10-19	0.636 to 0.707	ug/L	0

SUMMARY OF LEAD TESTING UNDER SCHEDULE 15.1 DURING THIS REPORTING PERIOD.

LOCATION TYPE	POINTS SAMPLED	LEAD SAMPLES TAKEN	pH & ALKALINITY SAMPLES TAKEN	pH RESULTS pH UNITS	ALKALINITY RESULTS mg/L	LEAD RESULTS mg/L	LEAD AWQI	LEAD EXCEEDANCES
PLUMBING-NR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PLUMBING-R	5	10	5	7.11 to 7.36	N/A	0.0004 to 0.0033	N/A	0
DISTRIBUTION	2	2	2	7.15 to 7.16	356 to 366	<0.0001 to 0.0023	0	N/A

NR - Non Residential R - Residential

SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
GREENSVILLE WELL FDG01 - TREATED				
1,1-DICHLOROETHYLENE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
1,2-DICHLOROBENZENE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
1,2-DICHLOROETHANE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
1,4-DICHLOROBENZENE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
2,3,4,6-TETRACHLOROPHENOL	2022-04-26	<0.20	ug/L	0
2,4,6-TRICHLOROPHENOL	2022-04-26	<0.25	ug/L	0
2,4-DICHLOROPHENOXYACETIC ACID	2022-04-26	<0.19	ug/L	0
2,4-DICHLOROPHENOL	2022-04-26	<0.15	ug/L	0
ALACHLOR	2022-04-26	<0.02	ug/L	0
ATRAZINE + DESETHYL-ATRAZINE	2022-04-26	<0.01	ug/L	0
AZINPHOS-METHYL	2022-04-26	<0.05	ug/L	0
BENZENE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
BENZO[A]PYRENE	2022-04-26	<0.004	ug/L	0
BROMOXYNIL	2022-04-26	<0.33	ug/L	0
CARBARYL	2022-04-26	<0.05	ug/L	0
CARBOFURAN	2022-04-26	<0.01	ug/L	0
CARBON TETRACHLORIDE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
CHLOROBENZENE	2022-04-26 to 2022-10-19	<0.3	ug/L	0
CHLORPYRIFOS (DURSBAN)	2022-04-26	<0.02	ug/L	0
DIAZINON	2022-04-26	<0.02	ug/L	0
DICAMBA	2022-04-26	<0.20	ug/L	0
DICHLOROMETHANE	2022-04-26 to 2022-10-19	<0.5	ug/L	0
DICLOFOP-METHYL	2022-04-26	<0.40	ug/L	0
DIMETHOATE	2022-04-26	<0.06	ug/L	0
DIQUAT	2022-04-26	<1	ug/L	0
DIURON	2022-04-26	<0.03	ug/L	0
ETHYLBENZENE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
GLYPHOSATE	2022-04-26	<1	ug/L	0
MALATHION	2022-04-26	<0.02	ug/L	0

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SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE	UNIT OF MEASURE	NO. OF AWQI
GREENSVILLE WELL FDG01 - TREATED				
MCPA (2-METHYL-4-CHLOROPHENOXYACETIC ACID)	2022-04-26	<0.00012	mg/L	0
METOLACHLOR	2022-04-26	<0.01	ug/L	0
METRIBUZIN (SENCOR)	2022-04-26	<0.02	ug/L	0
PARAQUAT	2022-04-26	<1	ug/L	0
PCBS TOTAL	2022-04-26	<0.04	ug/L	0
PENTACHLOROPHENOL	2022-04-26	<0.15	ug/L	0
PHORATE	2022-04-26	<0.01	ug/L	0
PICLORAM	2022-04-26	<1	ug/L	0
PROMETRYNE	2022-04-26	<0.03	ug/L	0
SIMAZINE	2022-04-26	<0.01	ug/L	0
TERBUFOS	2022-04-26	<0.01	ug/L	0
TETRACHLOROETHYLENE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
TOLUENE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
TRIALATE	2022-04-26	<0.01	ug/L	0
TRICHLOROETHYLENE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
TRIFLURALIN	2022-04-26	<0.02	ug/L	0
VINYL CHLORIDE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
XYLENE	2022-04-26 to 2022-10-19	<0.5	ug/L	0
DISTRIBUTION				
TOTAL TRIHALOMETHANES*	Running annual average for the last four quarters	14.1	ug/L	0
HALOACETIC ACIDS*	Running annual average for the last four quarters	5.3	ug/L	0

* The Maximum Acceptable Concentration for Trihalomethanes and Haloacetic Acids in the distribution system is based on a running average of the results from all sampling events in the past four quarters. This running average can be found in the result value column.

PARAMETERS EXCEEDING PRESCRIBED HALF-STANDARD

There were no Schedule 23 or 24 parameters that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards (O.Reg. 169/03).



Greenville Well Station



CARLISLE DRINKING WATER SYSTEM WATER QUALITY ANNUAL REPORT

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GENERAL INFORMATION

The Carlisle water supply system consists of four wells, one elevated water storage tank, treatment, sampling and analysis, which services a population of approximately 1,833 people. The water source for the community of Carlisle is ground water. The PTTW for FDC01 & FDC02 was renewed March 1, 2021.

Water Wells:

- Carlisle Well FDC01 has a diameter of 157mm and a depth of approximately 42 metres.
- Carlisle Well FDC02 has a diameter of 300mm at a depth of 2.6 metres and a diameter of 250mm to a depth of 36 metres.
- Carlisle Well FDC03R has a diameter of 200mm and a depth of approximately 33.5 metres. It is a drilled ground water well under the influence of surface water (GUDI).
- Carlisle Well FDC05 has a diameter of 214mm and a depth of approximately 28 metres. It is a drilled ground water well under the influence of surface water (GUDI).

Treatment:

- Within a treatment well house, both wells, FDC01 and FDC02 are joined to a common header for flow metering and disinfection. Sodium hypochlorite (chlorine) within a chlorine contact chamber is used to ensure disinfection of the water.
- Within the well house, both FDC03R and FDC05 discharges have separate flow metering, filtration and ultraviolet light disinfection streams. The flows are combined for treatment by sodium hypochlorite (chlorine) within a chlorine contact chamber to ensure disinfection of the water prior to entering the distribution system.
- Fluoridation is not carried out at any of the Carlisle community wells.

Water Storage:

An elevated water storage tank is located at the same site as wells FDC01 and FDC02. The storage tank has an operating capacity of 1,400m³. It was designed for peak hour water demand equalization as well as fire and emergency storage.

Sampling & Analysis:

All wells are equipped with on-line chlorine residual and turbidity analyzers that continually monitor the treated water quality. Raw, treated and distribution water is sampled and analyzed weekly. In addition, chlorine residual in the distribution system is analyzed daily.

DEFINITIONS

AWQI: Adverse Water Quality Incident

CFU: Colony Forming Unit

HPC: Heterotrophic Plate Count

MDWL: Municipal Drinking Water Licence

mg/L: milligrams per litre

mL: millilitre

N/A: Not Applicable

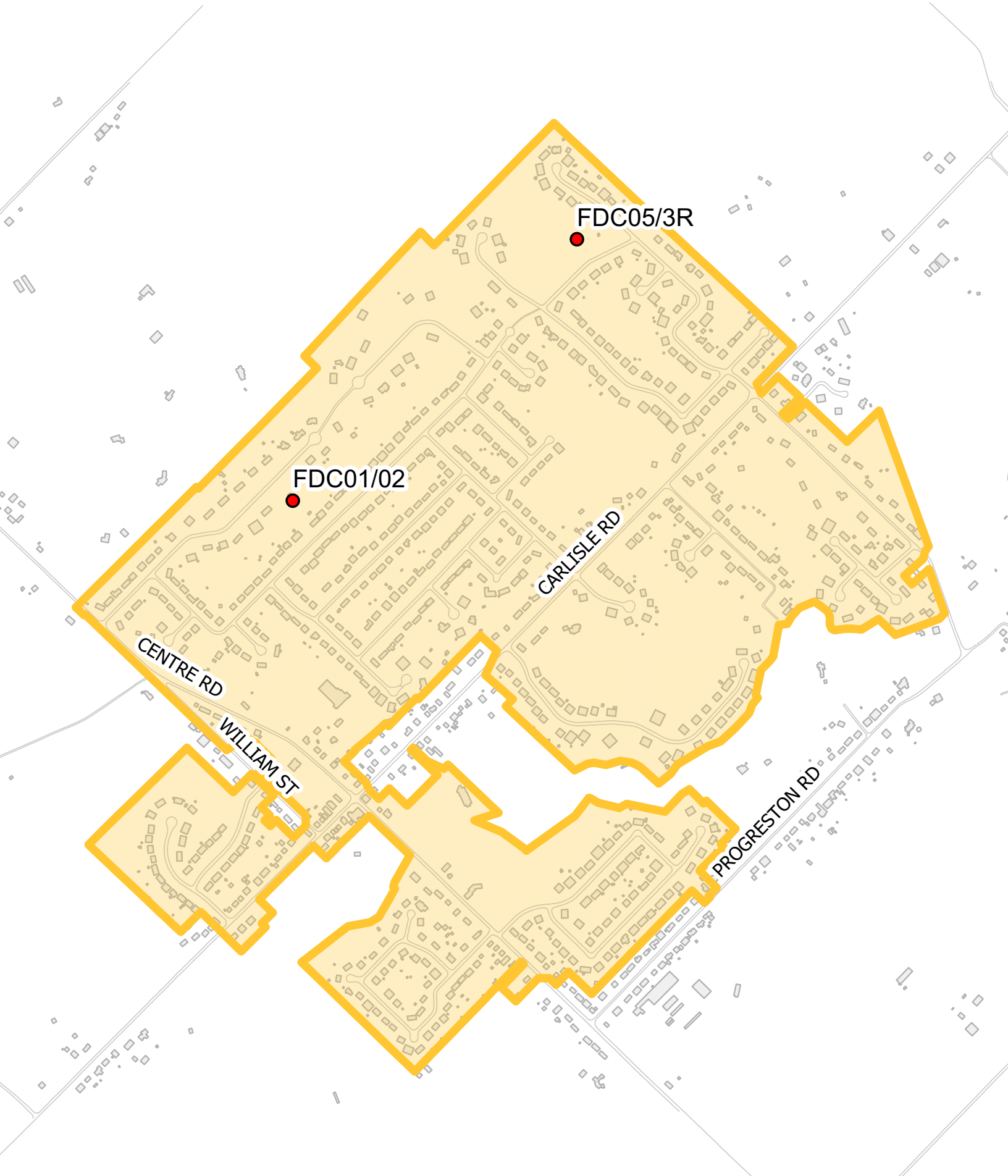
PTTW: Permit to Take Water

ug/L: micrograms per litre

MPN: Most Probable Number

P/A: Present/Absent

DRINKING WATER SYSTEM NUMBER	DRINKING WATER SYSTEM NAME	DRINKING WATER SYSTEM OWNER	DRINKING WATER SYSTEM CATEGORY	PERIOD BEING REPORTED
220004108	Carlisle Drinking Water System FDC01, FDC02, FDC03R, FDC05	City of Hamilton	Large Municipal Residential	January 1, 2022 to December 31, 2022



PROVISION OF DRINKING WATER TO OTHER MUNICIPALITIES

The following is a list of municipal drinking water systems which receive drinking water from the Carlisle System:

DRINKING WATER SYSTEM NAME	DRINKING WATER SYSTEM NUMBER
None	N/A



A copy of this annual report is provided to all Drinking Water System owners that are connected to the system and to whom we provide drinking water.



Our customers are notified through the local newspaper that the annual report is available online free of charge at www.hamilton.ca/waterquality. A copy of the report can also be requested by contacting (905) 546-2489 or water@hamilton.ca.

WATER TREATMENT CHEMICALS USED DURING THIS REPORTING PERIOD

- Sodium Hypochlorite

BREAKDOWN OF SIGNIFICANT MONETARY EXPENSES

THE FOLLOWING TABLE HIGHLIGHTS THE SIGNIFICANT EXPENSES THAT WERE INCURRED FOR INSTALLING, REPAIRING AND REPLACING REQUIRED EQUIPMENT IN 2022.

Carlisle Well FDC03R Well Repairs - \$191,905

ADVERSE TEST RESULTS AND REPORTABLE INCIDENTS

The following table outlines the notices submitted in accordance with subsection 18(1) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to the Ministry of Environment, Conservation and Parks (MECP) Spills Action Centre.

NOTIFICATION DATE (Y-M-D)	LOCATION OF ADVERSE	ADVERSE WATER QUALITY INCIDENT	RESOLUTION
We are pleased to announce that there were no Adverse Water Quality Incidents for the period of January 1, 2022 to December 31, 2022			

MECP INSPECTION FINDINGS AND SELF-DECLARED NON-COMPLIANCES

Please find below the summary of findings that were either issued during an MECP inspection or self-declared during the 2022 calendar year.

The 2021-2022 inspection was completed in February 2022 and findings of non-compliance and recommendations are noted in the table below:

MECP INSPECTION REPORT, MARCH 3, 2022

#	FINDING TYPE	FINDING	STATUS
1	Non-compliance	The flow measuring device was not calibrated or verified in accordance with the requirements of the MDWL issued under Part V of the SDWA.	Action complete
2	Recommendation	Create a new guidance document for MECP inspectors that will act as a roadmap for Sampling & Monitoring, Dead-end Flushing, and Watermain Flushing programs.	Action Complete
3	Recommendation	For air vents, the Ontario Design Guidelines for Drinking Water Systems recommends that elevated tanks, standpipes and on ground level facilities, vents should open downward.	Action Considered

The 2022-2023 inspection commenced in June 2022 and was completed in August 2022. There were no findings of non-compliance. As of December 31, 2022, the Inspection Summary Rating Record remained pending.

There were no self-declared non-compliances reported for the Carlisle DWS in 2022.

WATER PRODUCTION REPORTS - SUMMARY

The following provides a summary of daily flow rates and instantaneous peak flow rates in comparison to the capacity of the water works as identified in the Permit to Take Water. This information is tabulated in the accompanying tables.

TABLE 5-1: CARLISLE WELLS (FDC01 & FDC02) - 2022 MONTHLY PRODUCTION (SUMMARY)

FDC01 & 02	UNITS	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Monthly Total Flow	m ³	1,626	1,665	2,156	2,158	5,858	8,608	6,536	5,591	4,044	2,437	2,298	2,436
Average Daily Rate	m ³ /d	52	59	70	72	189	287	211	180	135	79	77	79
Maximum Daily Rate	m ³ /d	131	160	329	166	480	691	535	522	431	190	232	203
PTTW Daily Rated Capacity	m ³ /d	1,702	1,702	1,702	1,702	1,702	1,702	1,702	1,702	1,702	1,702	1,702	1,702
MDWL Daily Rated Capacity	m ³ /d	851	851	851	851	851	851	851	851	851	851	851	851



MAINTAINED COMPLIANCE

FIGURE 5-1: CARLISLE WELLS (FDC01 & FDC02) - 2022 MONTHLY PRODUCTION (SUMMARY)

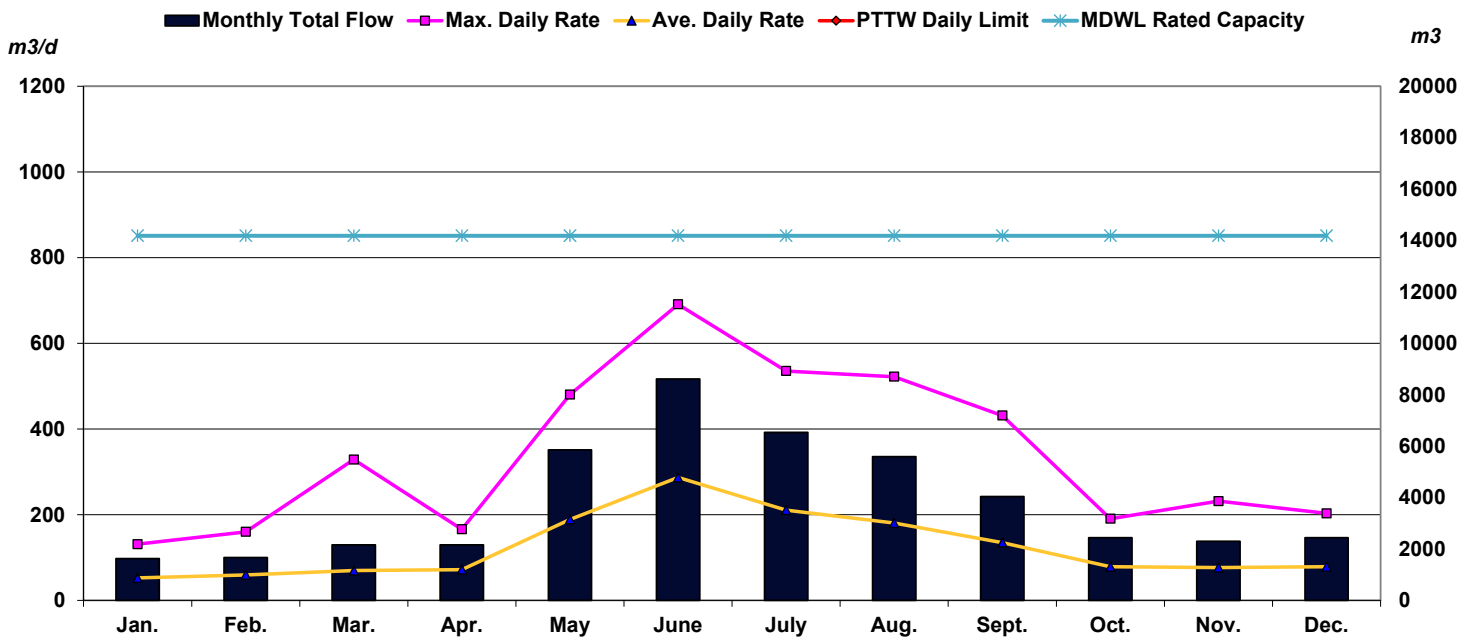


TABLE 5-2: CARLISLE WELL (FDC03R) - 2022 MONTHLY PRODUCTION (SUMMARY)

FDC03R	UNITS	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Monthly Total Flow	m ³	5,968	3,898	6,118	5,142	3,547	19,538	31,359	24,602	15,846	5,099	3,080	741
Average Daily Rate	m ³ /d	193	139	197	171	114	651	1,012	794	528	164	103	24
Maximum Daily Rate	m ³ /d	498	431	682	523	786	1,568	1,316	1,522	954	526	422	411
PTTW Daily Rated Capacity	m ³ /d	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160

Note: Carlisle DWS FDC03R and FDC05 have a combined rated capacity of 3456m³/day



MAINTAINED COMPLIANCE

FIGURE 5-2: CARLISLE WELL (FDC03R) - 2022 MONTHLY PRODUCTION (SUMMARY)

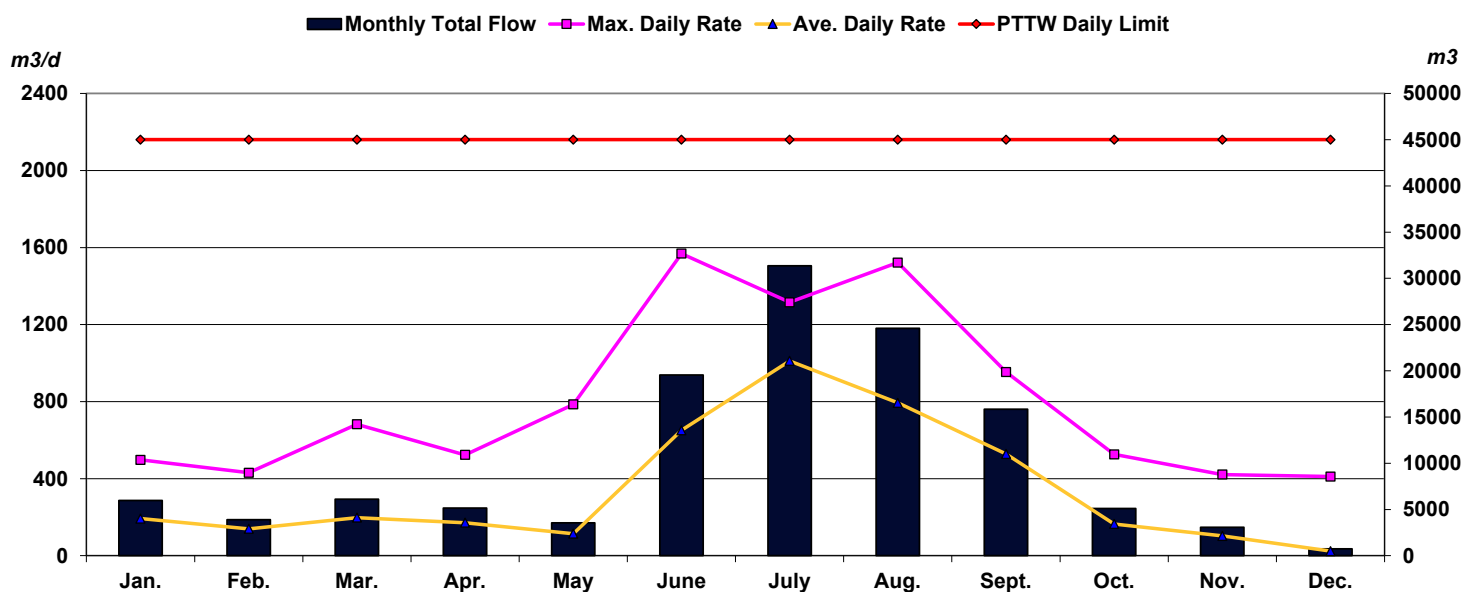


TABLE 5-3: CARLISLE WELL (FDC05) - 2022 MONTHLY PRODUCTION (SUMMARY)

FDC05	UNITS	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Monthly Total Flow	m ³	5,287	5,578	4,454	6,049	15,145	16,947	17,928	16,819	11,937	9,000	7,967	10,734
Average Daily Rate	m ³ /d	171	199	144	202	489	565	578	543	398	290	266	346
Maximum Daily Rate	m ³ /d	458	590	527	550	1,080	1,078	815	869	725	735	667	654
PTTW Daily Rated Capacity	m ³ /d	1,296	1,296	1,296	1,296	1,296	1,296	1,296	1,296	1,296	1,296	1,296	1,296

Note: Carlisle DWS FDC03R and FDC05 have a combined rated capacity of 3456m³/day



MAINTAINED COMPLIANCE

FIGURE 5-3: CARLISLE WELLS (FDC05) - 2022 MONTHLY PRODUCTION (SUMMARY)

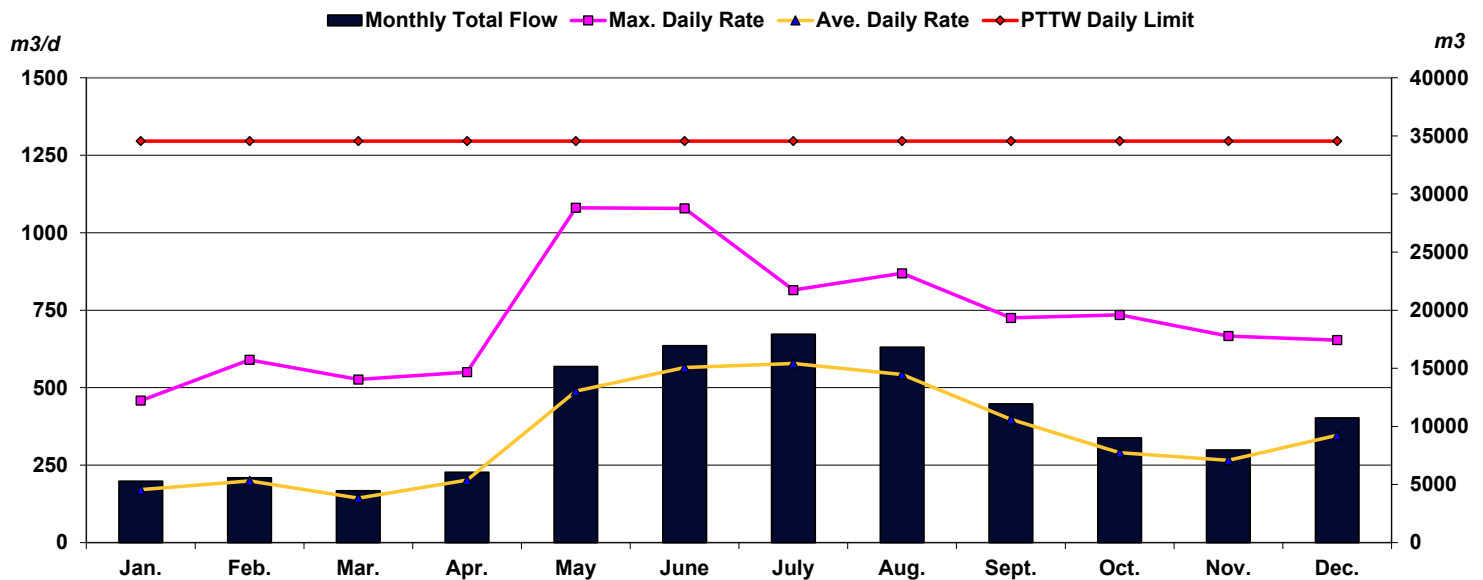


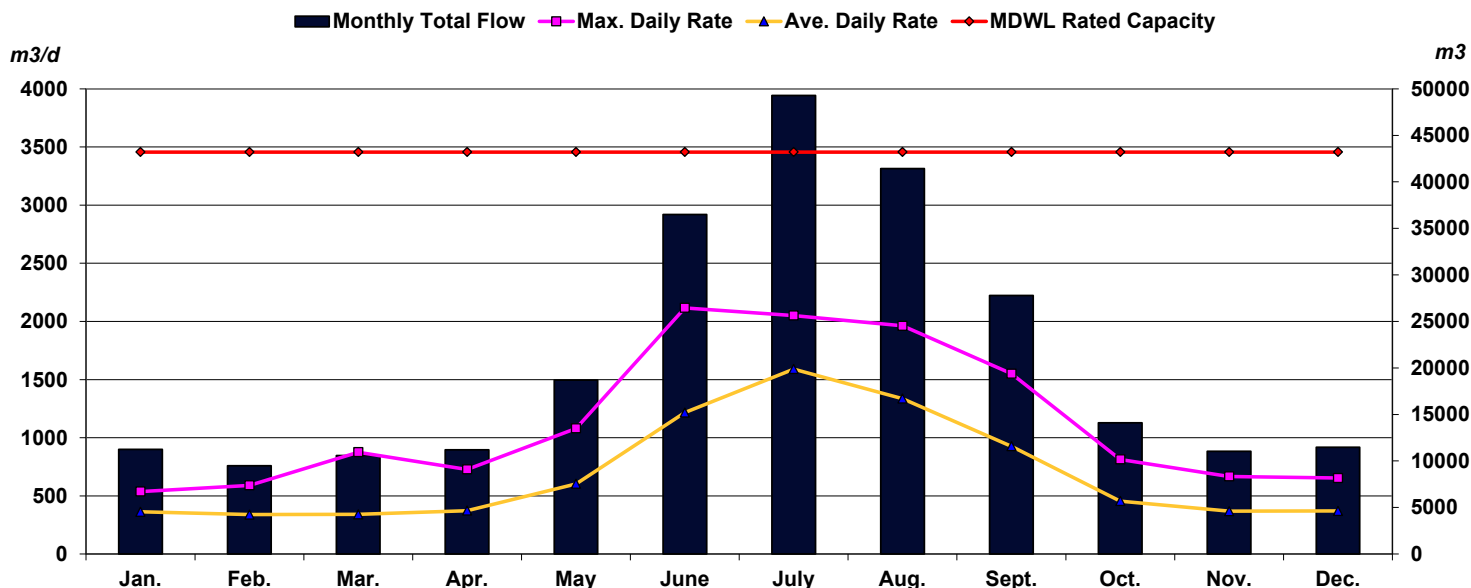
TABLE 5-4: CARLISLE WELL (FDC03R & FDC05) - 2022 MONTHLY PRODUCTION (SUMMARY)

FDC03R & FDC05	UNITS	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Monthly Total Flow	m ³	11,255	9,477	10,572	11,191	18,693	36,485	49,287	41,421	27,783	14,099	11,047	11,474
Average Daily Rate	m ³ /d	363	338	341	373	603	1,216	1,590	1,336	926	455	368	370
Maximum Daily Rate	m ³ /d	538	590	875	728	1,080	2,116	2,051	1,962	1,551	813	667	654
MDWL Daily Rated Capacity	m ³ /d	3,456	3,456	3,456	3,456	3,456	3,456	3,456	3,456	3,456	3,456	3,456	3,456



MAINTAINED COMPLIANCE

FIGURE 5-4: CARLISLE WELL (FDC03R & FDC05) - 2022 MONTHLY PRODUCTION (SUMMARY)



WATER QUALITY DATA

MICROBIOLOGICAL TESTING REQUIRED BY REGULATION 170/03, DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	NUMBER OF SAMPLES	RESULT VALUE RANGE	UNIT OF MEASURE
CARLISLE WELL FDC01 - RAW				
E.COLI	2022-01-04 to 2022-12-27	52	0	MPN/100mL
TOTAL COLIFORM	2022-01-04 to 2022-12-27	52	0	MPN/100mL
CARLISLE WELL FDC02 - RAW				
E.COLI	2022-01-04 to 2022-11-22	47	0	MPN/100mL
TOTAL COLIFORM	2022-01-04 to 2022-11-22	47	0	MPN/100mL
CARLISLE WELL FDC03R - RAW				
E.COLI	2022-01-03 to 2022-12-12	48	0	MPN/100mL
TOTAL COLIFORM	2022-01-03 to 2022-12-12	48	0	MPN/100mL
CARLISLE WELL FDC05 - RAW				
E.COLI	2022-01-03 to 2022-12-26	52	0	MPN/100mL
TOTAL COLIFORM	2022-01-03 to 2022-12-26	52	0	MPN/100mL
CARLISLE WELL FDC01 - TREATED				
E.COLI	2022-01-04 to 2022-12-27	52	ALL ABSENT	P/A/100mL
HPC	2022-01-04 to 2022-12-27	52	0 to 4	CFU/1mL
TOTAL COLIFORM	2022-01-04 to 2022-12-27	52	ALL ABSENT	P/A/100mL
CARLISLE WELL FDC02 - TREATED				
E.COLI	2022-01-04 to 2022-11-22	47	ALL ABSENT	P/A/100mL
HPC	2022-01-04 to 2022-11-22	47	0 to 2	CFU/1mL
TOTAL COLIFORM	2022-01-04 to 2022-11-22	47	ALL ABSENT	P/A/100mL
CARLISLE WELL FDC03R - TREATED				
E.COLI	2022-01-03 to 2022-12-12	48	ALL ABSENT	P/A/100mL
HPC	2022-01-03 to 2022-12-12	48	0 to 2	CFU/1mL
TOTAL COLIFORM	2022-01-03 to 2022-12-12	48	ALL ABSENT	P/A/100mL
CARLISLE WELL FDC05 - TREATED				
E.COLI	2022-01-03 to 2022-12-26	52	ALL ABSENT	P/A/100mL
HPC	2022-01-03 to 2022-12-26	52	0 to 2	CFU/1mL
TOTAL COLIFORM	2022-01-03 to 2022-12-26	52	ALL ABSENT	P/A/100mL

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MICROBIOLOGICAL TESTING REQUIRED BY REGULATION 170/03, DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	NUMBER OF SAMPLES	RESULT VALUE RANGE	UNIT OF MEASURE
DISTRIBUTION				
E.COLI	2022-01-03 to 2022-12-27	175	ALL ABSENT	P/A/100mL
HPC	2022-01-03 to 2022-12-27	208	0 to 2	CFU/1mL
TOTAL COLIFORM	2022-01-03 to 2022-12-27	175	ALL ABSENT	P/A/100mL

OPERATIONAL TESTING DONE UNDER SCHEDULE 7, 8 OR 9 OF REGULATION 170/03 DURING THE PERIOD COVERED BY THIS ANNUAL REPORT.

NOTE: If results are obtained from continuous monitors, then 8760 is reported as the number of samples.

PARAMETER - SAMPLE TYPE	NUMBER OF SAMPLES	RESULT VALUE RANGE	UNIT OF MEASURE
TURBIDITY - RAW - FDC01	52	0.05 – 0.84	NTU
TURBIDITY - RAW - FDC02	47	0.05 – 0.76	NTU
TURBIDITY - TREATED - FDC03R	8760	0.01 – 3.45	NTU
TURBIDITY - TREATED - FDC05	8760	0.04 – 0.40	NTU
FREE CHLORINE - TREATED - FDC01 AND FDC02	8760	1.36 – 4.59	mg/L
FREE CHLORINE - TREATED - FDC03R AND FDC05	8760	1.31 - 2.67	mg/L
FREE CHLORINE - DISTRIBUTION	365	1.25 – 2.38	mg/L

SUMMARY OF ADDITIONAL TESTING AND SAMPLING CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENT OF A LICENCE, APPROVAL, ORDER OR OTHER LEGAL INSTRUMENT.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE
N/A	-	-	-

SUMMARY OF INORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
CARLISLE WELL FDC01 - TREATED				
ANTIMONY	2022-04-27 to 2022-10-18	<0.0001	mg/L	0
ARSENIC	2022-04-27 to 2022-10-18	0.0002 to 0.0004	mg/L	0
BARIUM	2022-04-27 to 2022-10-18	0.0881 to 0.0942	mg/L	0
BORON	2022-04-27 to 2022-10-18	0.017 to 0.019	mg/L	0
CADMIUM	2022-04-27 to 2022-10-18	<0.0001	mg/L	0
CHROMIUM	2022-04-27 to 2022-10-18	<0.0001	mg/L	0
FLUORIDE	2022-04-27 to 2022-10-18	0.07 to 0.09	mg/L	0
MERCURY	2022-04-27 to 2022-10-18	<0.05	ug/L	0
NITRATE AS N	2022-01-25 to 2022-10-18	0.90 to 2.27	mg/L	0
NITRITE AS N	2022-01-25 to 2022-10-18	<0.01	mg/L	0
SELENIUM	2022-04-27 to 2022-10-18	0.0002	mg/L	0
SODIUM	2022-04-27 to 2022-10-18	15.9 to 20.9	mg/L	0
URANIUM	2022-04-27 to 2022-10-18	0.432 to 0.564	ug/L	0
CARLISLE WELL FDC02 - TREATED				
ANTIMONY	2022-04-27 to 2022-10-18	<0.0001	mg/L	0
ARSENIC	2022-04-27 to 2022-10-18	0.0002	mg/L	0
BARIUM	2022-04-27 to 2022-10-18	0.0881 to 0.0892	mg/L	0
BORON	2022-04-27 to 2022-10-18	0.017 to 0.018	mg/L	0
CADMIUM	2022-04-27 to 2022-10-18	<0.0001	mg/L	0
CHROMIUM	2022-04-27 to 2022-10-18	<0.0001 to 0.0001	mg/L	0
FLUORIDE	2022-04-27 to 2022-10-18	0.07 to 0.08	mg/L	0
MERCURY	2022-04-27 to 2022-10-18	<0.05	ug/L	0
NITRATE AS N	2022-01-25 to 2022-10-18	1.33 to 3.92	mg/L	0
NITRITE AS N	2022-01-25 to 2022-10-18	<0.01	mg/L	0
SELENIUM	2022-04-27 to 2022-10-18	0.0002	mg/L	0
SODIUM	2022-04-27 to 2022-10-18	19.1 to 26.9	mg/L	0
URANIUM	2022-04-27 to 2022-10-18	0.385 to 0.542	ug/L	0

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SUMMARY OF INORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
CARLISLE WELL FDC03R - TREATED				
ANTIMONY	2022-04-27 to 2022-10-18	0.0001 to 0.0002	mg/L	0
ARSENIC	2022-04-27 to 2022-10-18	0.0004 to 0.0005	mg/L	0
BARIUM	2022-04-27 to 2022-10-18	0.0811 to 0.0821	mg/L	0
BORON	2022-04-27 to 2022-10-18	0.024 to 0.026	mg/L	0
CADMIUM	2022-04-27 to 2022-10-18	<0.0001	mg/L	0
CHROMIUM	2022-04-27 to 2022-10-18	<0.0001	mg/L	0
FLUORIDE	2022-04-27 to 2022-10-18	0.07	mg/L	0
MERCURY	2022-04-27 to 2022-10-18	<0.05	ug/L	0
NITRATE AS N	2022-01-25 to 2022-10-18	0.20 to 0.60	mg/L	0
NITRITE AS N	2022-01-25 to 2022-10-18	<0.01	mg/L	0
SELENIUM	2022-04-27 to 2022-10-18	<0.0001	mg/L	0
SODIUM	2022-04-27 to 2022-10-18	57.8 to 58.3	mg/L	0
URANIUM	2022-04-27 to 2022-10-18	0.682 to 0.695	ug/L	0
CARLISLE WELL FDC05 - TREATED				
ANTIMONY	2022-04-27 to 2022-10-18	<0.0001 to 0.0002	mg/L	0
ARSENIC	2022-04-27 to 2022-10-18	0.0005 to 0.0009	mg/L	0
BARIUM	2022-04-27 to 2022-10-18	0.0750 to 0.0775	mg/L	0
BORON	2022-04-27 to 2022-10-18	0.024 to 0.026	mg/L	0
CADMIUM	2022-04-27 to 2022-10-18	<0.0001	mg/L	0
CHROMIUM	2022-04-27 to 2022-10-18	<0.0001	mg/L	0
FLUORIDE	2022-04-27 to 2022-10-18	0.07 to 0.08	mg/L	0
MERCURY	2022-04-27 to 2022-10-18	<0.05	ug/L	0
NITRATE AS N	2022-01-25 to 2022-10-18	<0.02 to 0.91	mg/L	0
NITRITE AS N	2022-01-25 to 2022-10-18	<0.01	mg/L	0
SELENIUM	2022-04-27 to 2022-10-18	<0.0001	mg/L	0
SODIUM	2022-04-27 to 2022-10-18	53.2 to 60.8	mg/L	0
URANIUM	2022-04-27 to 2022-10-18	0.435 to 0.560	ug/L	0

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SUMMARY OF LEAD TESTING UNDER SCHEDULE 15.1 DURING THIS REPORTING PERIOD.

LOCATION TYPE	POINTS SAMPLED	LEAD SAMPLES TAKEN	pH & ALKALINITY SAMPLES TAKEN	pH RESULTS pH UNITS	ALKALINITY RESULTS mg/L	LEAD RESULTS mg/L	LEAD AWQI	LEAD EXCEEDANCES
PLUMBING-NR	1	2	1	7.35	N/A	0.0004 to 0.0008	N/A	0
PLUMBING-R	10	20	10	7.30 to 7.41	N/A	0.0001 to 0.0024	N/A	0
DISTRIBUTION	4	4	4	7.17 to 7.36	325 to 346	0.0004 to 0.0011	0	N/A

NR - Non Residential R- Residential



Carlisle Well System

SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
CARLISLE WELL FDC01 - TREATED				
1,1-DICHLOROETHYLENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
1,2-DICHLOROBENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
1,2-DICHLOROETHANE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
1,4-DICHLOROBENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
2,3,4,6-TETRACHLOROPHENOL	2022-04-27	<0.20	ug/L	0
2,4,6-TRICHLOROPHENOL	2022-04-27	<0.25	ug/L	0
2,4-DICHLOROPHENOXYACETIC ACID	2022-04-27	<0.19	ug/L	0
2,4-DICHLOROPHENOL	2022-04-27	<0.15	ug/L	0
ALACHLOR	2022-04-27	<0.02	ug/L	0
ATRAZINE + DESETHYL-ATRAZINE	2022-04-27	<0.01	ug/L	0
AZINPHOS-METHYL	2022-04-27	<0.05	ug/L	0
BENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
BENZO[A]PYRENE	2022-04-27	<0.004	ug/L	0
BROMOXYNIL	2022-04-27	<0.33	ug/L	0
CARBARYL	2022-04-27	<0.05	ug/L	0
CARBOFURAN	2022-04-27	<0.01	ug/L	0
CARBON TETRACHLORIDE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
CHLOROBENZENE	2022-04-27 to 2022-10-18	<0.3	ug/L	0
CHLORPYRIFOS (DURSBAN)	2022-04-27	<0.02	ug/L	0
DIAZINON	2022-04-27	<0.02	ug/L	0
DICAMBA	2022-04-27	<0.20	ug/L	0
DICHLOROMETHANE	2022-04-27 to 2022-10-18	<0.5	ug/L	0
DICLOFOP-METHYL	2022-04-27	<0.40	ug/L	0
DIMETHOATE	2022-04-27	<0.06	ug/L	0
DIQUAT	2022-04-27	<1	ug/L	0
DIURON	2022-04-27	<0.03	ug/L	0
ETHYLBENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
GLYPHOSATE	2022-04-27	<1	ug/L	0
MALATHION	2022-04-27	<0.02	ug/L	0
MCPA (2-METHYL-4-CHLOROPHENOXYACETIC ACID)	2022-04-27	<0.00012	mg/L	0

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SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQIS
CARLISLE WELL FDC01 - TREATED				
METOLACHLOR	2022-04-27	<0.01	ug/L	0
METRIBUZIN (SENCOR)	2022-04-27	<0.02	ug/L	0
PARAQUAT	2022-04-27	<1	ug/L	0
PCBS TOTAL	2022-04-27	<0.04	ug/L	0
PENTACHLOROPHENOL	2022-04-27	<0.15	ug/L	0
PHORATE	2022-04-27	<0.01	ug/L	0
PICLORAM	2022-04-27	<1	ug/L	0
PROMETRYNE	2022-04-27	<0.03	ug/L	0
SIMAZINE	2022-04-27	<0.01	ug/L	0
TERBUFOS	2022-04-27	<0.01	ug/L	0
TETRACHLOROETHYLENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
TOLUENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
TRIALATE	2022-04-27	<0.01	ug/L	0
TRICHLOROETHYLENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
TRIFLURALIN	2022-04-27	<0.02	ug/L	0
VINYL CHLORIDE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
XYLENE	2022-04-27 to 2022-10-18	<0.5	ug/L	0
CARLISLE WELL FDC02 - TREATED				
1,1-DICHLOROETHYLENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
1,2-DICHLOROBENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
1,2-DICHLOROETHANE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
1,4-DICHLOROBENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
2,3,4,6-TETRACHLOROPHENOL	2022-04-27	<0.20	ug/L	0
2,4,6-TRICHLOROPHENOL	2022-04-27	<0.25	ug/L	0
2,4-DICHLOROPHENOXYACETIC ACID	2022-04-27	<0.19	ug/L	0
2,4-DICHLOROPHENOL	2022-04-27	<0.15	ug/L	0
ALACHLOR	2022-04-27	<0.02	ug/L	0
ATRAZINE + DESETHYL-ATRAZINE	2022-04-27	<0.01	ug/L	0
AZINPHOS-METHYL	2022-04-27	<0.05	ug/L	0
BENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
BENZO[A]PYRENE	2022-04-27	<0.004	ug/L	0

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SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
CARLISLE WELL FDC02 - TREATED				
BROMOXYNIL	2022-04-27	<0.33	ug/L	0
CARBARYL	2022-04-27	<0.05	ug/L	0
CARBOFURAN	2022-04-27	<0.01	ug/L	0
CARBON TETRACHLORIDE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
CHLOROBENZENE	2022-04-27 to 2022-10-18	<0.3	ug/L	0
CHLORPYRIFOS (DURSBAN)	2022-04-27	<0.02	ug/L	0
DIAZINON	2022-04-27	<0.02	ug/L	0
DICAMBA	2022-04-27	<0.20	ug/L	0
DICHLOROMETHANE	2022-04-27 to 2022-10-18	<0.5	ug/L	0
DICLOFOP-METHYL	2022-04-27	<0.40	ug/L	0
DIMETHOATE	2022-04-27	<0.06	ug/L	0
DIQUAT	2022-04-27	<1	ug/L	0
DIURON	2022-04-27	<0.03	ug/L	0
ETHYLBENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
GLYPHOSATE	2022-04-27	<1	ug/L	0
MALATHION	2022-04-27	<0.02	ug/L	0
MCPA (2-METHYL-4-CHLORO-PHENOXYACETIC ACID)	2022-04-27	<0.00012	mg/L	0
METOLACHLOR	2022-04-27	<0.01	ug/L	0
METRIBUZIN (SENCOR)	2022-04-27	<0.02	ug/L	0
PARAQUAT	2022-04-27	<1	ug/L	0
PCBS TOTAL	2022-04-27	<0.04	ug/L	0
PENTACHLOROPHENOL	2022-04-27	<0.15	ug/L	0
PHORATE	2022-04-27	<0.01	ug/L	0
PICLORAM	2022-04-27	<1	ug/L	0
PROMETRYNE	2022-04-27	<0.03	ug/L	0
SIMAZINE	2022-04-27	<0.01	ug/L	0
TERBUFOS	2022-04-27	<0.01	ug/L	0
TETRACHLOROETHYLENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
TOLUENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
TRIALATE	2022-04-27	<0.01	ug/L	0

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SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQIS
CARLISLE WELL FDC02 - TREATED				
TRICHLOROETHYLENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
TRIFLURALIN	2022-04-27	<0.02	ug/L	0
VINYL CHLORIDE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
XYLENE	2022-04-27 to 2022-10-18	<0.5	ug/L	0
CARLISLE WELL FDC03R - TREATED				
1,1-DICHLOROETHYLENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
1,2-DICHLOROBENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
1,2-DICHLOROETHANE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
1,4-DICHLOROBENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
2,3,4,6-TETRACHLOROPHENOL	2022-04-27	<0.20	ug/L	0
2,4,6-TRICHLOROPHENOL	2022-04-27	<0.25	ug/L	0
2,4-DICHLOROPHENOXYACETIC ACID	2022-04-27	<0.19	ug/L	0
2,4-DICHLOROPHENOL	2022-04-27	<0.15	ug/L	0
ALACHLOR	2022-04-27	<0.02	ug/L	0
ATRAZINE + DESETHYL-ATRAZINE	2022-04-27	<0.01	ug/L	0
AZINPHOS-METHYL	2022-04-27	<0.05	ug/L	0
BENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
BENZO[A]PYRENE	2022-04-27	<0.004	ug/L	0
BROMOXYNIL	2022-04-27	<0.33	ug/L	0
CARBARYL	2022-04-27	<0.05	ug/L	0
CARBOFURAN	2022-04-27	<0.01	ug/L	0
CARBON TETRACHLORIDE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
CHLOROBENZENE	2022-04-27 to 2022-10-18	<0.3	ug/L	0
CHLORPYRIFOS (DURSBAN)	2022-04-27	<0.02	ug/L	0
DIAZINON	2022-04-27	<0.02	ug/L	0
DICAMBA	2022-04-27	<0.20	ug/L	0
DICHLOROMETHANE	2022-04-27 to 2022-10-18	<0.5	ug/L	0
DICLOFOP-METHYL	2022-04-27	<0.40	ug/L	0
DIMETHOATE	2022-04-27	<0.06	ug/L	0
DIQUAT	2022-04-27	<1	ug/L	0

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SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
CARLISLE WELL FDC03R - TREATED				
DIURON	2022-04-27	<0.03	ug/L	0
ETHYLBENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
GLYPHOSATE	2022-04-27	<1	ug/L	0
MALATHION	2022-04-27	<0.02	ug/L	0
MCPA (2-METHYL-4-CHLOROPHENOXYACETIC ACID)	2022-04-27	<0.00012	mg/L	0
METOLACHLOR	2022-04-27	<0.01	ug/L	0
METRIBUZIN (SENCOR)	2022-04-27	<0.02	ug/L	0
PARAQUAT	2022-04-27	<1	ug/L	0
PCBS TOTAL	2022-04-27	<0.04	ug/L	0
PENTACHLOROPHENOL	2022-04-27	<0.15	ug/L	0
PHORATE	2022-04-27	<0.01	ug/L	0
PICLORAM	2022-04-27	<1	ug/L	0
PROMETRYNE	2022-04-27	<0.03	ug/L	0
SIMAZINE	2022-04-27	<0.01	ug/L	0
TERBUFOS	2022-04-27	<0.01	ug/L	0
TETRACHLOROETHYLENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
TOLUENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
TRIALATE	2022-04-27	<0.01	ug/L	0
TRICHLOROETHYLENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
TRIFLURALIN	2022-04-27	<0.02	ug/L	0
VINYL CHLORIDE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
XYLENE	2022-04-27 to 2022-10-18	<0.5	ug/L	0
CARLISLE WELL FDC05 - TREATED				
1,1-DICHLOROETHYLENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
1,2-DICHLOROBENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
1,2-DICHLOROETHANE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
1,4-DICHLOROBENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
2,3,4,6-TETRACHLOROPHENOL	2022-04-27	<0.20	ug/L	0
2,4,6-TRICHLOROPHENOL	2022-04-27	<0.25	ug/L	0
2,4-DICHLOROPHENOXYACETIC ACID	2022-04-27	<0.19	ug/L	0

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SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
CARLISLE WELL FDC05 - TREATED				
2,4-DICHLOROPHENOL	2022-04-27	<0.15	ug/L	0
ALACHLOR	2022-04-27	<0.02	ug/L	0
ATRAZINE + DESETHYL-ATRAZINE	2022-04-27	<0.01	ug/L	0
AZINPHOS-METHYL	2022-04-27	<0.05	ug/L	0
BENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
BENZO[A]PYRENE	2022-04-27	<0.004	ug/L	0
BROMOXYNIL	2022-04-27	<0.33	ug/L	0
CARBARYL	2022-04-27	<0.05	ug/L	0
CARBOFURAN	2022-04-27	<0.01	ug/L	0
CARBON TETRACHLORIDE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
CHLOROBENZENE	2022-04-27 to 2022-10-18	<0.3	ug/L	0
CHLORPYRIFOS (DURSBAN)	2022-04-27	<0.02	ug/L	0
DIAZINON	2022-04-27	<0.02	ug/L	0
DICAMBA	2022-04-27	<0.20	ug/L	0
DICHLOROMETHANE	2022-04-27 to 2022-10-18	<0.5	ug/L	0
DICLOFOP-METHYL	2022-04-27	<0.40	ug/L	0
DIMETHOATE	2022-04-27	<0.06	ug/L	0
DIQUAT	2022-04-27	<1	ug/L	0
DIURON	2022-04-27	<0.03	ug/L	0
ETHYLBENZENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
GLYPHOSATE	2022-04-27	<1	ug/L	0
MALATHION	2022-04-27	<0.02	ug/L	0
MCPA (2-METHYL-4-CHLORO-PHENOXYACETIC ACID)	2022-04-27	<0.00012	mg/L	0
METOLACHLOR	2022-04-27	<0.01	ug/L	0
METRIBUZIN (SENCOR)	2022-04-27	<0.02	ug/L	0
PARAQUAT	2022-04-27	<1	ug/L	0
PCBS TOTAL	2022-04-27	<0.04	ug/L	0
PENTACHLOROPHENOL	2022-04-27	<0.15	ug/L	0
PHORATE	2022-04-27	<0.01	ug/L	0
PICLORAM	2022-04-27	<1	ug/L	0

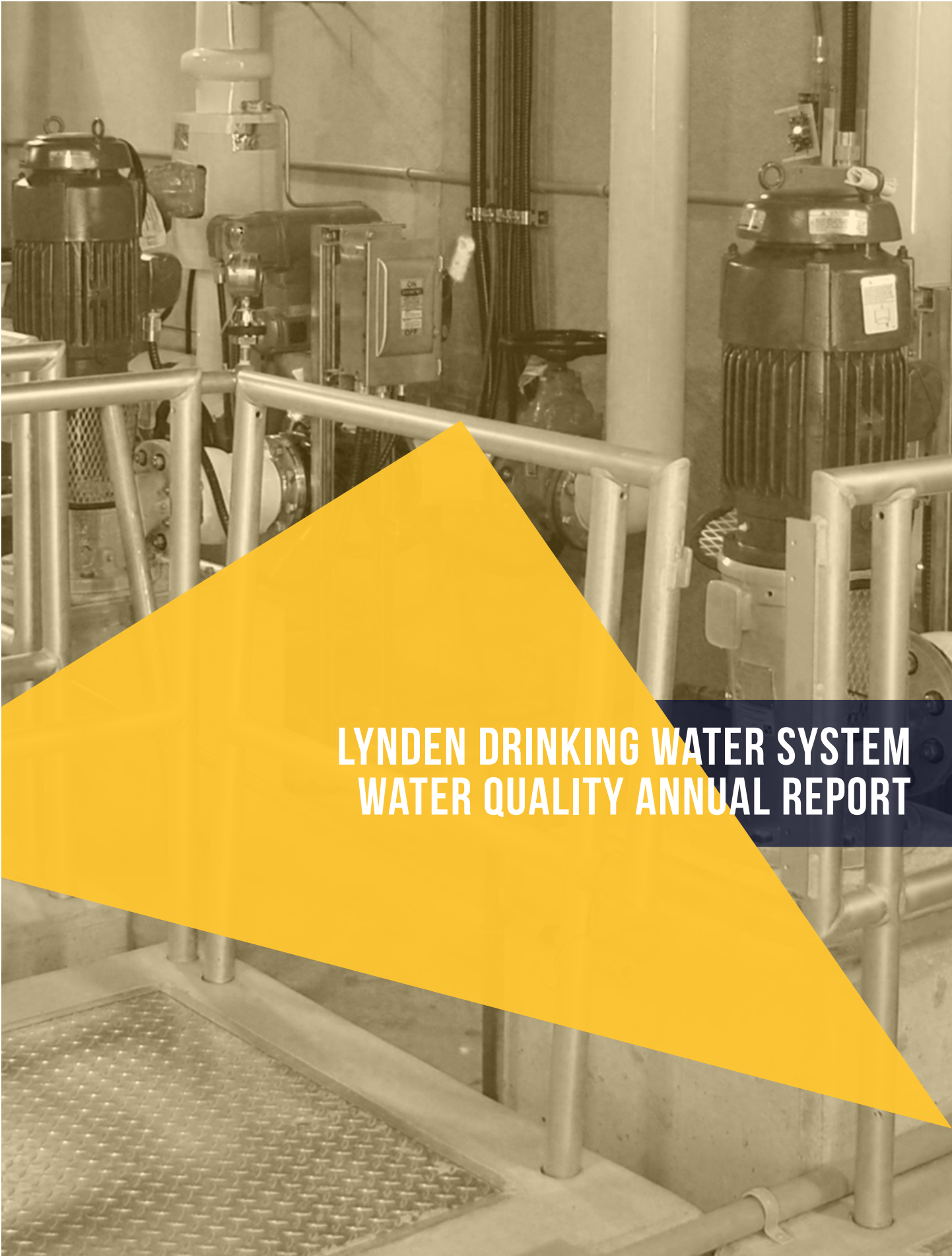
SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
CARLISLE WELL FDC05 - TREATED				
PROMETRYNE	2022-04-27	<0.03	ug/L	0
SIMAZINE	2022-04-27	<0.01	ug/L	0
TERBUFOS	2022-04-27	<0.01	ug/L	0
TETRACHLOROETHYLENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
TOLUENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
TRIALATE	2022-04-27	<0.01	ug/L	0
TRICHLOROETHYLENE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
TRIFLURALIN	2022-04-27	<0.02	ug/L	0
VINYL CHLORIDE	2022-04-27 to 2022-10-18	<0.2	ug/L	0
XYLENE	2022-04-27 to 2022-10-18	<0.5	ug/L	0
DISTRIBUTION				
TOTAL TRIHALOMETHANES*	Running annual average for the last four quarters	10.2	ug/L	0
HALOACETIC ACIDS*	Running annual average for the last four quarters	<5.3	ug/L	0

* The Maximum Acceptable Concentration for Trihalomethanes and Haloacetic Acids in the distribution system is based on a running average of the results from all sampling events in the past four quarters. This running average can be found in the result value column.

PARAMETERS EXCEEDING PRESCRIBED HALF-STANDARD

There were no Schedule 23 or 24 parameters that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards (O.Reg. 169/03).



LYNDEN DRINKING WATER SYSTEM WATER QUALITY ANNUAL REPORT

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GENERAL INFORMATION

The Lynden water supply system consists of two wells, one reservoir, treatment, sampling and analysis, which services a population of approximately 393 people. The water source for the community of Lynden is ground water.

The construction of a new Lynden well (FDL03), water treatment plant and storage facility was complete and started providing water to the Lynden DWS on July 9, 2020. This project represents over a \$7 million investment and provides clean drinking water, redundancy of equipment and ensures security of supply for the Lynden community.

Water Wells:

- Lynden well FDL01 has been out of service since July 9, 2020 and will be decommissioned. Lynden Well FDL01 has a diameter of 200mm at a depth of approximately 54.6 metres.
- Lynden Well FDL03 has a diameter of 200mm at a depth of 52 metres.

Treatment:

- Within a treatment well house, both wells, FDL01 and FDL03 are joined to a common header for flow metering and disinfection.
- The treatment plant includes an air stripper, transfer pumping, a cartridge filter, and a carbon dioxide injection system followed by a static mixer for pH adjustment prior to the aeration tank. Sodium hypochlorite (chlorine) within the reservoir is used to ensure disinfection of the water.
- Fluoridation is not carried out at the Lynden community well.

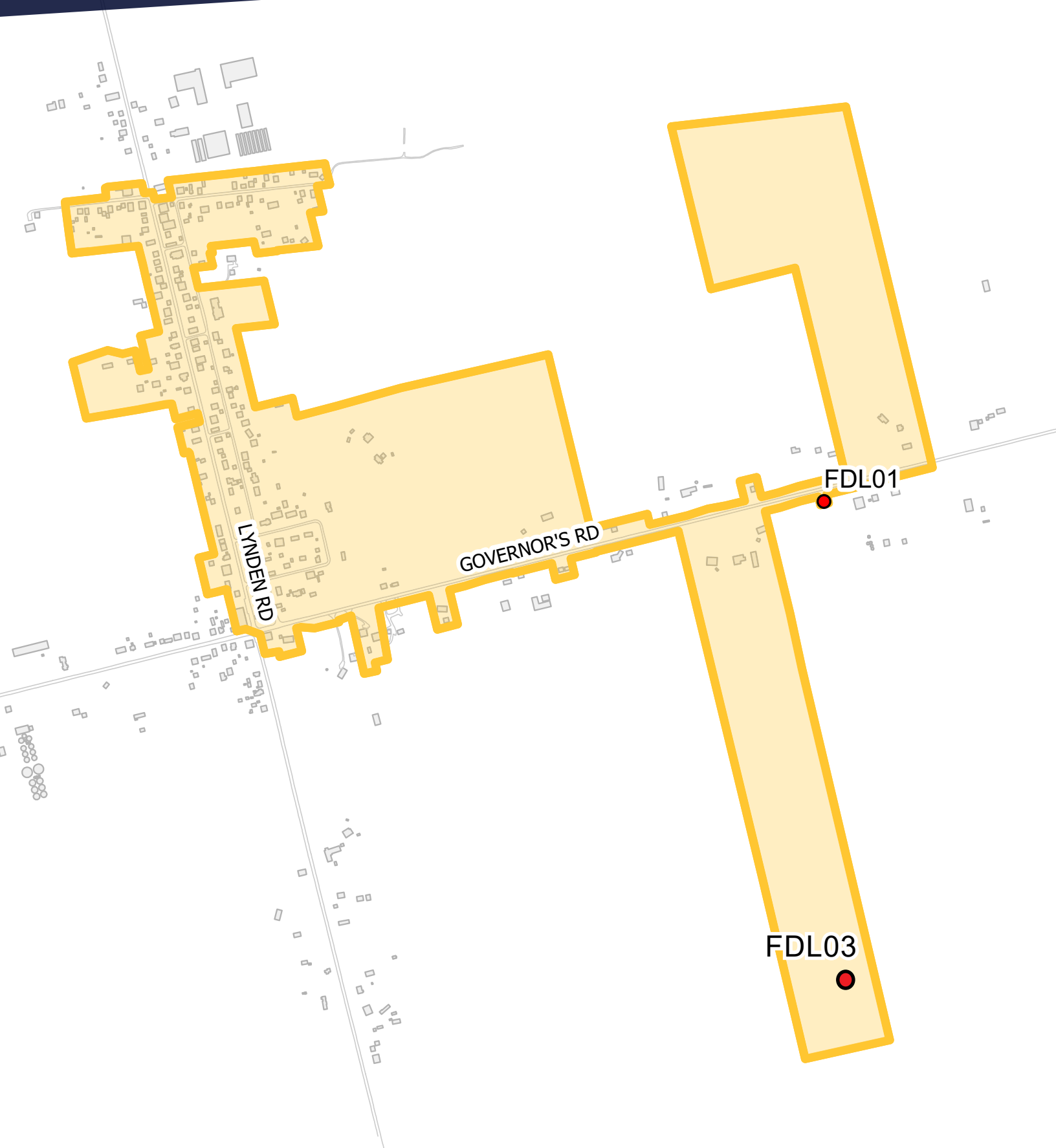
Sampling & Analysis:

All wells are equipped with on-line chlorine residual and turbidity analyzers that continually monitor the treated water quality. Raw, treated and distribution water is sampled and analyzed weekly. In addition, chlorine residual in the distribution system is analyzed daily.

DEFINITIONS

- AWQI: Adverse Water Quality Incident
- CFU: Colony Forming Unit
- HPC: Heterotrophic Plate Count
- MDWL: Municipal Drinking Water Licence
- mg/L: milligrams per litre
- mL: millilitre
- N/A: Not Applicable
- PTTW: Permit to Take Water
- ug/L: micrograms per litre
- MPN: Most Probable Number
- P/A: Present/Absent

DRINKING WATER SYSTEM NUMBER	DRINKING WATER SYSTEM NAME	DRINKING WATER SYSTEM OWNER	DRINKING WATER SYSTEM CATEGORY	PERIOD BEING REPORTED
250001830	Lynden Drinking Water System FDL03	City of Hamilton	Large Municipal Residential	January 1, 2022 to December 31, 2022



PROVISION OF DRINKING WATER TO OTHER MUNICIPALITIES

The following is a list of municipal drinking water systems which receive drinking water from the Lynden System:

DRINKING WATER SYSTEM NAME	DRINKING WATER SYSTEM NUMBER
None	N/A



A copy of this annual report is provided to all Drinking Water System owners that are connected to the system and to whom we provide drinking water.



Our customers are notified through the local newspaper that the annual report is available online free of charge at www.hamilton.ca/waterquality. A copy of the report can also be requested by contacting (905) 546-2489 or water@hamilton.ca.

WATER TREATMENT CHEMICALS USED DURING THIS REPORTING PERIOD

- Sodium Hypochlorite
 - Carbon Dioxide
-

BREAKDOWN OF SIGNIFICANT MONETARY EXPENSES

There were no significant expenses incurred for installing, repairing and replacing required equipment in 2022. There were no significant projects initiated or expenses to highlight for the Lynden Drinking Water System in 2022.

ADVERSE TEST RESULTS AND REPORTABLE INCIDENTS

The following table outlines the notices submitted in accordance with subsection 18(1) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to the Ministry of Environment, Conservation and Parks (MECP) Spills Action Centre. In August 2021, a long-standing Drinking Water Advisory (DWA) for Lead was lifted by Public Health. Corrective action was carried out and the safety of the drinking water supply was verified to the satisfaction of the Medical Officer of Health for the City of Hamilton.

NOTIFICATION DATE (Y-M-D)	LOCATION OF ADVERSE	ADVERSE WATER QUALITY INCIDENT	RESOLUTION
<p>We are pleased to announce that there were no Adverse Water Quality Incidents for the period of January 1, 2022 to December 31, 2022</p>			

MECP INSPECTION FINDINGS AND SELF-DECLARED NON-COMPLIANCES

Please find below the summary of findings that were either issued during an MECP inspection or self-declared during the 2022 calendar year.

The 2021-2022 inspection was completed in March 2022 and there were no findings of non-compliance.

The 2022-2023 inspection commenced in December 2022 and as of December 31, 2022, the Drinking Water Inspection Report and Inspection Summary Rating Record remained pending.

There were no self-declared non-compliances reported for the Lynden DWS in 2022.

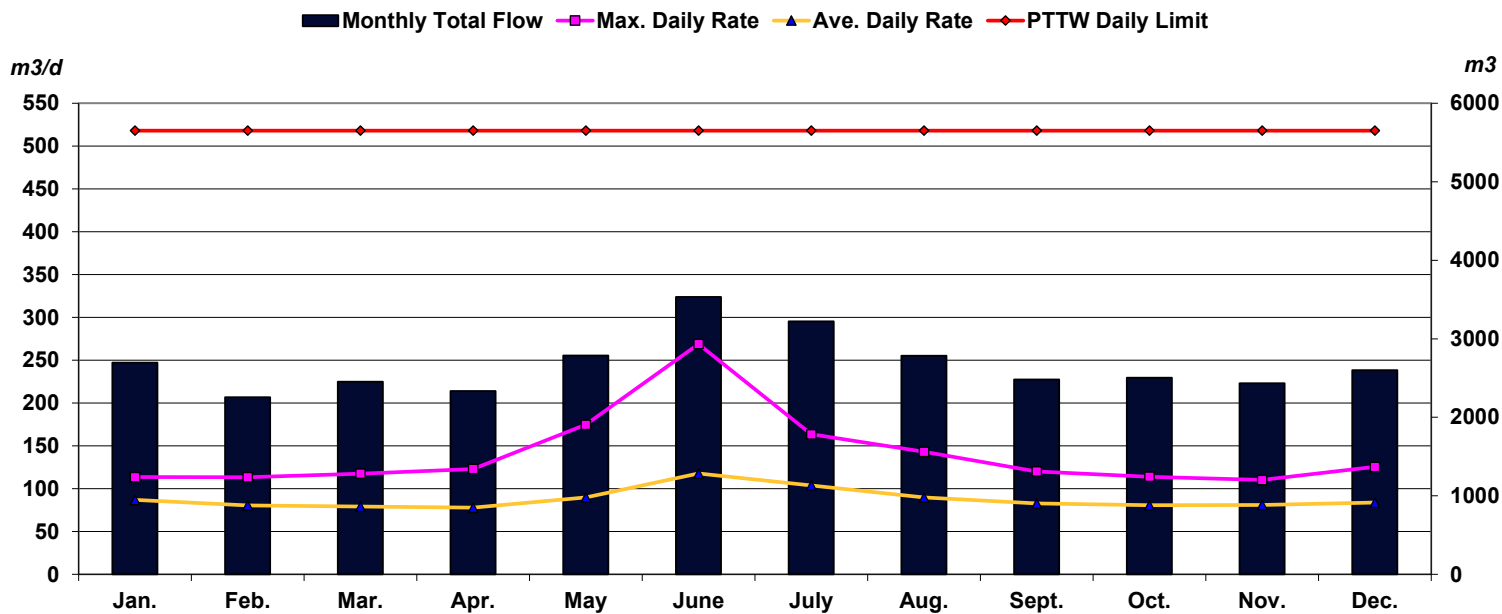
TABLE 6-1: LYNDEN WELL (FDL03) - 2022 MONTHLY PRODUCTION (SUMMARY)

FDL03	UNITS	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Monthly Total Flow	m ³	2,696	2,257	2,454	2,336	2,786	3,534	3,222	2,783	2,481	2,503	2,433	2,600
Average Daily Rate	m ³ /d	87	81	79	78	90	118	104	90	83	81	81	84
Maximum Daily Rate	m ³ /d	114	113	118	123	175	269	164	143	120	114	110	126
PTTW Daily Rated Capacity	m ³ /d	518	518	518	518	518	518	518	518	518	518	518	518



MAINTAINED COMPLIANCE

FIGURE 6-1: LYNDEN WELL (FDL03) - 2022 MONTHLY PRODUCTION (SUMMARY)



WATER QUALITY DATA

MICROBIOLOGICAL TESTING REQUIRED BY REGULATION 170/03, DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	NUMBER OF SAMPLES	RESULT VALUE RANGE	UNIT OF MEASURE
LYNDEN WELL FDL03 - RAW				
E.COLI	2022-01-05 to 2022-12-28	52	0	MPN/100mL
TOTAL COLIFORM	2022-01-05 to 2022-12-28	52	0	MPN/100mL
LYNDEN WELL FDL03 - TREATED				
E.COLI	2022-01-05 to 2022-12-28	52	ALL ABSENT	P/A/100mL
HPC	2022-01-05 to 2022-12-28	52	0 to 3	CFU/1mL
TOTAL COLIFORM	2022-01-05 to 2022-12-28	52	ALL ABSENT	P/A/100mL
DISTRIBUTION				
E.COLI	2022-01-05 to 2022-12-28	151	ALL ABSENT	P/A/100mL
HPC	2022-01-05 to 2022-12-28	151	0 to 6	CFU/1mL
TOTAL COLIFORM	2022-01-05 to 2022-12-28	151	ALL ABSENT	P/A/100mL

OPERATIONAL TESTING DONE UNDER SCHEDULE 7, 8 OR 9 OF REGULATION 170/03 DURING THE PERIOD COVERED BY THIS ANNUAL REPORT.

NOTE: If results are obtained from continuous monitors, then 8760 is reported as the number of samples.

PARAMETER - SAMPLE TYPE	NUMBER OF SAMPLES	RESULT VALUE RANGE	UNIT OF MEASURE
TURBIDITY - RAW - FDL03	52	0.17 – 1.26	NTU
FREE CHLORINE - TREATED - FDL03	8760	0.78 – 3.71	mg/L
FREE CHLORINE - DISTRIBUTION	364	0.30 – 2.73	mg/L

SUMMARY OF ADDITIONAL TESTING AND SAMPLING CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENT OF A LICENCE, APPROVAL, ORDER OR OTHER LEGAL INSTRUMENT.

PARAMETER - SAMPLE TYPE	NUMBER OF SAMPLES	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE
N/A	-	-	-	-

SUMMARY OF INORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
LYNDEN WELL FDL03 - TREATED				
ANTIMONY	2022-04-26 to 2022-10-19	<0.0001	mg/L	0
ARSENIC	2022-04-26 to 2022-10-19	0.0004 to 0.0005	mg/L	0
BARIUM	2022-01-26 to 2022-10-19	0.268 to 0.308	mg/L	0
BORON	2022-04-26 to 2022-10-19	0.462 to 0.474	mg/L	0
CADMIUM	2022-04-26 to 2022-10-19	<0.0001	mg/L	0
CHROMIUM	2022-04-26 to 2022-10-19	0.0001	mg/L	0
FLUORIDE	2022-04-26 to 2022-10-19	0.69 to 0.70	mg/L	0
MERCURY	2022-04-26 to 2022-10-19	<0.05	ug/L	0
NITRATE AS N	2022-01-26 to 2022-10-19	<0.02	mg/L	0
NITRITE AS N	2022-01-26 to 2022-10-19	<0.01	mg/L	0
SELENIUM	2022-04-26 to 2022-10-19	<0.0001	mg/L	0
SODIUM	2022-04-26 to 2022-10-19	53.3 to 59.6	mg/L	0
URANIUM	2022-04-26 to 2022-10-19	0.022 to 0.026	ug/L	0

SUMMARY OF LEAD TESTING UNDER SCHEDULE 15.1 DURING THIS REPORTING PERIOD.

LOCATION TYPE	POINTS SAMPLED	LEAD SAMPLES TAKEN	pH & ALKALINITY SAMPLES TAKEN	pH RESULTS pH UNITS	ALKALINITY RESULTS mg/L	LEAD RESULTS mg/L	LEAD AWQI	LEAD EXCEEDANCES
PLUMBING-NR	1	2	1	8.65	N/A	0.0003 to 0.0010	N/A	0
PLUMBING-R	5	10	5	8.54 to 8.73	N/A	<0.0001 to 0.0002	N/A	0
DISTRIBUTION	2	2	2	8.61 to 8.70	107	0.0002 to 0.0004	0	N/A

NR - Non Residential R- Residential

SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
LYNDEN WELL FDL03 - TREATED				
1,1-DICHLOROETHYLENE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
1,2-DICHLOROBENZENE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
1,2-DICHLOROETHANE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
1,4-DICHLOROBENZENE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
2,3,4,6-TETRACHLOROPHENOL	2022-04-26	<0.20	ug/L	0
2,4,6-TRICHLOROPHENOL	2022-04-26	<0.25	ug/L	0
2,4-DICHLOROPHENOXYACETIC ACID	2022-04-26	<0.19	ug/L	0
2,4-DICHLOROPHENOL	2022-04-26	<0.15	ug/L	0
ALACHLOR	2022-04-26	<0.02	ug/L	0
ATRAZINE + DESETHYL-ATRAZINE	2022-04-26	<0.01	ug/L	0
AZINPHOS-METHYL	2022-04-26	<0.05	ug/L	0
BENZENE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
BENZO[A]PYRENE	2022-04-26	<0.004	ug/L	0
BROMOXYNIL	2022-04-26	<0.33	ug/L	0
CARBARYL	2022-04-26	<0.05	ug/L	0
CARBOFURAN	2022-04-26	<0.01	ug/L	0
CARBON TETRACHLORIDE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
CHLOROBENZENE	2022-04-26 to 2022-10-19	<0.3	ug/L	0
CHLORPYRIFOS (DURSBAN)	2022-04-26	<0.02	ug/L	0
DIAZINON	2022-04-26	<0.02	ug/L	0
DICAMBA	2022-04-26	<0.20	ug/L	0
DICHLOROMETHANE	2022-04-26 to 2022-10-19	<0.5	ug/L	0
DICLOFOP-METHYL	2022-04-26	<0.40	ug/L	0
DIMETHOATE	2022-04-26	<0.06	ug/L	0
DIQUAT	2022-04-26	<1	ug/L	0
DIURON	2022-04-26	<0.03	ug/L	0
ETHYLBENZENE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
GLYPHOSATE	2022-04-26	<1	ug/L	0
MALATHION	2022-04-26	<0.02	ug/L	0

...continued on next page

SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

PARAMETER	SAMPLE DATE	RESULT VALUE RANGE	UNIT OF MEASURE	NO. OF AWQI
LYNDEN WELL FDL03 - TREATED				
MCPA (2-METHYL-4-CHLORO-PHENOXYACETIC ACID)	2022-04-26	<0.00012	mg/L	0
METOLACHLOR	2022-04-26	<0.01	ug/L	0
METRIBUZIN (SENCOR)	2022-04-26	<0.02	ug/L	0
PARAQUAT	2022-04-26	<1	ug/L	0
PCBS TOTAL	2022-04-26	<0.04	ug/L	0
PENTACHLOROPHENOL	2022-04-26	<0.15	ug/L	0
PHORATE	2022-04-26	<0.01	ug/L	0
PICLORAM	2022-04-26	<1	ug/L	0
PROMETRYNE	2022-04-26	<0.03	ug/L	0
SIMAZINE	2022-04-26	<0.01	ug/L	0
TERBUFOS	2022-04-26	<0.01	ug/L	0
TETRACHLOROETHYLENE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
TOLUENE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
TRIALATE	2022-04-26	<0.01	ug/L	0
TRICHLOROETHYLENE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
TRIFLURALIN	2022-04-26	<0.02	ug/L	0
VINYL CHLORIDE	2022-04-26 to 2022-10-19	<0.2	ug/L	0
XYLENE	2022-04-26 to 2022-10-19	<0.5 to 0.9	ug/L	0
DISTRIBUTION				
TOTAL TRIHALOMETHANES*	Running annual average for the last four quarters	54.8	ug/L	0
HALOACETIC ACIDS*	Running annual average for the last four quarters	6.7	ug/L	0

* The Maximum Acceptable Concentration for Trihalomethanes and Haloacetic Acids in the distribution system is based on a running average of the results from all sampling events in the past four quarters. This running average can be found in the result value column.

PARAMETERS EXCEEDING PRESCRIBED HALF-STANDARD

There were no Schedule 23 or 24 parameters that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards (O.Reg. 169/03).



2022

CITY OF HAMILTON'S DRINKING WATER SYSTEMS
DWQMS SUMMARY REPORT

DRINKING WATER QUALITY MANAGEMENT SYSTEM POLICY



The City of Hamilton owns, maintains and operates various drinking water systems. The City is committed to:

S

Safe, high quality, consistent supply of drinking water

A

Always improving the Drinking Water Quality Management System

F

Following and complying with applicable legislation

E

Effective and open communication with the community concerning matters of drinking water quality



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1 INTRODUCTION

1.1 Purpose

This Drinking Water Quality Management System (DWQMS) Summary Report is being submitted to the Owner, (i.e., Mayor and Council) on behalf of Top Management (i.e., General Manager, Public Works and Director, Hamilton Water) of the City’s five drinking water systems (DWS), as shown below.

Drinking Water System
Hamilton DWS (Woodward and Fifty Road Subsystems)
Freelton DWS
Greenville DWS
Carlisle DWS
Lynden DWS

The purpose of this DWQMS Summary Report is to keep the Owner of the City’s DWSs informed about the ongoing performance of the accredited DWQMS, including major milestones achieved in 2022. This report also assists the Owner in meeting their Standard of Care responsibilities under the Safe Drinking Water Act (SDWA).

This DWQMS Summary Report is a key communication tool from Top Management to the Owner as referenced in Element 12 Communications of the DWQMS Standard. This Report also meets the communication requirements of Element 14 Review and Provision of Infrastructure and Element 20 Management Review of the DWQMS Standard as identified in Sections 3 and 5 of this report, respectively.

1.2 Scope

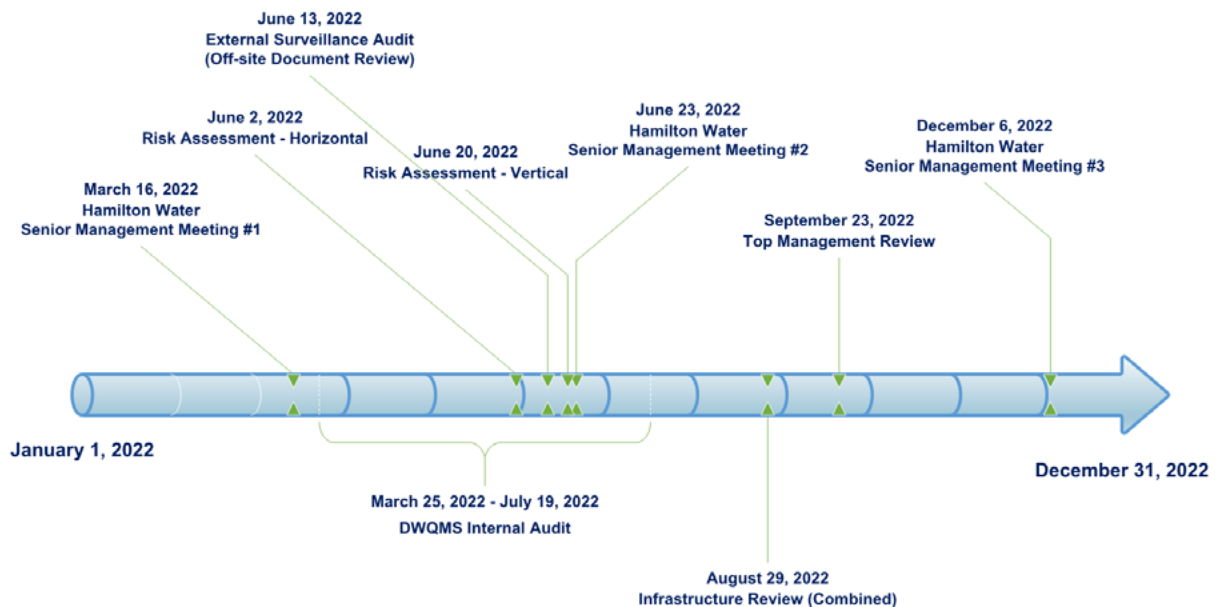
The DWQMS Standard requires that the Operating Authority report on certain aspects of the DWQMS to the Owner, specifically the outcomes of Element 14 Review and Provision of Infrastructure and Element 20 Management Review. This report fulfills the communication requirements of these elements and exceeds the Standard’s requirements by providing information on external and internal DWQMS Audits, Risk Assessment and other major milestones of the DWQMS in 2022.

1.3 Overview of Key Milestones

DWQMS milestones related to the accreditation of Hamilton Water, the City's Operating Authority are:

- **November 2008** – DWQMS Operational Plan endorsed by Owners,
- **April 2009** – Operating Authority achieves Partial Scope; Entire DWQMS accreditation,
- **June 2009** – Operating Authority receives Municipal Drinking Water Licences and Drinking Water Works Permits for all five City DWs,
- **February 2011** – On-site Verification Audit by Canadian General Standards Board (CGSB),
- **July 2011** – Operating Authority achieves Full Scope; Entire DWQMS accreditation,
- **2012** – Identified QMI - SAI Global as the new Accreditation Body,
- **2012** – Standard of Care Training for Mayor and Council,
- **May 2013** – External Systems Audit (off-site document review),
- **June 2013** – Operating Authority receives reaccreditation,
- **May 2014** – External Systems Audit (off-site document review),
- **June 2014** – Received renewed Municipal Drinking Water System Licences for each of the City's five DWs,
- **First quarter 2015** – re-endorsement of the DWQMS Operational Plan by Owners,
- **March (off-site document review) and April (on-site audit) 2015** – re-accreditation of the DWQMS by external registrar, SAI-Global,
- **May 2016** – External Systems Audit (off-site document review),
- **May 2016** – Standard of Care Training for Acting General Manager and new Councillor,
- **May 2017** – External Systems Audit (off-site document review),
- **April (off-site document review) and May (on-site audit) 2018** – re-accreditation of the DWQMS by external registrar, SAI-Global,
- **February to April 2019** - Standard of Care Training for new Councillors and Legal Counsel,
- **May 2019** – Received renewed Municipal Drinking Water System Licences and Permits for each of the City's five DWs,
- **May 2019** – re-endorsement of the DWQMS Operational Plan by Owners,
- **May 2019** – External Systems Audit (off-site document review).
- **April 2020** – External Systems Audit (off-site document review).
- **April 2021 (off-site document review) and May 2021 (on-site virtual)** – re-accreditation of the DWQMS by external registrar, SAI-Global.
- **June 2022** – External Systems Audit (off-site document review)

Figure 1: Project Pipeline - 2022 (key DWQMS milestones which occurred in 2022)



1.4 DWQMS Operational Summary

Figure 2 illustrates the Plan, Do, Check and Act elements of the DWQMS Standard.

The following sections of this report include an overview of milestones related to the following elements of the DWQMS:

- Section 2 - Element 8 Risk Assessment Outcomes
- Section 3 - Element 14 Review and Provision of Infrastructure
- Section 4 - Element 19 Internal Audits
- Section 5 - Element 20 Management Review

1.5 DWS Licences & Permits Approvals

Due to COVID-19 and the requirement for physical distancing, the Municipal Drinking Water Licences (MDWL) for each of our Drinking Water Systems were amended to allow regulatory relief from lead sampling requirements as per O. Reg. 170/03, Schedule 15.1. Specifically, the City of Hamilton was granted relief from the requirement to collect Plumbing samples from December 15th, 2021 to April 15th, 2022.

In addition, there were 12 approvals for extensions to the distribution system and 7 approvals for like for like infrastructure replacements.

Figure 2: DWQMS Standard Elements



2 RISK ASSESSMENT

2.1 Overview

The DWQMS Standard requires that a Risk Assessment be conducted in its entirety every three years and reviewed on an annual basis, to verify the currency and validity of the information. In 2022, there was an interim review of the Risk Assessment. There will be a full review in 2023 in accordance with the Standard.

Staff from across Hamilton Water and select staff from Engineering Services collaborated on updating the existing information considering the following key questions:

- Are identified control measures still valid and if so, are they still in place?
- Have additional controls been implemented?
- How has equipment condition, raw water quality, operational controls etc. changed?
- Are any modified "Risk Factors" now considered to be Critical Control Risks?

Similar to previous years, there were no significant risks identified through the 2022 process, which were not already captured through an existing Hamilton Water initiative or project.

2.2 Key Updates

As part of the Risk Assessment, process changes, including capital upgrades in the DWSs, are considered and the associated risk scores (i.e. likelihood of occurrence) are updated as needed. The following includes a list of materials that were considered in the 2022 Risk Assessment:

- Capital Delivery - Water Projects Recently completed and upcoming
- 2021 DWQMS Infrastructure Review outcomes
- Outcomes updated from previous DWQMS Risk Assessment
- Review of Adverse Water Quality Incident Notifications
- BCOS Database Quality Non-conformance Module (audits and inspections)
- Items from recent DWQMS Top Management Review Meeting

Hamilton Water staff continue to work to integrate the DWQMS Risk Assessment with the City's Asset Management risk assessment in accordance with Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure that came into effect on January 1, 2018. The DWQMS Risk Assessment and Infrastructure Review will be updated to incorporate any new related processes or requirements.

3 REVIEW AND PROVISION OF INFRASTRUCTURE

3.1 Purpose

The Operating Authority must ensure and verify, on an annual basis, the adequacy of water infrastructure. In order to satisfy the requirements of the DWQMS Standard, the Operating Authority conducted a formal review of its vertical (water treatment, storage and pumping) and horizontal (watermains) infrastructure. The scope of the review also considered the operation, maintenance and replacement of existing infrastructure assets as well as new infrastructure planned for the immediate and long-term future. An Infrastructure Review (Combined) meeting was held with the Management Team of Hamilton Water to discuss the outcomes of both the horizontal and vertical infrastructure reviews. This DWQMS Summary Report (2022) includes a brief summary of the results of the DWQMS Infrastructure Review.

3.2 Process

Teams were assembled from across relevant sections of Hamilton Water, Engineering Services and Planning and Economic Development (P&ED) to conduct the review of water infrastructure. A Coordination Meeting was held on August 29, 2022 to discuss vertical and horizontal infrastructure.

The teams collected and examined input data related to various asset management, maintenance and capital programs. A summary of the type of "indicator" data examined is provided below:

3.3 Overview of Results

The outcomes and recommendations from the Infrastructure Review Meeting were documented in meeting minutes for the 2022 review. Attendees at the Infrastructure Review meeting utilized the outcomes from the meeting as input to capital planning and budget preparation. Hamilton Water discussed the 2022 Infrastructure Review at the Top Management Review meeting on September 23, 2022.

The 2022 Infrastructure Review process concluded that our vertical and horizontal infrastructure is generally found to be adequate and available when needed.

Table 1: Infrastructure Review Data

Infrastructure Type	Input Data
Horizontal Infrastructure – Maintenance	Watermain Repairs Hydrant and Valve Inspections Valve and Meter Replacement Substandard Service Replacement Preventative Maintenance Emergency Repairs Customer Complaints
Horizontal Infrastructure - Large Capital	Replaced, Rehabilitated and New Watermains Condition Assessments Capital Upgrades Master Plan Schedule Corrosion Control Program and Corrosion Control Building Asset Management – Critical Watermain Age Profiles and Inspections
Vertical Infrastructure – Maintenance	Preventative Maintenance Program Status Breakdowns and Emergency Repairs Capital Upgrades - Coordination and Scheduling Life Cycle Best Practices Critical Projects
Vertical Infrastructure – Large Capital	Condition Assessments Master Plan Update Source Water Protection Projects, Well Studies and Investigations Water Capital Projects Lists

3.3 Overview of Results (Cont'd)

It was also found, however, that we are not keeping up with required renewals and replacements of our aging infrastructure. This results in an increased demand on maintenance staff and resources as assets remain in operation beyond their intended life cycle.

4 DWQMS AUDITS

The DWQMS accreditation process requires both 3rd party accreditation audits and annual internal audits by the Operating Authority. The cycle of external audits includes an on-site verification audit every 3 years and an off-site documentation review annually.

4.1 External DWQMS Audits

Hamilton Water utilizes the services of QMI-SAI Global as the accreditation body for the DWQMS. In 2022, QMI-SAI Global conducted an off-site documentation review. There were no non-conformances and one opportunity for improvement (implemented).

4.2 Internal DWQMS Audits

The Operating Authority must conduct internal audits to evaluate the conformity of the DWQMS with the requirements of the DWQMS Standard and its procedures, at least annually.

The internal DWQMS audit conducted in 2022 covered all the 21 Elements of DWQMS and included the following process audits

- Water Treatment Processes - Chlorine (Woodward DWS)
- Watermain Approvals
- Water Facilities' Approvals
- Hydrant Adapter Testing
- Calibration of Regulatory Devices
- Watermain Construction Transfer of Assets
- Document and Records Control (Element 5)
- Drinking Water Systems (Element 6)
- Communications (Element 12)
- Essential Supplies and Services (Element 13)

The results of the annual DWQMS Internal Audits conducted in 2022 demonstrated that the City of Hamilton's DWQMS is a mature system and that opportunities to improve the DWQMS continue to be identified to ensure that the system is relevant and appropriate. The Hamilton Water DWQMS contains the required procedures and records to illustrate the establishment and continual improvement of the management system.

The 2022 DWQMS internal audits took place during the COVID-19 pandemic and, as such, were completed virtually.

With the timely completion of the corrective actions issued as a result of this audit, the overall conformance to V2.0 of the DWQMS Standard and the City of Hamilton's DWQMS is suitable, the audit process is adequate, and the implementation and maintenance effective.

4.3 2023 DWQMS Audit Plan

The Compliance Support Group of the Compliance & Regulations Section is developing an Audit Plan for the 2023 DWQMS internal audits. The audit is to take place between March and July 2023. The plan will include a number of process and element audits. The Audit Plan will be reviewed by the Hamilton Water Senior Management Team and approved by the Systems Management Representative prior to implementation.



5 MANAGEMENT REVIEW

The "Plan" component of Element 20 Management Review of the DWQMS Standard requires a documented procedure to describe how the Operating Authority reviews the suitability, adequacy and effectiveness of the DWQMS. The "Check" component of the element requires that Top Management participate in a management review at least once per year to review the DWQMS and consider recommendations for continual improvement. Required outputs of the meeting are:

- Consideration of the results of the management review and identifying deficiencies and action items to address deficiencies,
- Provide a record of decisions and actions items including responsibilities and timelines,
- Report the results of the management review to the Owner.

In 2022, the DWQMS Top Management Review was held on September 23, 2022. Attendees included Top Management (General Manager, Public Works and Director, Hamilton Water), Directors, Section Managers, Overall Responsible Operators (OROs) for treatment and distribution, the System Management Representative (i.e., Manager, Compliance and Regulations) and staff from the Compliance Support Group.

Overall, Top Management, Directors and Section Managers concluded that the DWQMS is suitable, adequate and effective.

Action items were assigned following the 2022 DWQMS Top Management Review that will result in operational improvements, improved communication and better coordination between Hamilton Water and other City departments.



5.1 Financial Plan

The need to prepare a Water Infrastructure Financial Plan is, in part, a regulatory compliance issue specific to the water licensing requirements defined within the DWQMS and more specifically detailed under Regulation 453/07 - Financial Plans made under the Safe Drinking Water Act, 2002. The required Financial Plan for water systems must address a minimum six-year time-frame and be approved by council prior to submission to the Province of Ontario. The resulting plans must also be made freely available to the general public. Water Infrastructure Financial Plans for Hamilton have typically been developed to cover a ten-year period of time in order to reflect consistency with the current Water, Wastewater and Stormwater Rate budget process.

The first Financial Plan was created in 2010 and revised in 2014. The latest revision was approved by Council on July 12, 2018. This most current plan was sent to the Ministry of Municipal Affairs and Housing on November 22, 2018. The next revision of the Financial Plan is underway and will be submitted with the Licence renewal applications in Fall 2023.

Table 2: Major Next Steps

Month of 2023	Scheduled DWQMS Milestones
January to July	Investigate and correct internal audit findings from the 2022 DWQMS Internal Audits
February/March	Annual O.Reg. 170 Schedule 22 Report and DWQMS Summary Report to Council Standard of Care Training
March to July	DWQMS Internal Audits
March	Hamilton Water - Senior Management Team Meeting #1 Council's signature of the Operational Plan Summary Report
June	DWQMS Risk Assessment Meetings
June	External Systems Audit (off-site document Review)
June	Hamilton Water - Senior Management Team Meeting # 2
August	Infrastructure Review Meeting
September	DWQMS Top Management Review
December	Hamilton Water - Senior Management Team Meeting # 3

6 CONCLUSIONS

The outcomes from the internal DWQMS audit and the Management Review concluded that the DWQMS is adequate, suitable and effective and conforms to the requirements of the DWQMS Standard. Corrective action plans from the audit and action items from the Management Review will be implemented to ensure continual improvement of the DWQMS.

7 NEXT STEPS – TIMELINE

The management system requires ongoing commitment by staff and management. Maintenance and improvement of the system continues to be a high priority of the Operating Authority. Major next steps related to the maintenance of the DWQMS in 2023 are detailed in Table 2:



INFORMATION REPORT

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	March 20, 2023
SUBJECT/REPORT NO:	Annual Watermain Break Report - 2022 (City Wide) (PW23015)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Dave Alberton (905) 546-2424 Ext. 1090
SUBMITTED BY:	Shane McCauley Director, Water & Wastewater Operations Public Works Department
SIGNATURE:	

COUNCIL DIRECTION

On January 23, 2019, Council directed staff to provide the Public Works Committee with an annual report on watermain breaks, the total number, cause and cost of each break, as well as the distance of watermains relined with total cost and overall report on sustainability.

INFORMATION

Total Number, Cause and Cost of Watermain Breaks

In 2022, Hamilton Water experienced a total of 227 watermain breaks resulting in a total repair cost of approximately \$2.28M. The total repair cost is the sum of repair costs valued at \$1.32M (including excavation, repair, and temporary restoration), and permanent restoration costs valued at approximately \$0.96M. Approximately 33% of the watermain breaks were caused by corrosion, 60% were caused by ground movement, 4% were the result of displaced pipe joints, and 3% were caused and repaired by a contractor. A summary of watermain breaks by cost and mode of failure is provided in Appendix "A" to Report PW23015. A detailed report of the cost and mode of failure of each watermain break is provided in Appendix "B" to Report PW23015.

On average, from 2012 to 2022, the City of Hamilton (City) experienced approximately 301 watermain breaks per year. However, this average is affected by significantly

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**SUBJECT: Annual Watermain Break Report - 2022 (PW23015) (City Wide) –
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higher numbers of watermain breaks in 2014 (440) and 2015 (433). The increased number of watermain breaks in 2014 and 2015 were the result of abnormally low winter temperatures caused by polar vortex events.

A summary of total watermain breaks by year for the previous 10 years is provided in Appendix “C” to Report PW23015.

Distance and Cost of the Watermain Rehabilitation and Replacement Program

The Engineering Services Division monitors and tracks the length and cost of watermains that are replaced and rehabilitated (relined). Since 2012, Engineering Services has lined 56.3km of watermain at cost of \$59.6M. In 2022 the length of watermains rehabilitated (relined) was 3km at an approximate cost of \$6.1M. Since 2012, Engineering Services has replaced 65.4km of watermain at cost of \$99.31M. The length of watermains replaced was 0.9km and the cost of watermains replaced was approximately \$2.11M. A 10-year summary of watermain replacements and rehabilitation is provided in Appendix “D” to Report PW23015 and the same information is tabulated in Table 1 below.

Length and Cost of Watermain Replacement and Rehabilitation

Year	Rehabilitated		Replaced	
	Pipe (Km)	\$ (Millions)	Pipe (Km)	\$ (Millions)
2012	3.3	\$2.7	9.1	\$17.6
2013	3.9	\$4.3	6.3	\$11.5
2014	6.4	\$5.4	10.5	\$16.1
2015	6.3	\$5.5	9.0	\$10.5
2016	4.2	\$5.5	5.0	\$7.0
2017	7.3	\$6.5	6.6	\$8.7
2018	5.3	\$4.6	5.2	\$6.0
2019	6.0	\$5.5	3.7	\$5.0
2020	5.6	\$6.2	5.1	\$9.5
2021	5.0	\$7.3	4.0	\$5.3
2022	3.0	\$6.1	0.9	\$2.11
Total	56.3	\$59.6	65.4	\$99.31
% of Overall Inventory	5.3%	-	1.4%	-

From 2023 through 2032, the City plans to spend \$193.6M on watermain replacement and rehabilitation projects. A summary of the projects that have been approved in principle as part of the 10-year Water, Wastewater and Storm Rate Budget is provided in Appendix “E” to Report PW23015.

**SUBJECT: Annual Watermain Break Report - 2022 (PW23015) (City Wide) –
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The Hamilton Water Division, Water Distribution & Wastewater Collection Section is responsible for maintenance and repairs of the City's watermains throughout the asset lifecycle. This work adheres to the strict legislative requirements surrounding potable water in municipal distribution networks, issued by the Ministry of the Environment, Conservation, and Parks (MECP).

The primary objective of the City's asset management, maintenance, and repair programs for watermains are to ensure the uninterrupted supply of high-quality potable water to the City's residents and industrial, commercial and institutional customers. It is very important to note that the City's water distribution systems are designed with a significant amount of redundancy, such that sections of watermain can be isolated for maintenance and repairs to be completed with minimal to no disruption to the supply of potable water to our customers.

Transmission mains are large watermains (450mm and larger) which allow for large volumes of water to be transported across the City to fill potable water storage facilities (reservoirs and towers), to supply water pumping stations, and to supply local watermains. Transmission mains carry the largest risk for the City in terms of ensuring that the supply of potable water remains uninterrupted. Due to the criticality of transmission mains the Infrastructure Renewal Section within the Engineering Services Division completes periodic condition assessments.

Local watermains, or distribution mains, are smaller (400mm or less), and they supply potable water to the serviced properties within the City. As mentioned previously, the distribution network for local watermains includes a significant amount of redundancy, such that sections of watermain can be isolated for maintenance and repairs to be completed with minimal to no disruption to the supply of potable water to our customers.

The City has 187km of transmission watermains and 1,946km of distribution watermains for a total of 2,133km of watermains.

A summary of the City's transmission and distribution watermain inventory is provided in Appendix "F" to Report PW23015 and the same information is tabulated in Table 2 below.

Transmission and Distribution Watermain Inventory by Age

	Transmission Watermains	Distribution Watermains
Installed prior to 1950	66km (35%)	357 km (18%)
Installed between 1951 and 1980	70km (37%)	550km (28%)
Installed after 1981	51km (28%)	1039km (54%)

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Non-Revenue Water

In 2019, Hamilton Water implemented a proactive water distribution asset leak detection program to reduce non-revenue water. Drinking water that has been produced by the City that is lost before it reaches the customer is considered non-revenue water. Non-revenue water can occur through physical losses such as watermain breaks, from unbilled but authorized consumption such as watermain flushing and firefighting; however, can also come from water meter inaccuracies, data handling errors, illegal connections and water theft. A significant contributor to the City's non-revenue water is leaking and broken watermains. Ideally the total volume of water produced by each Municipality would be equal to the volume of water that reaches and is accurately billed to the consumers, but this is never the case in any Municipality. The financial consequences of non-revenue water are multiple and include lost revenue from unbilled consumption, theft, and increased operational costs to produce and distribute drinking water.

Currently, non-revenue water in the City represents about 23.8% of the water produced or imported by the City, which is significantly higher than the industry standard of 15%.

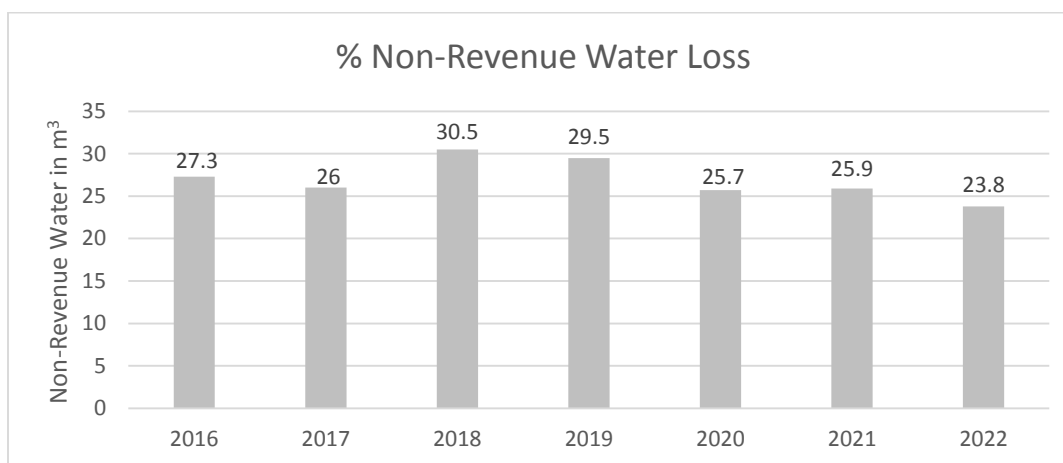


Figure 1 – 7 Year Average of Non-Revenue Water Loss

Due to Hamilton's unique geography and often rocky, porous ground there are many watermain leaks and breaks that do not surface and have the potential to remain undetected for years. These hidden leaks account for a large amount of non-revenue water and can be far more damaging to the pipe network, with erosion of pipe bedding leading to major pipe breaks.

In 2022, the Proactive Leak Detection Program found 108 leaks; 73 leaks were found on City infrastructure and 35 leaks on private water services. Of the 73 City infrastructure leaks found, 27 (12%) of the leaks found were watermain breaks that had

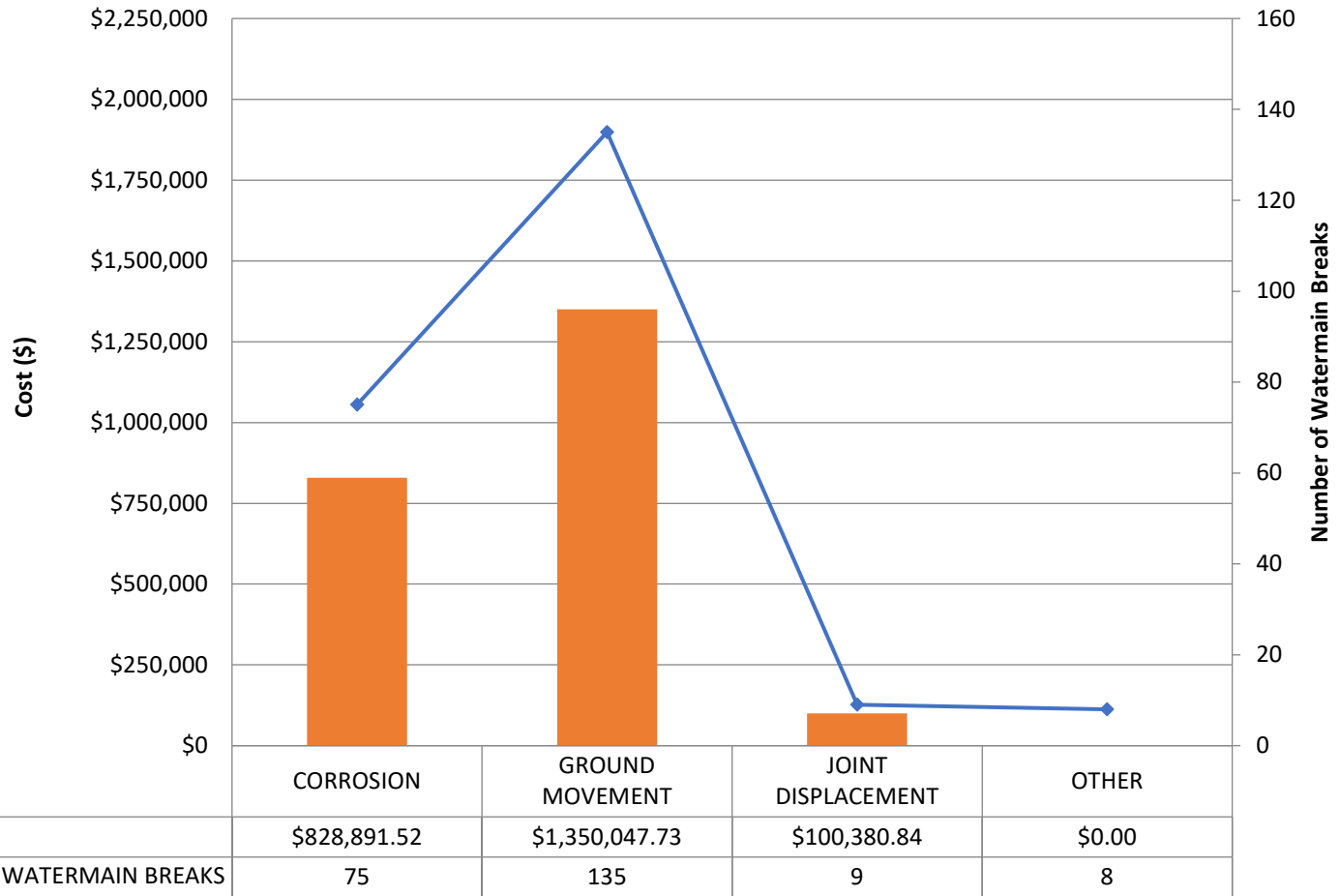
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not surfaced. As a result of the work being done under the Proactive Leak Detection Program the City's non-revenue water continues to decrease; reducing costs and risk.

APPENDICES AND SCHEDULES ATTACHED

- Appendix "A" to Report PW23015 – Summary of Watermain Breaks by Cost and Mode of Failure
- Appendix "B" to Report PW23015 – Detailed Watermain Break Mode of Failure and Cost Data
- Appendix "C" to Report PW23015 – Summary of Total Watermain Breaks by Year
- Appendix "D" to Report PW23015 – 10-Year Summary of Watermain Replacements and Rehabilitation
- Appendix "E" to Report PW23015 – Summary of Approved in Principle, Watermain Replacement and Rehabilitation Projects in 10 year Water, Wastewater and Storm Rate Budget
- Appendix "F" to Report PW23015 – Summary of the City's Transmission and Distribution Watermain Inventory by Age

Number and Cost of Watermain Breaks by Mode of Failure



Mode of Failure

2022 Detailed Watermain Break Cause and Cost Summary Data

Item #	Ward	Work Order	Mode of Failure	Address	Municipality	Completed	Total
1	WARD1	7070980	Ground Movement	NORTH OVAL	HAMILTON	30/01/2022	\$ 7,338.38
2	WARD1	7071182	Ground Movement	INCHBURY ST	HAMILTON	29/01/2022	\$ 9,159.38
3	WARD1	7071214	Ground Movement	FRANKLIN AVE	HAMILTON	31/01/2022	\$ 7,734.85
4	WARD1	7071303	Ground Movement	FREELAND CRT	HAMILTON	31/01/2022	\$ 18,719.03
5	WARD1	7079668	Ground Movement	BROADWAY AVE	HAMILTON	14/02/2022	\$ 4,811.99
6	WARD1	7081647	Ground Movement	STROUD RD	HAMILTON	16/02/2022	\$ 4,739.89
7	WARD1	7106214	Ground Movement	BROADWAY AVE	HAMILTON	04/04/2022	\$ 5,573.18
8	WARD1	7112519	Other	ABERDEEN AVE	HAMILTON	14/04/2022	\$ -
9	WARD1	7158014	Ground Movement	MAYFAIR CRES	HAMILTON	05/07/2022	\$ 6,756.86
10	WARD1	7183159	Ground Movement	SUSSEX ST	HAMILTON	21/08/2022	\$ 3,124.92
11	WARD1	7244714	Ground Movement	162 RIFLE RANGE RD	HAMILTON	12/12/2022	\$ 4,249.58
12	WARD1	7070364	Corrosion	ABERDEEN AVE	HAMILTON	27/01/2022	\$ 18,761.11
13	WARD1	7112215	Corrosion	ABERDEEN AVE	HAMILTON	15/04/2022	\$ 22,209.31
14	WARD1	7125768	Other	FRANKLIN AVE	HAMILTON	11/05/2022	\$ -
15	WARD1	7136397	Corrosion	CHARLTON AVE W	HAMILTON	31/05/2022	\$ 10,044.48
16	WARD1	7173451	Corrosion	ABERDEEN AVE	HAMILTON	04/08/2022	\$ 14,287.17
17	WARD1	7206256	Corrosion	CHATHAM ST	HAMILTON	07/10/2022	\$ 8,489.15
18	WARD1	7239573	Corrosion	246 DUKE ST	HAMILTON	29/11/2022	\$ 7,611.82
19	WARD1	7071224	Joint Displacement	PARADISE RD N	HAMILTON	30/01/2022	\$ 5,164.19
20	WARD1	7114905	Joint Displacement	ABERDEEN AVE	HAMILTON	24/04/2022	\$ 16,390.40
21	WARD1	7071228	Ground Movement	BOND ST N	HAMILTON	31/01/2022	\$ 8,892.97
22	WARD1	7074438	Ground Movement	CHARLTON AVE W	HAMILTON	04/02/2022	\$ 8,427.18
23	WARD1	7115438	Other	HOMEWOOD AVE	HAMILTON	22/04/2022	\$ -
24	WARD1	7228710	Other	PARKSIDE DR	HAMILTON	08/11/2022	\$ -
25	WARD1	7125500	Ground Movement	FRANKLIN AVE	HAMILTON	12/05/2022	\$ 12,552.93
26	WARD1	7069906	Ground Movement	34 NORWOOD RD	HAMILTON	27/01/2022	\$ 6,348.66
27	WARD1	7082644	Ground Movement	DORSET PL	HAMILTON	18/02/2022	\$ 23,132.91
28	WARD1	7083266	Ground Movement	KIPLING RD	HAMILTON	20/02/2022	\$ 8,827.77
29	WARD1	7086628	Ground Movement	DORSET PL	HAMILTON	25/02/2022	\$ 6,407.54
30	WARD1	7125764	Other	FRANKLIN AVE	HAMILTON	11/05/2022	\$ -
31	WARD2	7054075	Ground Movement	574 JAMES ST N	HAMILTON	04/01/2022	\$ 6,016.15
32	WARD2	7066084	Ground Movement	MAIN ST W	HAMILTON	20/01/2022	\$ 14,358.86
33	WARD2	7091584	Ground Movement	605 JAMES ST N	HAMILTON	08/03/2022	\$ 6,684.57
34	WARD2	7241578	Ground Movement	GLOUCESTER RD	HAMILTON	04/12/2022	\$ 8,985.17
35	WARD2	7245703	Ground Movement	BARTON ST W	HAMILTON	15/12/2022	\$ 14,191.43
36	WARD2	7073509	Corrosion	175 JOHN ST N	HAMILTON	03/02/2022	\$ 23,833.46
37	WARD2	7075551	Corrosion	LOUISA AVE	HAMILTON	05/02/2022	\$ 5,368.04
38	WARD2	7241565	Corrosion	CATHARINE ST N	HAMILTON	04/12/2022	\$ 12,897.53
39	WARD2	7244699	Corrosion	BAY ST S	HAMILTON	11/12/2022	\$ 10,180.27
40	WARD3	7075457	Ground Movement	85 KEITH ST	HAMILTON	04/02/2022	\$ 6,663.91
41	WARD3	7103121	Ground Movement	MCKINSTRY ST	HAMILTON	29/03/2022	\$ 13,875.82
42	WARD3	7128123	Ground Movement	GAGE AVE S	HAMILTON	17/05/2022	\$ 9,911.69
43	WARD3	7203788	Ground Movement	401 MAIN ST E	HAMILTON	02/10/2022	\$ 10,538.24
44	WARD3	7053753	Corrosion	ARTHUR AVE N	HAMILTON	06/01/2022	\$ 7,383.06
45	WARD3	7070220	Corrosion	BALSAM AVE N	HAMILTON	27/01/2022	\$ 6,873.83
46	WARD3	7123634	Corrosion	KING WILLIAM ST	HAMILTON	07/05/2022	\$ 9,912.60

2022 Detailed Watermain Break Cause and Cost Summary Data

Item #	Ward	Work Order	Mode of Failure	Address	Municipality	Completed	Total
47	WARD3	7228700	Corrosion	55 CEDAR AVE	HAMILTON	08/11/2022	\$ 1,774.63
48	WARD3	7243514	Corrosion	SHERMAN AVE S	HAMILTON	08/12/2022	\$ 12,862.43
49	WARD3	7179099	Joint Displacement	BIGGAR AVE	HAMILTON	15/08/2022	\$ 8,802.30
50	WARD3	7208167	Other	BURRIS ST	HAMILTON	11/10/2022	\$ -
51	WARD4	7056936	Ground Movement	700 WOODWARD AVE	HAMILTON	06/01/2022	\$ 9,279.60
52	WARD4	7058085	Ground Movement	BRAMPTON ST	HAMILTON	07/01/2022	\$ 11,214.17
53	WARD4	7058418	Ground Movement	CAMERON AVE S	HAMILTON	10/01/2022	\$ 15,569.10
54	WARD4	7064049	Ground Movement	562 TATE AVE	HAMILTON	15/01/2022	\$ 10,024.66
55	WARD4	7071207	Ground Movement	BEVAN CRT	HAMILTON	29/01/2022	\$ 5,843.82
56	WARD4	7088625	Ground Movement	WALTER AVE S	HAMILTON	03/03/2022	\$ 5,131.75
57	WARD4	7098382	Ground Movement	COCHRANE RD	HAMILTON	18/03/2022	\$ 8,796.38
58	WARD4	7101562	Ground Movement	BRIGHTON AVE	HAMILTON	25/03/2022	\$ 6,767.81
59	WARD4	7103839	Ground Movement	BURLINGTON ST E	HAMILTON	30/03/2022	\$ 10,715.43
60	WARD4	7146348	Ground Movement	NORMANDY RD	HAMILTON	10/06/2022	\$ 6,443.76
61	WARD4	7213281	Ground Movement	LEASIDE RD	HAMILTON	17/10/2022	\$ 7,469.37
62	WARD4	7228418	Other	BELAND CRT	HAMILTON	08/11/2022	\$ -
63	WARD4	7250346	Ground Movement	GARSDIE AVE S	HAMILTON	29/12/2022	\$ 8,100.33
64	WARD4	7067662	Corrosion	MALTA DR	HAMILTON	24/01/2022	\$ 5,271.28
65	WARD4	7075168	Corrosion	ROSEWOOD RD	HAMILTON	05/02/2022	\$ 7,907.46
66	WARD4	7173453	Corrosion	GLENCARRY AVE	HAMILTON	03/08/2022	\$ 5,164.25
67	WARD4	7192594	Corrosion	KNOX AVE	HAMILTON	08/09/2022	\$ 6,556.74
68	WARD4	7194723	Corrosion	CANNON ST E	HAMILTON	14/09/2022	\$ 18,266.94
69	WARD4	7067453	Joint Displacement	GRACE AVE	HAMILTON	22/01/2022	\$ 10,508.12
70	WARD4	7066085	Ground Movement	FAIRFIELD AVE	HAMILTON	20/01/2022	\$ 6,568.59
71	WARD4	7195600	Ground Movement	CANNON ST E	HAMILTON	14/09/2022	\$ 725.70
72	WARD4	7213185	Ground Movement	BELAND CRT	HAMILTON	16/10/2022	\$ 19,123.51
73	WARD4	7257451	Ground Movement	GLENCAIRN AVE	HAMILTON	22/12/2022	\$ 8,352.71
74	WARD4	7227857	Other	BELAND CRT	HAMILTON	07/11/2022	\$ -
75	WARD4	7213187	Ground Movement	1759 BARTON ST E	HAMILTON	16/10/2022	\$ 19,584.26
76	WARD4	7213416	Ground Movement	VANSITMART AVE	HAMILTON	17/10/2022	\$ 16,025.22
77	WARD5	7064753	Ground Movement	BARTON ST E	HAMILTON	18/01/2022	\$ 11,900.67
78	WARD5	7065336	Ground Movement	BARTON ST E	HAMILTON	19/01/2022	\$ 4,955.84
79	WARD5	7068966	Ground Movement	ELFORD CRES	HAMILTON	25/01/2022	\$ 7,594.94
80	WARD5	7070764	Ground Movement	BATTLEFIELD DR	STONE CREEK	28/01/2022	\$ 6,311.98
81	WARD5	7092051	Ground Movement	NASH RD N	HAMILTON	09/03/2022	\$ 7,019.60
82	WARD5	7236936	Ground Movement	VILLAGE GRN	STONE CREEK	23/11/2022	\$ 3,708.65
83	WARD5	7241576	Ground Movement	QUIGLEY RD	HAMILTON	04/12/2022	\$ 9,335.00
84	WARD5	7079603	Corrosion	KING ST E	HAMILTON	13/02/2022	\$ 68,091.28
85	WARD5	7108472	Corrosion	GARLAND PL	HAMILTON	07/04/2022	\$ 4,850.06
86	WARD5	7151048	Corrosion	NEIL AVE	STONE CREEK	19/06/2022	\$ 10,840.83
87	WARD5	7183143	Corrosion	543 GREENHILL AVE	HAMILTON	20/08/2022	\$ 13,463.45
88	WARD5	7202476	Corrosion	225 QUIGLEY RD	HAMILTON	29/09/2022	\$ 7,176.09
89	WARD5	7203170	Corrosion	KING ST E	HAMILTON	30/09/2022	\$ 15,354.24
90	WARD5	7071215	Joint Displacement	BARTON ST E	HAMILTON	30/01/2022	\$ 15,349.85
91	WARD5	7071315	Joint Displacement	BARTON ST E	HAMILTON	31/01/2022	\$ 9,917.17
92	WARD5	7149507	Ground Movement	410 NASH RD N	HAMILTON	16/06/2022	\$ 19,972.29

2022 Detailed Watermain Break Cause and Cost Summary Data

Item #	Ward	Work Order	Mode of Failure	Address	Municipality	Completed	Total
93	WARD5	7204748	Ground Movement	SUNRISE DR	HAMILTON	04/10/2022	\$ 22,563.48
94	WARD5	7147604	Ground Movement	ROBB AVE	STONE CREEK	14/06/2022	\$ 5,269.75
95	WARD6	7080696	Ground Movement	UPPER OTTAWA	HAMILTON	15/02/2022	\$ 12,363.09
96	WARD6	7112584	Ground Movement	UPPER SHERMAN AVE	HAMILTON	19/04/2022	\$ 9,900.57
97	WARD6	7115593	Ground Movement	EAST 45TH ST	HAMILTON	25/04/2022	\$ 4,139.19
98	WARD6	7117777	Ground Movement	829 BRUCEDALE AVE E	HAMILTON	27/04/2022	\$ 13,132.01
99	WARD6	7118777	Ground Movement	SUNNING HILL AVE	HAMILTON	02/05/2022	\$ 7,733.77
100	WARD6	7120703	Ground Movement	WOODSIDE DR	HAMILTON	04/05/2022	\$ 4,323.61
101	WARD6	7180914	Ground Movement	CROZIER CRT	HAMILTON	17/08/2022	\$ 5,033.00
102	WARD6	7214375	Ground Movement	TENTH AVE	HAMILTON	19/10/2022	\$ 13,603.82
103	WARD6	7247186	Ground Movement	BEAVERTON DR	HAMILTON	20/12/2022	\$ 2,951.13
104	WARD6	7109282	Corrosion	ALBION FALLS BLVD	HAMILTON	08/04/2022	\$ 4,568.64
105	WARD6	7120750	Corrosion	NANCY ST	HAMILTON	04/05/2022	\$ 4,838.04
106	WARD6	7147735	Corrosion	NEBO RD	HAMILTON	13/06/2022	\$ 9,548.22
107	WARD6	7185616	Corrosion	ROYALVISTA DR	HAMILTON	25/08/2022	\$ 7,341.71
108	WARD6	7197870	Joint Displacement	UPPER GAGE AVE	HAMILTON	30/09/2022	\$ 9,115.73
109	WARD6	7192954	Joint Displacement	BIGWIN RD	HAMILTON	09/09/2022	\$ 9,339.15
110	WARD6	7242945	Ground Movement	KENILWORTH AC	HAMILTON	09/12/2022	\$ 22,110.11
111	WARD7	7057456	Ground Movement	35 LILACSIDE DR	HAMILTON	07/01/2022	\$ 6,183.06
112	WARD7	7079626	Ground Movement	13 BISHOPSGATE AVE	HAMILTON	16/02/2022	\$ 15,320.62
113	WARD7	7090468	Ground Movement	FIELDING CRES	HAMILTON	07/03/2022	\$ 5,070.95
114	WARD7	7105803	Ground Movement	EAST 21ST ST	HAMILTON	04/04/2022	\$ 4,621.01
115	WARD7	7115380	Ground Movement	EAST 31ST ST	HAMILTON	25/04/2022	\$ 3,856.06
116	WARD7	7204775	Ground Movement	105 BELLINGHAM DR	HAMILTON	03/10/2022	\$ 1,706.69
117	WARD7	7213087	Ground Movement	BERKO AVE	HAMILTON	21/10/2022	\$ 1,706.69
118	WARD7	7213306	Ground Movement	BERKO AVE	HAMILTON	18/10/2022	\$ 5,747.77
119	WARD7	7224624	Ground Movement	MEADOWLARK DR	HAMILTON	02/11/2022	\$ 4,889.49
120	WARD7	7225572	Ground Movement	CRANE CRT	HAMILTON	07/11/2022	\$ 4,662.30
121	WARD7	7227605	Ground Movement	SWALLOW CRES	HAMILTON	22/11/2022	\$ 4,747.06
122	WARD7	7242872	Ground Movement	FANO DR	HAMILTON	07/12/2022	\$ 10,936.02
123	WARD7	7053846	Corrosion	UPPER WELLINGTON ST	HAMILTON	01/01/2022	\$ 25,057.17
124	WARD7	7068561	Corrosion	EAST 26TH ST	HAMILTON	25/01/2022	\$ 14,845.72
125	WARD7	7207804	Corrosion	ABBOT DR	HAMILTON	10/10/2022	\$ 11,016.64
126	WARD7	7211723	Corrosion	UPPER WENTWORTH ST	HAMILTON	13/10/2022	\$ 19,725.60
127	WARD7	7227734	Corrosion	352 STONE CHURCH RD E	HAMILTON	05/11/2022	\$ 11,824.82
128	WARD7	7150202	Joint Displacement	FIELDING CRES	HAMILTON	16/06/2022	\$ 15,793.93
129	WARD7	7055984	Ground Movement	UPPER WELLINGTON ST	HAMILTON	05/01/2022	\$ 10,756.16
130	WARD7	7213433	Ground Movement	SEVENTH AVE	HAMILTON	17/10/2022	\$ 18,372.73
131	WARD7	7243329	Ground Movement	RANCHDALE DR	HAMILTON	09/12/2022	\$ 4,464.09
132	WARD7	7075792	Ground Movement	DAVID AVE	HAMILTON	06/02/2022	\$ 11,708.15
133	WARD8	7053851	Ground Movement	WEST 3RD ST	HAMILTON	02/01/2022	\$ 10,612.62
134	WARD8	7061330	Ground Movement	ALLISON CRES	HAMILTON	13/01/2022	\$ 9,906.59
135	WARD8	7064582	Ground Movement	JAMESTON AVE	HAMILTON	18/01/2022	\$ 10,924.77
136	WARD8	7069899	Ground Movement	BRUCEDALE AVE E	HAMILTON	27/01/2022	\$ 14,529.67
137	WARD8	7079611	Ground Movement	20 JAMESTON AVE	HAMILTON	13/02/2022	\$ 6,363.85
138	WARD8	7117952	Ground Movement	6 MARRIOTT PL	HAMILTON	27/04/2022	\$ 20,450.30

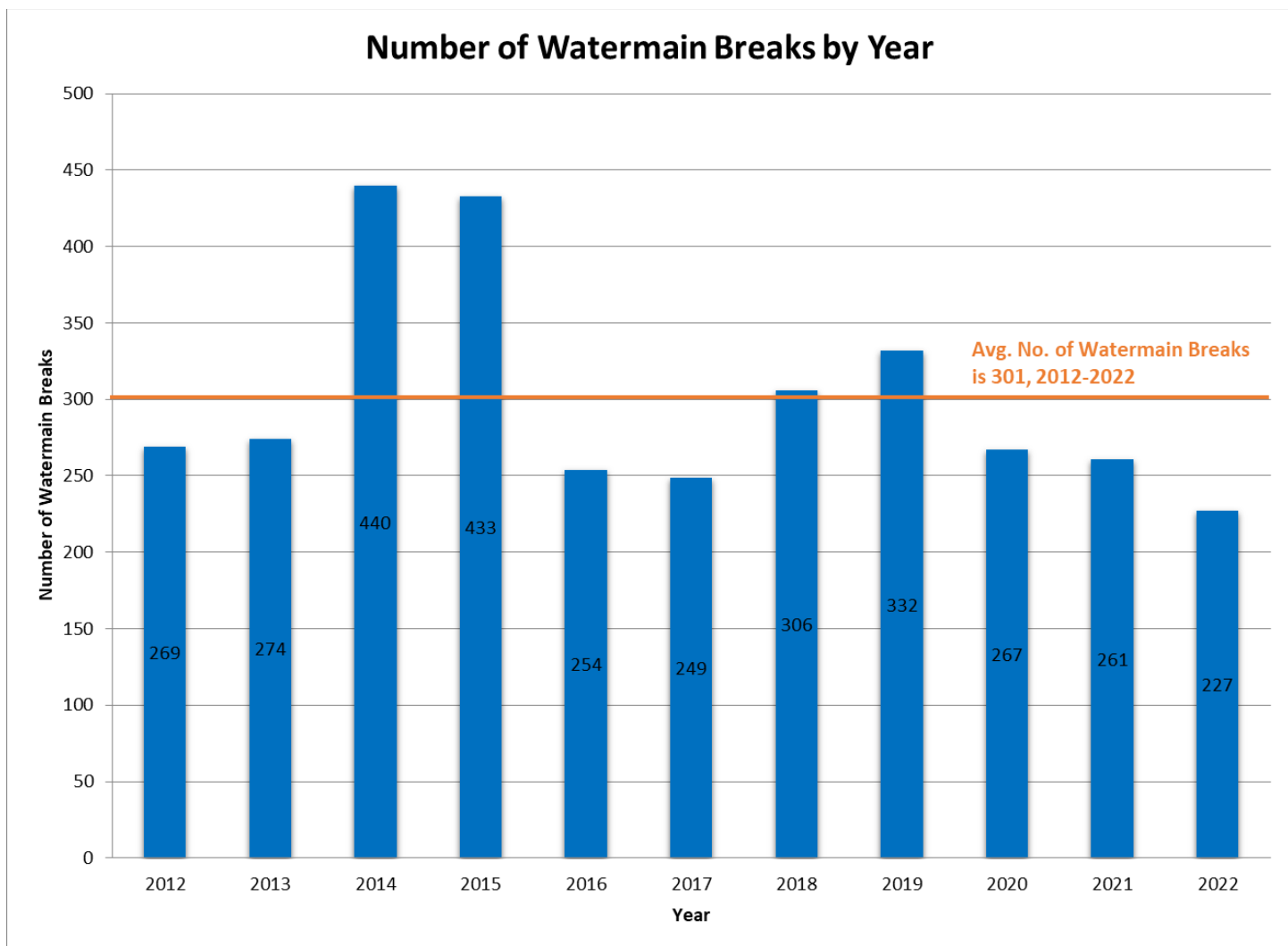
2022 Detailed Watermain Break Cause and Cost Summary Data

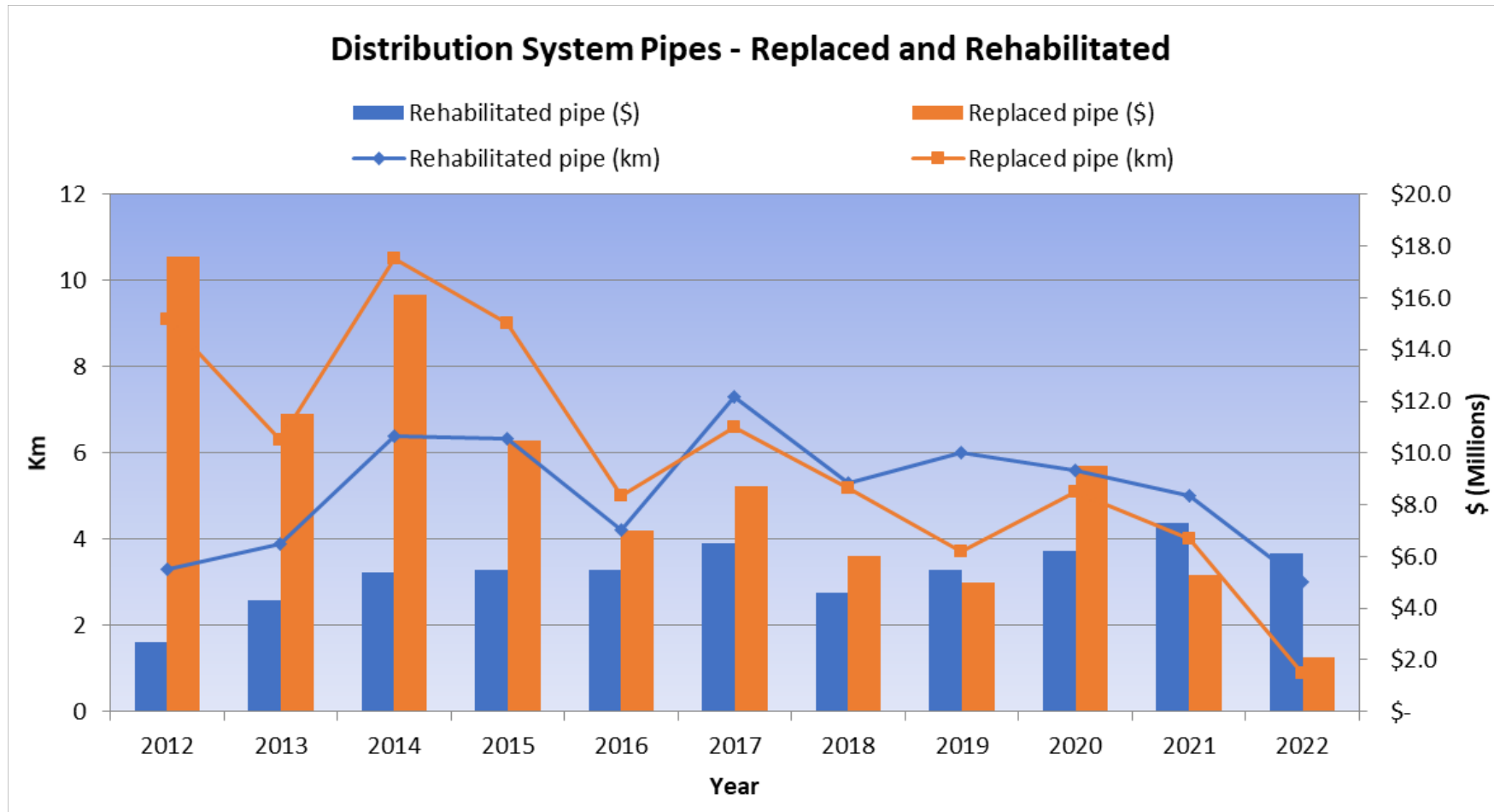
Item #	Ward	Work Order	Mode of Failure	Address	Municipality	Completed	Total
139	WARD8	7164480	Ground Movement	GLENEAGLES DR	HAMILTON	24/07/2022	\$ 5,381.50
140	WARD8	7187945	Ground Movement	GENEVA DR	HAMILTON	31/08/2022	\$ 3,771.45
141	WARD8	7203205	Ground Movement	BRUCEDALE AVE E	HAMILTON	30/09/2022	\$ 9,108.41
142	WARD8	7231058	Ground Movement	LYNBROOK DR	HAMILTON	15/11/2022	\$ 4,825.44
143	WARD8	7234897	Ground Movement	ALDRIDGE ST	HAMILTON	18/11/2022	\$ 8,366.87
144	WARD8	7107385	Corrosion	LUSCOMBE ST	HAMILTON	06/04/2022	\$ 5,758.40
145	WARD8	7126067	Corrosion	WARREN AVE	HAMILTON	13/05/2022	\$ 15,585.30
146	WARD8	7148865	Corrosion	UPPER JAMES ST	HAMILTON	23/06/2022	\$ 8,478.95
147	WARD8	7166815	Corrosion	46 GREENINGDON DR	HAMILTON	21/07/2022	\$ 8,930.33
148	WARD8	7185606	Corrosion	QUEENSDALE AVE E	HAMILTON	24/08/2022	\$ 11,071.45
149	WARD8	7085614	Ground Movement	WEST 5TH ST	HAMILTON	24/02/2022	\$ 143,005.88
150	WARD9	7055978	Corrosion	192 FIRST RD W	STONEY CREEK	05/01/2022	\$ 8,970.96
151	WARD9	7117413	Corrosion	CHILTON DR	STONEY CREEK	26/04/2022	\$ 4,622.63
152	WARD9	7192456	Corrosion	2240 RYMAL RD	STONEY CREEK	07/09/2022	\$ 12,811.02
153	WARD9	7248111	Corrosion	121 CHILTON DR	STONEY CREEK	19/12/2022	\$ 4,747.38
154	WARD9-10	7124886	Ground Movement	GRAY RD	STONEY CREEK	10/05/2022	\$ 3,349.35
155	WARD10	7053877	Ground Movement	274 GREEN RD	STONEY CREEK	03/01/2022	\$ 13,800.18
156	WARD10	7075699	Ground Movement	GREEN RD	STONEY CREEK	06/02/2022	\$ 18,926.06
157	WARD10	7097618	Ground Movement	MILLIKIN DR	STONEY CREEK	18/03/2022	\$ 6,343.48
158	WARD10	7121035	Ground Movement	30 HILTS DR	STONEY CREEK	10/05/2022	\$ 5,777.35
159	WARD10	7207500	Ground Movement	MAPLE DR	STONEY CREEK	11/10/2022	\$ 4,412.97
160	WARD10	7214227	Ground Movement	MEMORIAL AVE	STONEY CREEK	19/10/2022	\$ 5,217.05
161	WARD10	7243513	Ground Movement	GALIC CRT	STONEY CREEK	08/12/2022	\$ 6,530.44
162	WARD10	7257787	Ground Movement	206 GREEN RD	STONEY CREEK	26/12/2022	\$ 10,265.47
163	WARD10	7262577	Ground Movement	GREEN RD	STONEY CREEK	27/12/2022	\$ 9,532.53
164	WARD10	7074424	Corrosion	PINELANDS AVE	STONEY CREEK	09/02/2022	\$ 9,340.93
165	WARD10	7141814	Corrosion	VINEHILL DR	STONEY CREEK	02/06/2022	\$ 6,439.88
166	WARD10	7157524	Corrosion	38 CHURCH ST	STONEY CREEK	04/07/2022	\$ 11,067.13
167	WARD10	7158257	Corrosion	OAKRIDGE DR	STONEY CREEK	11/07/2022	\$ 8,324.93
168	WARD10	7179584	Corrosion	EDGEWATER DR	STONEY CREEK	13/08/2022	\$ 18,651.43
169	WARD10	7181178	Corrosion	CHURCH ST	STONEY CREEK	17/08/2022	\$ 6,005.10
170	WARD10	7188743	Corrosion	LEWIS RD	STONEY CREEK	31/08/2022	\$ 7,068.36
171	WARD10	7189900	Corrosion	TUSCANI DR	STONEY CREEK	01/09/2022	\$ 3,573.26
172	WARD10	7195367	Corrosion	PRESIDENT DR	STONEY CREEK	14/09/2022	\$ 6,014.69
173	WARD10	7204562	Corrosion	PRESIDENT DR	STONEY CREEK	03/11/2022	\$ 7,155.51
174	WARD10	7225746	Corrosion	RUSSET CRT	STONEY CREEK	02/11/2022	\$ 2,280.23
175	WARD10	7241483	Corrosion	MCCOLLUM RD	STONEY CREEK	03/12/2022	\$ 7,242.73
176	WARD10	7095724	Ground Movement	810 BARTON ST	STONEY CREEK	15/03/2022	\$ 7,158.90
177	WARD10	7206443	Ground Movement	HARBRITE DR	STONEY CREEK	07/10/2022	\$ 16,564.58
178	WARD10	7207601	Ground Movement	LEWIS RD	STONEY CREEK	12/10/2022	\$ 6,625.70
179	WARD11	7100600	Ground Movement	STAGECOACH DR	GLANBROOK	23/03/2022	\$ 9,505.15
180	WARD12	7056589	Ground Movement	GRAY COURT DR	ANCASTER	06/01/2022	\$ 5,625.67
181	WARD12	7068687	Ground Movement	OAKLEY CRT	ANCASTER	25/01/2022	\$ 4,874.87
182	WARD12	7072162	Ground Movement	WOODVIEW CRES	ANCASTER	01/02/2022	\$ 8,759.53
183	WARD12	7074869	Ground Movement	GOVERNOR'S RD	DUNDAS	07/02/2022	\$ 9,198.03
184	WARD12	7079600	Ground Movement	THORNWOOD DR	ANCASTER	12/02/2022	\$ 14,717.33

2022 Detailed Watermain Break Cause and Cost Summary Data

Item #	Ward	Work Order	Mode of Failure	Address	Municipality	Completed	Total
185	WARD12	7090597	Ground Movement	HOSTEIN DR	ANCASTER	05/03/2022	\$ 9,137.05
186	WARD12	7097863	Ground Movement	PARK LANE	ANCASTER	18/03/2022	\$ 9,359.58
187	WARD12	7235433	Ground Movement	IRMA CRT	ANCASTER	21/11/2022	\$ 3,913.84
188	WARD12	7243967	Ground Movement	BROOKVIEW CRT	ANCASTER	08/12/2022	\$ 8,903.74
189	WARD12	7262227	Ground Movement	520 ANSON DR	ANCASTER	25/12/2022	\$ 2,814.96
190	WARD13	7070742	Ground Movement	MCMASTER AVE	DUNDAS	28/01/2022	\$ 7,603.14
191	WARD13	7075793	Ground Movement	119 GRANT BLVD	DUNDAS	06/02/2022	\$ 13,679.42
192	WARD13	7094217	Ground Movement	SYDENHAM ST	DUNDAS	12/03/2022	\$ 5,125.16
193	WARD13	7245369	Ground Movement	LYNNDALE DR	DUNDAS	12/12/2022	\$ 1,706.67
194	WARD13	7250423	Ground Movement	LINDA CRT	DUNDAS	20/12/2022	\$ 7,402.67
195	WARD13	7258319	Ground Movement	GLEN CRT	DUNDAS	23/12/2022	\$ 357.20
196	WARD13	7262209	Ground Movement	LYNNDALE DR	DUNDAS	25/12/2022	\$ 6,112.06
197	WARD13	7066650	Corrosion	SKYLINE DR	DUNDAS	20/01/2022	\$ 9,477.93
198	WARD13	7120400	Corrosion	HIGHWAY NO. 5 W	FLAMBOROUGH	03/05/2022	\$ 32,402.95
199	WARD13	7120900	Corrosion	HIGHWAY NO. 5 W	FLAMBOROUGH	04/05/2022	\$ 6,243.57
200	WARD13	7177702	Corrosion	81 WATSONS LANE	DUNDAS	11/08/2022	\$ 6,588.22
201	WARD13	7178492	Corrosion	JOHNSTON AVE	DUNDAS	11/08/2022	\$ 5,085.70
202	WARD13	7117769	Ground Movement	HIGHWAY NO. 5 W	FLAMBOROUGH	27/04/2022	\$ 20,194.20
203	WARD13	7098188	Ground Movement	SLEEPY HOLLOW CRT	DUNDAS	18/03/2022	\$ 8,993.17
204	WARD 13	7263760	Ground Movement	MARKET ST	HAMILTON	31/12/2022	\$ 13,865.97
205	WARD14	7065048	Ground Movement	SAN MARINO CRES	HAMILTON	19/01/2022	\$ 6,463.21
206	WARD14	7076387	Ground Movement	17 COLQUHOUN CRES	HAMILTON	08/02/2022	\$ 5,775.16
207	WARD14	7147628	Ground Movement	SANATORIUM RD	HAMILTON	14/06/2022	\$ 24,767.16
208	WARD14	7148760	Ground Movement	SANATORIUM RD	HAMILTON	14/06/2022	\$ 10,080.04
209	WARD14	7168290	Ground Movement	BONAVENTURE DR	HAMILTON	25/07/2022	\$ 6,339.75
210	WARD14	7213006	Ground Movement	SCENIC DR	HAMILTON	21/10/2022	\$ 5,289.33
211	WARD14	7090781	Corrosion	204 CLIFTON DOWNS RD	HAMILTON	06/03/2022	\$ 12,322.81
212	WARD14	7174596	Corrosion	383 SCENIC DR	HAMILTON	04/08/2022	\$ 10,437.03
213	WARD14	7129776	Ground Movement	372 UPPER PARADISE RD	HAMILTON	19/05/2022	\$ 23,468.02
214	WARD15	7244579	Ground Movement	CEDAR ST	FLAMBOROUGH	10/12/2022	\$ 2,925.50
215	WARD15	7057324	Corrosion	DUNDAS ST E	FLAMBOROUGH	07/01/2022	\$ 17,629.01
216	WARD15	7067627	Corrosion	10 HUNTSMAN GATE	FLAMBOROUGH	26/01/2022	\$ 3,926.12
217	WARD15	7114124	Corrosion	SOUTH DR	FLAMBOROUGH	20/04/2022	\$ 6,791.60
218	WARD15	7131194	Corrosion	41 SOUTH DR	FLAMBOROUGH	21/05/2022	\$ 5,802.76
219	WARD15	7144322	Corrosion	SOUTH DR	FLAMBOROUGH	08/06/2022	\$ 13,408.06
220	WARD15	7144448	Corrosion	SOUTH DR	FLAMBOROUGH	04/06/2022	\$ 6,532.28
221	WARD15	7146874	Corrosion	265 MILL ST S	FLAMBOROUGH	12/06/2022	\$ 6,989.91
222	WARD15	7168265	Corrosion	HIGHWAY NO. 6	FLAMBOROUGH	27/07/2022	\$ 19,078.16
223	WARD15	7172101	Corrosion	HIGHWAY NO. 6	FLAMBOROUGH	29/07/2022	\$ 11,341.29
224	WARD15	7175420	Corrosion	DUNDAS ST E	FLAMBOROUGH	06/08/2022	\$ 17,842.02
225	WARD15	7224712	Corrosion	SOUTH DR	FLAMBOROUGH	29/10/2022	\$ 8,547.51
226	WARD15	7227755	Corrosion	FERN AVE	FLAMBOROUGH	07/11/2022	\$ 10,105.92
227	WARD15	7071016	Ground Movement	98 MAIN ST N	FLAMBOROUGH	28/01/2022	\$ 8,907.36

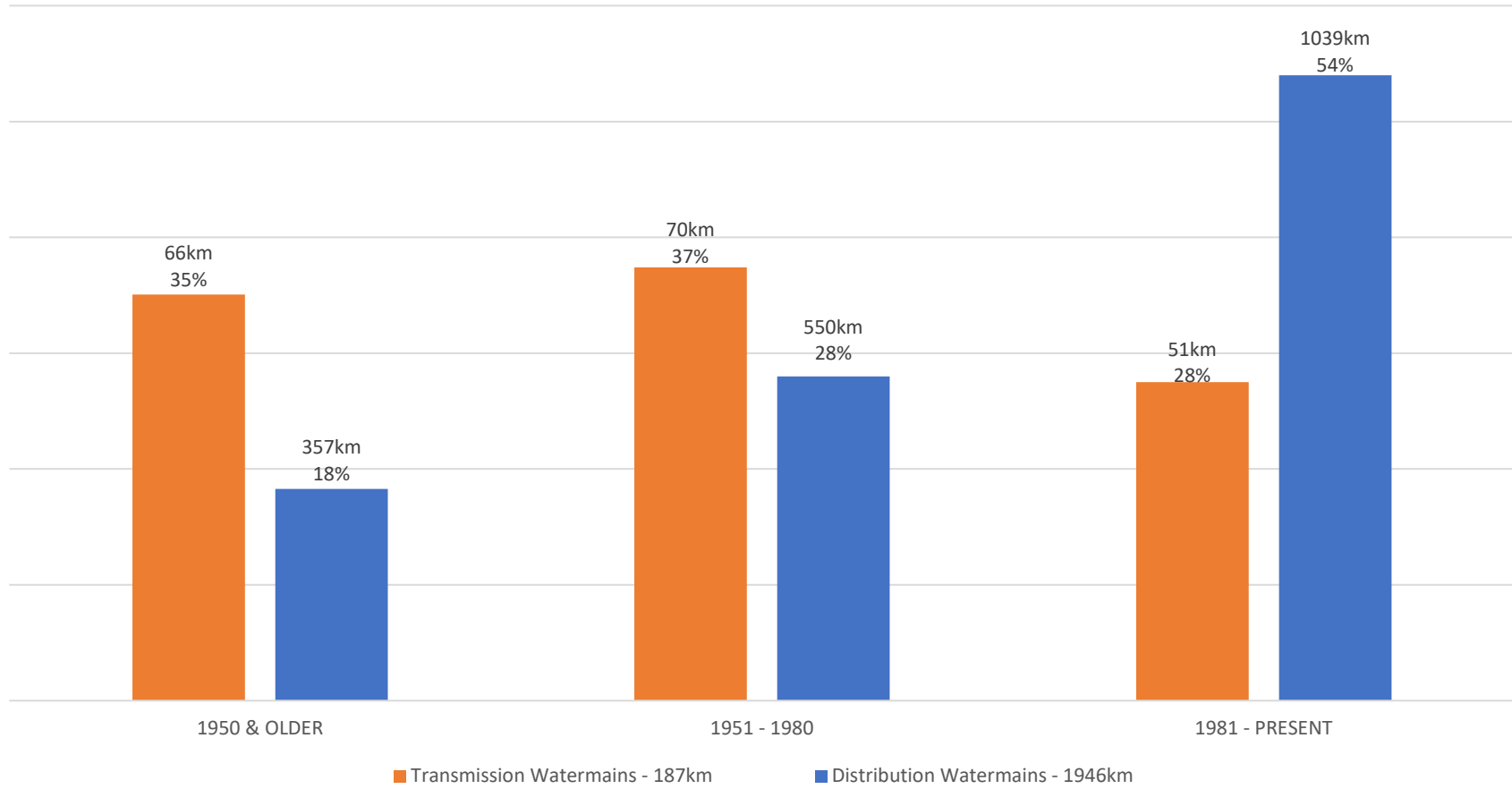
Note: Watermain breaks with no associated repair cost (Other) were caused and repaired by a contractor at no cost to the City. Any associated restoration was completed under another work order.






Project ID	Title	Start	End	2023 Gross	2023 Net	2024 Gross	2024 Net	2025 Gross	2025 Net	2026 Gross	2026 Net	2027 Gross	2027 Net	2028 Gross	2028 Net	2029 Gross	2029 Net	2030 Gross	2030 Net	2031 Gross	2031 Net	2032 Gross	2032 Net	10 Yr Gross	10 Yr Net
5142871308	Burlington & Industrial - Ottawa to Kenilworth	2028	2028	0	0	0	0	0	0	0	0	0	0	2,150	2,150	0	0	0	0	0	0	0	0	2,150	2,150
5142871311	Oak/Emerald/East Ave - Cannon to Barton	2028	2028	0	0	0	0	0	0	0	0	0	0	1,640	1,640	0	0	0	0	0	0	0	0	1,640	1,640
5142871312	Claims / East St N / Spencer / (Hunter Neighbourhood)	2028	2028	0	0	0	0	0	0	0	0	0	0	630	630	0	0	0	0	0	0	0	0	630	630
5142961301	Clinton/Case/Ruth/Barnesdale	2029	2029	0	0	0	0	0	0	0	0	0	0	0	0	1,810	1,810	0	0	0	0	0	0	1,810	1,810
5142971020	Sanford - Cannon to Barton	2029	2029	0	0	0	0	0	0	0	0	0	0	0	0	850	850	0	0	0	0	0	0	850	850
5142971113	Westdale North Neighbourhood Phase 3	2029	2029	0	0	0	0	0	0	0	0	0	0	0	0	2,200	2,200	0	0	0	0	0	0	2,200	2,200
5142971114	Charlton - James to Walnut	2029	2029	0	0	0	0	0	0	0	0	0	0	0	0	4,000	4,000	0	0	0	0	0	0	4,000	4,000
5142971117	Green - Carla to Barton	2029	2029	0	0	0	0	0	0	0	0	0	0	0	0	1,300	1,300	0	0	0	0	0	0	1,300	1,300
5142971303	Florence/Head/Morden/Napier/Nelson/Peel/Wellesley (Strathcona Neighbourhood)	2029	2029	0	0	0	0	0	0	0	0	0	0	0	0	720	720	0	0	0	0	0	0	720	720
5142971305	Carling / Macklin St S / Olmstead / Tope (Westdale South)	2029	2029	0	0	0	0	0	0	0	0	0	0	0	0	680	680	0	0	0	0	0	0	680	680
5142971310	Upper Wellington - Bryna to Mohawk	2029	2029	0	0	0	0	0	0	0	0	0	0	0	0	1,050	1,050	0	0	0	0	0	0	1,050	1,050
5142971311	Oxford / Tecumseh (Strathcona Neighbourhood)	2029	2029	0	0	0	0	0	0	0	0	0	0	0	0	820	820	0	0	0	0	0	0	820	820
5142971316	Sanford - Main to Cannon	2029	2029	0	0	0	0	0	0	0	0	0	0	0	0	1,410	1,410	0	0	0	0	0	0	1,410	1,410
5143060310	Princess/Westinghouse/Milton/Fullerton/Gibson/Earl	2030	2030	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,200	4,200	0	0	0	0	4,200	4,200
5143061303	Caroline - Herkimer to Robinson	2030	2030	0	0	0	0	0	0	0	0	0	0	0	0	0	0	420	420	0	0	0	0	420	420
5143071129	Nash – Barton to 350 metres north of Bancroft	2030	2030	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,100	1,100	0	0	0	0	1,100	1,100
5143071303	Hughson - Wilson to Barton	2030	2030	0	0	0	0	0	0	0	0	0	0	0	0	0	0	550	550	0	0	0	0	550	550
5143071304	Evans - Wellington to East	2030	2030	0	0	0	0	0	0	0	0	0	0	0	0	0	0	390	390	0	0	0	0	390	390
5143071308	Stipeley Neighbourhood (South) - Connaught / Balasm / Dunsmure	2030	2030	0	0	0	0	0	0	0	0	0	0	0	0	0	0	950	950	0	0	0	0	950	950
				22,385	14,515	27,590	23,170	28,720	28,720	14,280	14,280	22,870	22,870	27,950	27,950	23,570	23,570	13,810	13,810	6,200	6,200	6,200	6,200	193,575	181,285

Summary of the City's Transmission and Distribution Watermain Inventory by Age





INFORMATION REPORT

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	March 20, 2023
SUBJECT/REPORT NO:	Protected Bike Lane Curbs (PW23016) (City Wide) (Outstanding Business List Item)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Peter Locs (905) 546-2424 Ext. 6015
SUBMITTED BY:	Mike Field Acting Director, Transportation Operations & Maintenance Public Works Department
SIGNATURE:	

COUNCIL DIRECTION

At the August 11, 2021 Public Works Committee meeting, the Hamilton Cycling Advisory Committee brought forward a Citizen Committee Report putting forth the following recommendations:

- (a) The Committee recommends pre-cast curb heights of no less than 25 cm tall be used to separate protected bike lanes from adjacent traffic lanes, where viable; and
- (b) That the City initiate a pilot program to test painting select larger pre-cast bike lane curbs with artwork from local artists or be marked brightly, so the curbs do not blend into the grey asphalt.

The report was referred to appropriate staff for a report back to the Public Works Committee. This information update is the follow up to that direction.

INFORMATION

In response to item (a) – Precast curb heights:

Bike lanes are delineated by a variety of infrastructure types to provide space, or buffer

OUR Vision: To be the best place to raise a child and age successfully.

OUR Mission: To provide high quality cost conscious public services that contribute to a healthy, safe and prosperous community, in a sustainable manner.

OUR Culture: Collective Ownership, Steadfast Integrity, Courageous Change, Sensational Service, Engaged Empowered Employees.

SUBJECT: Protected Bike Lane Curbs (PW23016) (City Wide) – Page 2 of 3

between motorists and cyclists. The delineation or protection treatment used is determined by the conditions of the roadway, environment and area where the bike lanes are installed. As per Ontario Traffic Manual (OTM) Book 18 – Cycling Facilities, some factors which contribute to the type of separation or protection treatment used include: the zone (urban/rural), traffic volume and speed, roadway classification and width, direction of travel, on-street parking requirement, drainage, driveways and transit access points and conflict points.

Physical separation of cycling lanes using a curb treatment is warranted on roadways with a higher volume of traffic and conflict points. Typical curbs the City use are 12-15 cm in height. In November 2021, the City began using mini-jersey barriers which are 45 cm tall as an enhancement to bike lane protection, utilized where viable. To date mini-jersey barriers have been installed on York Boulevard from Dundurn Street North to Hess Street North and at critical locations on Wilson Street East between Rousseaux Street and Filman Road.

The City intends to continue the use of mini-jersey barriers on arterial roadways with higher traffic volume and conflict points. The mini-jersey barrier curbs require additional road space due to the size of their base which presents a practical limitation on where and when they can be used. OTM Book 18 suggests a desired width of 1.0 m horizontal buffer between the bicycle lane and the adjacent motor vehicle lanes to accommodate the physical separation barriers. It should be noted as well that larger barrier curb treatment which are a minimum of 25 cm tall typically present similar limitation but to a lesser extent. Consequently, the product is not viable to be utilized in all applications. Regular curb stops continue to be utilized in combination with markings and bollards where site conditions don't permit the mini-jersey barrier to be used.

Other considerations such as terrain (hills or flat), sightline limitations and environmental factors such as driveway accesses/approaches, etc., are factors in determining the appropriate size of barrier or separation treatment type to be used. For reference below various types of treatments are listed for the physical separation of bike lanes with images to reference in Appendix "A" to Report PW23016:

Flex Bollards: vertical flexible posts mounted to the roadway within a painted buffer.

Rubber curbs: a short rubber or polymer curb anchored into the roadway.

Pre-Cast Curbs (Parking-style): also known as a 'pinned curb', is a small parking-style concrete curb anchored into the roadway to provide separation between bicycle and vehicular traffic (Low: 15cm, Regular 25cm)

Cast in-place Concrete Curbs: Continuous poured concrete curbs, are typically larger and are durable and effective at preventing motor vehicle encroachment onto cycling facilities.

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SUBJECT: Protected Bike Lane Curbs (PW23016) (City Wide) – Page 3 of 3

Mini Jersey Barriers (Low-wall concrete barriers): pre-cast concrete barriers that can be used as a continuous vertical separation or implemented with gaps as needed. The height is typically 0.45-0.5 m.

Raised Cycle Track: a physically separated bikeway that is horizontally and vertically separated from the portion of the roadway travelled by motorized vehicles, separated by a curb plus a horizontal buffer.

Planters: a planting container (usually made of PVC or Ceramic) which holds plants and their soil, placed at consistent intervals to provide a physical separation between cyclists and other vehicles.

In response to item (b) - Painting of Cycling Barriers:

The City agrees that efforts are required to ensure larger precast curb barriers are visible to road users of all ages and abilities. To increase visibility the City will pilot the use of barrier markers, reflectors, paddle reflectors and artwork on physical barriers to increase visibility and ensure that the facility does not create a hazard for traffic as well as people with visual impairments. A pilot visibility enhancement strategy will be initiated to test the above-mentioned visibility measures on mini-jersey barriers. The pilot's objective will be to increase visibility and observe operating impacts of on-going roadway maintenance and winter maintenance.

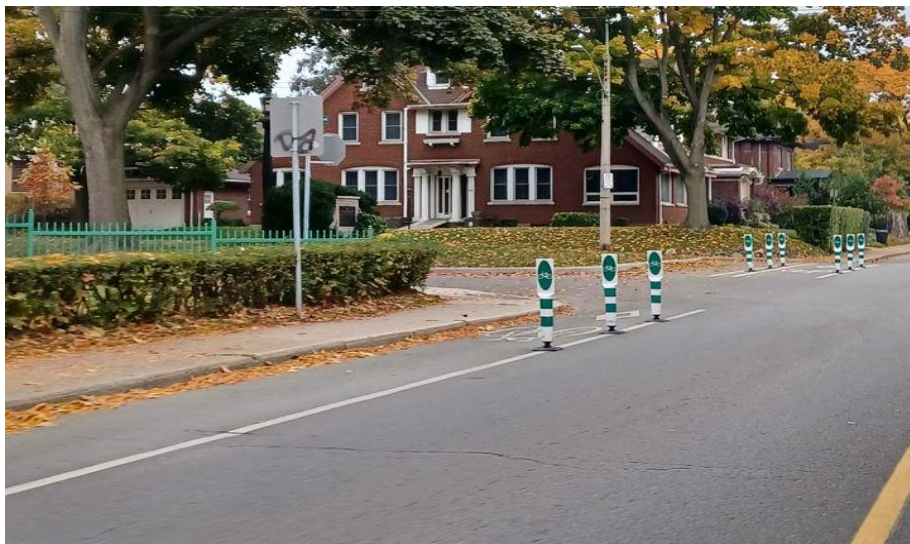
The pilot will be required to run for a minimum of 12 months to observe an entire winter cycle and annual cycle of roadway maintenance activities. During this period, any repetitive impact on the barriers and bollards by moving vehicles or by maintenance equipment will be conscientiously recorded. The results will be utilized to update installation and maintenance practices for separated bike lane curb infrastructure moving forward.

APPENDICES AND SCHEDULES ATTACHED

Appendix "A" to Report PW23016 – Physical Separation Illustrations

Protected Bike Lane Curbs – Physical Separation Illustrations

A) Flex Bollard Separation



Planters



B) Pre-Cast Curbs



25mm Height Pre-Cast Curb



15mm Height Pre-Cast Curb

C) Low Wall Concrete Curbs



D) Cast-in-Place



E) Rubber Curbs



F) Cycle Track





INFORMATION REPORT

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	March 20, 2023
SUBJECT/REPORT NO:	2022 Year End Report on Community Bookings at Tim Hortons Field (PW18075(b)) (Ward 3)
WARD(S) AFFECTED:	Ward 3
PREPARED BY:	Rob Gatto (905) 546-2424 Ext. 5448
SUBMITTED BY:	Rob Gatto Manager of Sports & Entertainment Facilities Public Works Department
SIGNATURE:	

COUNCIL DIRECTION

The purpose of this Information Report (PW18075(b)) (Ward 3) is to provide Council with a 2022 Year-End Report on 'Community Use' at Tim Hortons Field.

Utilization of the stadium is measured on two categories of use, (1) Field of Play usage and (2) Room & Space Bookings. Appendix "A" to Report PW18075(b) provides a 5-year history as well as the current year-end report of 'Community Use' at the stadium.

INFORMATION

Stadiums worldwide had to review every aspect of their operations in response to the global pandemic, subsequently changing fan-base expectations and community uses. The City continues to examine ways to increase community use by developing a plan in collaboration with the stadium's anchor tenant, the Ticats/Forge Organization, and other strategic partners.

After two (2) years of being in a global pandemic, with several lockdowns and social distancing requirements observed, some people were eager to reconnect in person, while others remained hesitant about attending major or community events at the stadium. With that in mind, the City's stadium operations team needed to re-engage the community, educate them about safety measures that were adopted and those that remained in place.

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SUBJECT: 2022 Year End Report on Community Bookings at Tim Hortons Field (PW18075(b)) (Ward 3) - Page 3 of 3

In the spring of 2022, both the Forge FC Soccer Club and the Hamilton Tiger Cats had a complete schedule, and their home games were played at Tim Hortons with no COVID related restrictions to attend a community event or game.

Tim Hortons Field continues to be showcased as a premier stadium, hosting international, national, and high-profile local community events such as; World Cup qualifying soccer matches, Champions League CONCACAF soccer matches, the NHL Winter Heritage hockey game, Nitro Circus, and the Arkells' concert, that played in front of 26,000 fans. A welcome addition in 2022 was Hamilton's Mohawk College Mountaineers, calling Tim Hortons Field their home pitch to host both women's and men's soccer games.

Field of Play Bookings (2022):

At Tim Hortons Field, the field of play is typically available for bookings from April to November, available 7day/week from 7:00 a.m. – 11:00 p.m. Available extended hours are based on 'non-prime' and 'prime' time slots. Prime time hours are defined as Monday-Friday 5:00 p.m. – 11:00 p.m., and weekends 8:00 a.m. – 11:00 p.m. During the winter months, the field of play is typically closed due to colder weather conditions.

January to March of 2022 saw an exceptional outcome with the stadium hosting four (4) successful winter events:

1. FIFA World Cup Qualifier – January 30, 2022
Canada vs USA;
2. CONCACAF Champions League Finals – February 16, 2022
Cruz Azul vs Hamilton Forge FC;
3. NHL Heritage Outdoor Classic – March 13, 2022
Toronto Maple Leafs vs Buffalo Sabres;
4. OHL Regular Season Outdoor Showcase Game – March 14, 2022
Oshawa General vs Hamilton Bulldogs.

With the Province lifting most health restrictions in the spring of 2022 we experienced an increase in field of play of hours with a total of 795.5 hours. This is a good news story, as 2022 was the best year for field of play hours, for community use, since the existence of Tim Hortons Field in 2015.

Professional sporting events and major events, such as concerts, are not calculated as part of community bookings.

SUBJECT: 2022 Year End Report on Community Bookings at Tim Hortons Field (PW18075(b)) (Ward 3) - Page 3 of 3

Room and Space Bookings (2022):

Tim Hortons Field offers several interior spaces for small meetings and conferences, trade shows and private lounge set ups, this space is ideal for, rehearsals, dinners, and presentations. In addition, there are interior spaces that are conducive to recreational purposes as well. In total there are 11 interior rooms of various sizes that may be configured to serve smaller functions, meetings or large events in the club suites which converts from five (5) smaller rooms to one (1) large banquet room.

With most of the pandemic health restrictions lifted in the spring of 2022, the stadium is seeing a gradual increase in room bookings from the public and community groups. January to December there were 18 rooms booked, for a total of 67 hours. Note, total room bookings exclude the Hamilton Forge and the Hamilton Tiger Cats organizations.

Post Pandemic Recovery:

The pandemic has taken a heavy toll on the community use at Tim Hortons Field, some would say practically non-existent.

Working towards a recovery plan has been underway, which requires a long-term strategy that allows for collaboration between a wide range of partners, including the stadium's anchor tenants, the Hamilton Tiger Cats and the Hamilton Forge FC Organization, and their support engaging and promoting community use. Other strategic partners include the two (2) major School Boards in Hamilton, Colleges and Universities, various community sporting organizations, neighbourhood associations, non-profit and profit organizations, which collectively will make a tangible difference on how the stadium is used.

APPENDICES AND SCHEDULES ATTACHED

Appendix "A" to Report PW18075(b) – Year Over Year Community Use of Tim Hortons Field

Year Over Year
¹ Community Use of Tim Hortons Field


Field of Play			Room Space Bookings			Total Hours
Year	Bookings	Hours	Year	Bookings	Hours	
2017	173	486.5	2017	160	924.0	1410.5
2018	229	724.0	2018	180	846.0	1570.0
2019	243	564.0	2019	83	473.0	² 1037.0
³ 2020	14	38.0	2020	10	38.0	76.0
³ 2021	10	22.5	2021	0	0.0	22.5
⁴ 2022	299	795.5	2022	18	67.0	862.5

Footnotes:

-
- 1 Data provided in this report represents only "community use" at Tim Hortons Field. Excluded in this review is the professional sports use and major events i.e. concerts.
 - 2 April 2019 marked the inaugural season of the Canadian Premier League (Hamilton Forge). Noticeable decrease of "community use" to make way for professional soccer.
 - 3 Pandemic COVID-19 period.
 - 4 January - December 2022 - 862.50 total "community use" hours.



INFORMATION REPORT

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	March 20, 2023
SUBJECT/REPORT NO:	Temporary "Road Official" Role (PW21013(a)) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Melissa Chiappetta (905) 546-2424 Ext. 2240
SUBMITTED BY:	Carlyle Khan General Manager Public works Public Works Department
SIGNATURE:	

COUNCIL DIRECTION

N/A

INFORMATION

In March 2021, Information Report PW21013 was taken to Public Works (PW) Committee to advise that the General Manager (GM), PW would be creating a temporary "Road Official" role in the Department for a period of 24 months to address findings in a consultant's report relative to a perceived operational weakness related to the oversight of the management and operation of the City's transportation network.

With the fragmentation of the structure and systems that are involved in the design, build, operation and maintenance of the Municipal Road Allowance, it was identified that decision authorities were unclear, particularly in relation to the stewardship of Complete Streets and the allocation and distribution of capital within transportation infrastructure projects, as well as a lack of coordination between departments and divisions with inputs into the roadway right of way. The creation of a temporary "Road Official", or Chief Road Official as it became known, was anticipated to provide consistent coordination and oversight of Public Works roles and responsibilities with respect to working in the Municipal Road Allowance.

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SUBJECT: Temporary "Road Official" Role (PW21013(a)) (City Wide) – Page 2 of 5

Within PW, the key stakeholder Divisions include primarily Engineering Services and Transportation Operations & Maintenance. Additional PW Stakeholders include both Transit and Hamilton Water. Within Planning & Economic Development (PED), the key stakeholder Divisions include Growth Management and Transportation Planning and Parking. Additionally, with the initiation of the Light Rail Transit (LRT) project, the Chief Road Official would play a critical role in ensuring integration within the Municipal Road Allowance.

The key deliverables of the Chief Road Official, listed in Report PW21013 were as follows:

- Providing oversight, advice and championing of the long-term strategies, principles, and direction approved by City Council for managing the Transportation Network;
- Collaborating, and working through and with others, to deliver a comprehensive approach to designing, building, operating, and maintaining roads;
- Engaging all stakeholders and asset owners from across the organization on the evolution and managing of the municipal Right of Way cohesively;
- Providing guidance and support to ensure approved standards are being met;
- Ensuring desired outcomes through effective and consistent application of the City of Hamilton's Complete Streets Design Manual; and
- Acting as a key stakeholder to the implementation of the City of Hamilton's Transportation Master Plan.

A temporary Chief Road Official position was created for a period of 24 months, in June of 2021 and therefore was to expire at the end of June of 2023. The Chief Road Official resigned in January 2023, leaving five (5) months in the temporary period. Given the time needed to fill the position, and in conversation with the then, Chief Road Official, the General Manger, PW decided not to fill the position, but rather move to combining the duties of the Chief Road Official with the Director, Transportation Operations & Maintenance.

The organizational design criteria that informed the Chief Road Official pilot were:

- Establish adequate resource to provide overall operation, management and oversight of the City's transportation network;
- Be aligned to deliver on the City's strategic priorities: Complete Streets and Open for Business;
- Provide a single point of accountability for the delivery of the Complete Streets vision - the Road Authority;
- As much as possible, reduce or eliminate co-ordination costs;
- Provide for the effective allocation of capital;
- Clearly articulate decision authorities for all roles; and
- Better manage, and where possible eliminate, risks to the Municipality

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SUBJECT: Temporary "Road Official" Role (PW21013(a)) (City Wide) – Page 3 of 5

In Report PW21013, Council was advised that an evaluation of the Chief Road Official work would be conducted prior to the conclusion of the temporary 24-month period. The purpose of which, to determine if the road authority outcomes are required on a long-term or permanent basis, in the context of maintaining a Chief Road Official, whether the role should be modified in scope, or if it can be aligned and absorbed into an existing role.

Summary

In the approximately 18 months that the position was filled, the dedicated Chief Road Official focused on the following foundational works, as well as coordination with other groups to establish a framework to deliver on the position's key deliverables and eliminate the operational weakness related to the oversight of the operation and maintenance of the City's transportation network.

This included the following:

Transportation Quality Management System – Leading the development of Standard Operating Procedures (SOP) in collaboration and consultation with various stakeholders, related to the planning, design, construction, maintenance and operations of the transportation network (See Appendix "A" to Report PW21013(a));

Roads Value for Money Pavement Audit response – Coordinating a multi-divisional and departmental response to the audit findings;

Asset Management Plan (AMP) – Provide input into the development of the Transportation AMP as the asset owner;

LRT Coordination – Leadership role for Public Works coordinating input into the project;

Technical Leadership – Champion and lead key transportation initiatives such as the Main Street Two Way conversion, Birch Road Environmental Assessment and Rymal Road Environmental Assessment;

Technical Leadership of Internal/External Committees – Managing the Parkway Management Committee, Interdepartmental Transportation Advisory Group and Ministry of Transportation of Ontario Liaison Committee;

These initiatives helped to establish and build a foundation and framework for the overall management of the transportation network in a collaborative and cohesive manner. The establishment of the Chief Road Official as the transportation asset owner has provided clarity to roles and responsibilities when dealing with the transportation network and created a level of accountability for all transportation projects, plans and capital / operating budgets. As the asset owner, the Chief Road Official has

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SUBJECT: Temporary "Road Official" Role (PW21013(a)) (City Wide) – Page 4 of 5

responsibility for the transportation network over its entire life cycle, under the governance model by corporate asset management.

The approval of the Corporate Asset Management Plan by Council defined the responsibilities for the Chief Road Official as the asset owner for transportation assets. The position has worked with other service delivery divisions while overseeing asset management planning activities and providing guidance into operational and capital plans and budgets.

Next Steps

After nearly 18 months operating with a dedicated Chief Road Official, the necessary foundational elements and collaborative processes have been established. Since the Chief Road Official pilot an additional stakeholder and key player in resolving some of the functional fragmentation is the Corporate Asset Management Division, which in addition to identification of asset owners helps to achieve asset management planning through the established governance framework. Among other benefits, this ensures a reduction / elimination of co-ordination costs and provides for a more effective allocation of capital. Under the governance model, asset owners may seek assistance from others (ex: Engineering Services Division) for the provision of certain tasks (ex: condition assessments) to aid in decision making related to the management of assets.

The Chief Road Official position currently exists independently with no positional authority. The position was a pilot rather than a structure change to allow for an evaluation of its effectiveness, opportunity for staff development and to avoid potentially creating a new structure that may not remain.

The GM, PW in consultation with the GM, PED has determined that the best course of action at this time is to combine the duties of the Chief Road Official with the Director, Transportation Operations & Maintenance (TOM). Combining the two (2) positions will allow for the continuation of the established framework and provide the Chief Road Official with structural authority over one of the largest stakeholders in the City's transportation network, whose mandate is the maintenance and operation of roadway assets within the municipal road allowance. This will allow for greater alignment of operational activities with the identified asset owner responsibilities, provide for a more effective reporting structure and utilize existing staffing resources. In short, the pilot has demonstrated that the work of the Chief Road Official can continue within the existing structure of Transportation Operations & Maintenance.

The newly combined position will continue to have oversight and responsibility for all works within the roadway right of way including the lead role for the Light Rapid Transit (LRT) project from a PW perspective, with any inter-departmental issues requiring escalation to be brought to the GM PW and GM PED for review and resolution.

SUBJECT: Temporary "Road Official" Role (PW21013(a)) (City Wide) – Page 5 of 5

Therefore, the Chief Road Official and Director, TOM positions have been combined to create a new position, Director, Transportation which is being posted for recruitment.

APPENDICES AND SCHEDULES ATTACHED

Appendix "A" to Report PW21013(a) – SOP Listing

Appendix “A” to Report PW21013(a)

Page 1 of 1


SOP Listing

Name of SOP	Status Update - January 2023
Cycling Projects Design and Implementation SOP	Completed
Emergency Detour Routes	Completed
Escarpment Access Closure Procedure	Completed
Excess Soil Management Procedure	Completed
Internal Review Process and Non-Conformance	Completed
Management of Asset Transfer	Completed
Public Works – Red Hill Valley Parkway/Lincoln M. Alexander Parkway Operation and Maintenance Plan	Completed
PW Operational Standard	Completed
Roadside Memorial Policy (PW22006) (City Wide)	Completed
Asset Responsibility with ROW	Completed – Updates in progress
Sidewalk New Connections/Missing Links SOP	CRO to take forward to SLT
Transportation System - Sidewalk Design	CRO will Champion sub-committee
Risk Management Process	DLT Approval
SOP - Spills Response	DLT Approval
Assuming Road from Develop	In Progress
Control of Changes for Linear Construction Projects	In Progress
Installation of Parking Signs	In Progress
On-Street Patio Program	In Progress
Pavement Inspection SOP	In Progress
Scoping Capital Projects	In Progress
Temporary Lane Closures (Filming)	In Progress
Temporary Lane Closures (Lane & Sidewalk)	In Progress
Temporary Lane Closures (Utilities)	In Progress
Temporary Road Closures (Construction)	In Progress
Temporary Road Closures (Special Events)	In Progress
Traffic Road Closure Lane Restriction Application	In Progress
Transportation - Road Construction	In Progress
Transportation System - Traffic Systems	In Progress
Environmental Assessments	In Progress
Temporary Road Closure Procedure	In Progress
Transportation System - Road Design	In Progress

NOTE: With the combining of the CRO duties with the Director, Transportation Operations and Maintenance (TOM), all “In Progress” SOPs will be continued under the TOM Quality Management program group.



INFORMATION REPORT

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	March 20, 2023
SUBJECT/REPORT NO:	Emerald Ash Borer (EAB) Management Plan (10-year Summary) (PW21023(a)) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Kristen Bill (905) 546-2424 Ext. 5495 Robyn Pollard (905) 546-2424 Ext. 3919
SUBMITTED BY:	Cynthia Graham Acting Director, Environmental Services Public Works Department
SIGNATURE:	

COUNCIL DIRECTION

The City of Hamilton's (City) Emerald Ash Borer (EAB) Management Plan Recommendation Report PW10088(a) directed staff to provide an annual update on the implementation of the Emerald Ash Borer Management Plan. Since the initial direction in 2010, many staff reports provided updates and sought further direction regarding this program, most recently through Information Report PW21023 in 2021. Information report PW21023(a) provides a summary of the final year of the EAB Management Plan as well as a 10-year summary.

INFORMATION

In 2010, staff prepared Report PW10088, received at Public Works Committee on September 20, 2010, to outline the possible threat posed by Emerald Ash Borer to Hamilton's trees. On September 6, 2012, through report PW10088(a) Council approved a 10-year strategy to proactively manage publicly owned ash (*Fraxinus* species) trees, infested with the Emerald Ash Borer (*Agrilus planipennis* Fairmaire), within the right of way in the urban boundary and in City parks and cemeteries. The target removal rate was 2,300 tree removals per year, and the target replant rate was set at a 1:1 removal to replacement ratio with non-ash species. Between 2012 and 2022, EAB damage to

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**SUBJECT: Emerald Ash Borer (EAB) Management Plan (10-year Summary)
Report (PW21023(a)) (City Wide) – Page 2 of 7**

the ash tree population was significant city-wide, with most ash trees dying or declining to the point they required removal to mitigate risks to public health and safety.

Removal of infested ash trees began in 2011, however the EAB Management Plan was approved in 2012. Forestry staff inspected ash trees annually by Ward and prioritized removals of dead and poor condition ash trees that posed or could potentially pose a health and safety risk. Tree removal of infested and dying trees began in Ward 7 where EAB was first discovered and most prominent; and removals expanded to the Wards with the highest infestation rate, or where active infestations were detected.

In 2014, staff observed that the infestation and the subsequent decline in health of ash trees was accelerating faster than originally outlined in report PW10088. Therefore, the targeted 2,300 trees required adjustment annually during the program to mitigate the health and safety risk these dead and dying trees posed.

Ash tree removals, stumping, replacements, and injections were performed by a contractor and overseen by City staff, with the exception of ash trees that posed a potential property or health and safety hazard in which case City crews would perform the removal.

To date, all Wards have had all publicly owned ash trees inventoried including those in right of ways, manicured park areas, and cemeteries. Most ash trees have been removed, except for some that are still in fair to good condition, and those that are part of the injection treatment program.

Injection treatments were implemented for trees based on a treatment criterion. For trees to have received treatment, they needed to meet the minimum size of 15 centimetres in trunk diameter, be in good condition, be publicly owned, and free from future known development impacts.

The selected trees that met the criteria were treated with an injectable pesticide that can slow the spread of EAB if treatment starts before the insects cause significant damage. The treatment product was injected either yearly, or every other year, depending on the condition of the tree and the level of infestation.

In the EAB Management Plan presented to Council through Report PW10088(a), it was estimated that 400 trees would need to be injected yearly, however after assessing the ash tree population against the above criteria, 123 trees were injected on average, each year. The 120 trees that continue to be part of the treatment program remain in fair to good condition and will continue to be monitored and treated if they continue to meet the criteria. It is important to note, that injection treatments will not save the ash trees indefinitely, but instead preserve ash trees that could potentially be used as a seed

**SUBJECT: Emerald Ash Borer (EAB) Management Plan (10-year Summary)
Report (PW21023(a)) (City Wide) – Page 3 of 7**

source and continue to contribute positively to the urban forest canopy and provide benefits to the community.

Report PW10088(a) indicated that publicly owned ash trees along rural roads, in natural areas or ash trees growing on city owned property that did not constitute an urban street or park were not included as part of the EAB Management Plan due to the absence of a street tree inventory in rural areas at the time.

Recommendations from the consultant who aided staff in preparing the EAB Management Plan were presented in Report PW1088(a) and it was recommended that the City investigate opportunities to expand the tree inventory to rural areas and parks. Due to efficiencies, through the 10-years, staff were able to inventory ash trees in all the City's rural forestry grids and any naturalized buffers adjacent to public highways and properties.

In 2020, City staff informed Council through Report ES20001 that ash tree removals and replacements would be expanded to publicly owned trees in rural areas and along naturalized buffers, where it was identified that the ash trees posed a health and safety hazard to the public and / or property.

During the last year of the program in 2022, 1,607 ash trees were removed, and 5,423 replacement trees were planted. In the final years of the EAB Management Plan, where site conditions were favourable and planting space was available, and due to budget availability and favourable contractor pricing, the City planted additional trees beyond the 1:1 removal to replacement ratio at a replacement ratio of approximately 1:1.15 (see Figure 1 and Appendix "A" of Report PW21023(a)).

To date, a total of 25,355 ash trees have been removed and 27,905 replacement trees have been planted (see Figure 1 and Appendix "A" of Report PW21023(a)).

Replacement tree plantings included a diversity of tree species, to improve the diversity of the urban forest canopy and help protect the City's urban forest canopy against future devastation of pests and diseases that target select species.

**SUBJECT: Emerald Ash Borer (EAB) Management Plan (10-year Summary)
Report (PW21023(a)) (City Wide) – Page 4 of 7**

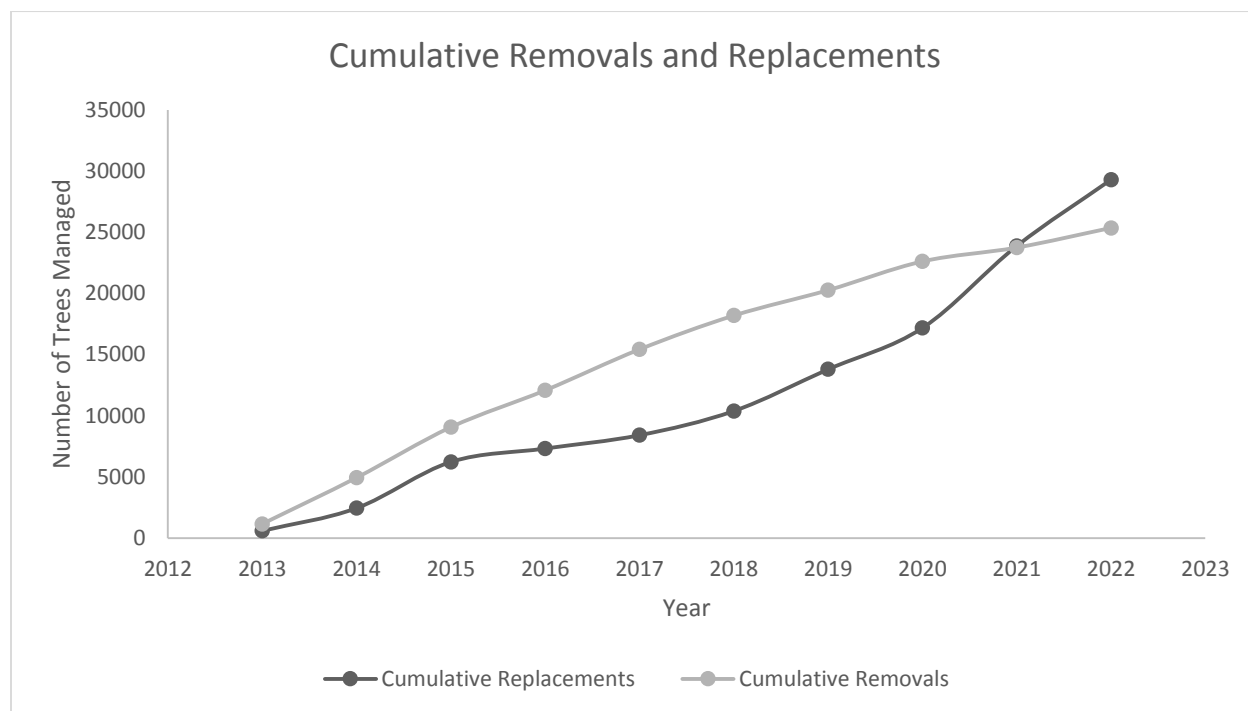


Figure 1. Cumulative number of removals and replacements for ash trees for the 10-year EAB Management Plan in the City of Hamilton.

Overall, the implementation of the EAB Management Plan was a success. Over the course of the 10-year period, the City exceeded the removal and replacement target rates, and achieved the consultant's recommendations (see Appendix "B" of Report PW21023(a)) where possible, while remaining under the budget provided to the program. This proactive approach avoided an influx of risk claims from hazardous dead ash trees to the public.

In 2022, a trapping program was initiated to assess the level of adult EAB still present within Hamilton. The program provides staff data used to estimate the overall population of EAB within a given area and determine if treatment is warranted. Forestry staff will conduct another trapping program in 2023 as a part of regular maintenance activities, to determine next steps required to maintain the residual trees the City has been protecting for the past 10 years.

A summary of the reporting to Council across the entire duration of the program is outlined in Appendix "C" of Report PW21023(a).

Financials

To date the EAB Management Plan spent just over \$21M of the approved budget and a year over year breakdown of expenditures is provided in Table 2 of Report

**SUBJECT: Emerald Ash Borer (EAB) Management Plan (10-year Summary)
Report (PW21023(a)) (City Wide) – Page 5 of 7**

PW21023(a). Note that while the total approved budget was \$26.2 million, the actual budget loaded to the EAB Capital project ID was a total of \$24.7 million.

Table 2. Year over year analysis of expenditures versus approved capital budget.

Year	Actual Budget	Actual Expenditures	Comments
2011	\$250,000.00	\$137,469.53	Refer to comment #1 below
2012	N/A	\$109,937.03	
2013	N/A	\$1,125,840.48	Refer to comment #2 below
2014	\$1,600,000.00	\$2,088,719.73	
2015	\$1,600,000.00	\$3,114,664.31	
2016	\$5,100,000.00	\$2,570,352.79	Refer to comment #2 below
2017	\$2,600,000.00	\$1,980,967.42	
2018	\$2,600,000.00	\$921,984.20	
2019	\$2,600,000.00	\$1,445,890.14	
2020	\$2,600,000.00	\$2,356,496.59	
2021	\$2,600,000.00	\$3,230,047.96	
2022	\$2,600,000.00	\$2,046,703.14	
Appropriations in	\$175,837.93		Refer to comment #3 below
Other Transfers In	\$460,793.15		Refer to comment #4 below
Totals	\$24,786,631.08	\$21,129,073.32	
Comments:			
<ol style="list-style-type: none"> 1) In 2011 and 2012, expenditures for EAB management were also funded through the program budget after the strategy received Council approval in 2012 2) In 2013, the program was funded from funds that were borrowed by the city. As a policy, the city only starts taking on debt when actual expenditures happen to avoid unnecessary interest charges which is why no funding is shown in 2013, and there is an increase to typical funds loaded in 2016 3) Occurred in 2015 from accounts 4451349000, 4451449000 and 4451351005 to 4451153001 (EAB Project) 4) Occurred in 2015, contributions from current to capital 			

The City was able to remain below the budgeted amount while still achieving targets due to the competitive tenders received for tree removals and stumping compared to the estimated \$730.00 per tree for removals and stumping estimated in the EAB

**SUBJECT: Emerald Ash Borer (EAB) Management Plan (10-year Summary)
Report (PW21023(a)) (City Wide) – Page 6 of 7**

Management Plan appended to Report PW10088(a). Further to this, the report over-estimated annual

tree treatment needs, which were revised after the City compared its publicly owned ash trees against its treatment criteria.

Fluctuations in expenditures year over year are as a result of recruitment of a Project Coordinator, and re-tendering multi-year project work. In 2015, City staff hired a Project Coordinator funded through the EAB program to manage contracts related to EAB to ensure quality assurance and oversee contracted works. This generally led to an overall increase in program expenditures, except in 2018, when City staff re-tendered its removal and stumping contract and received more favourable pricing than in previous years. The Project Coordinator position ended in 2022 at program close.

As part of closing out the project, all expenditures for 2022 will be reconciled; surplus funds remaining in the EAB Capital budget project ID will be returned to the funding source and Dept ID: 445145 – Emerald Ash Borer will be closed.

Future Management of EAB

EAB management will move for the most part from Forestry and Horticulture Capital Projects to Forestry Operations who will be responsible for tree risk assessments, pruning and when required removing remaining publicly owned ash trees. Costs will be funded through the Forestry and Horticulture Operating budget, with no additional funding required at this time.

The treatment and monitoring program will continue to be administered by the Project Manager of Forest Health and all costs for monitoring and treatment for 2023 will be funded through Dept ID: 445140 - Urban Forestry Health Program. No requirement for additional funds are anticipated at this time.

It is expected that EAB populations will continue to be present and attracted to the City due to regenerating ash trees, and any remaining ash populations in naturalized areas, on private properties across Hamilton, and remaining publicly owned rural ash trees that have yet to be removed. Note that publicly owned woodlot trees that do not pose a risk to public health and safety are not actively monitored by City staff at this time. Staff recognize this gap and plan to explore opportunities to expand the current inventory to public woodlots to aide in forest health management through actions outlined within the Urban Forest Strategy.

Given the success of implementing a proactive approach to managing EAB through the EAB Management Plan, similar plans may be developed for future pests and diseases,

**SUBJECT: Emerald Ash Borer (EAB) Management Plan (10-year Summary)
Report (PW21023(a)) (City Wide) – Page 7 of 7**

where warranted. These plans would be tailored depending on the pest or disease, and the affected public trees.

APPENDICES AND SCHEDULES ATTACHED

Appendix “A” to Report PW21023(a) – Annual Ash Tree Removals and Replacements vs Targets

Appendix “B” to Report PW21023(a) – Consultant Recommendations

Appendix “C” to Report PW21023(a) – List of Presentations and Reports to Council

Annual Ash Tree Removals and Replacements vs Targets

The following table summarizes the yearly removals and replacements since the beginning of the program:

Year	Target Removals / Replacements	Ash Tree Removals	Tree Replacements
2013	2300	1153	586
2014	2300	3783	1860
2015	2300	4128	3777
2016	2300	3013	1699
2017	2300	3347	1300
2018	2300	2765	1945
2019	2300	2075	3409
2020	2300	2352	3591
2021	2300	1132	6705
2022	2300	1607	5423
Totals	23,000 Removals 23,000 Replacements	25,355 Removals	29,299 Replacements

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Consultant Recommendations:

Recommendation		Summary
1	Implement an EAB Management Strategy involving proactive removal, replacement, and limited injection.	Proactive management, 1:1 planting was selected by Council and completed by Forestry staff.
2	Use the existing tree inventory to prioritize areas for EAB management and investigate opportunities to expand the tree inventory to rural areas and parks.	To improve management and execution of Forestry programs, the Tree Inventory was updated and digitized. This allowed the EAB program to be more efficient and EAB was expanded into rural areas and parks.
3	Implement grid-based branch sampling to delineate the area of infestation.	Staff initially performed branch sampling, and then improved identification of EAB infestation into a four-step system that categorized the health of ash trees (e.g., good, fair, poor and dead)
4	Implement an EAB communications strategy.	Information on EAB was set up and information notices were put out to property owners.
5	Investigate the viability of utilizing hyperspectral imagery to achieve a number of urban forest management objectives, including ash tree mapping in the rural areas.	Rather than using a cost intensive approach like hyperspectral imagery, staff implemented a systematic approach by using the Forest Inventory for mapping ash trees and investigating each Forestry Grid for EAB affected ash.
6	Maintain a formal working relationship with the CFIA, the Canadian Forest Service, and other organizations to share information about EAB infestation.	Working relationships with these organizations remain and regular communication remains.
7	Undertake annual review of the EAB management program and provide annual updates to City Council.	Annual information reports were presented to Council, except 2022 with updates from 2022 being summarized as part of PW21023(a) report. See Appendix C.

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List of Presentations and Reports to Council:

2010

September 20, 2010 Public Works

Emerald Ash Borer (EAB) [Management Plan](#) (PW10088) – (City Wide)

Committee Report – Public Works Committee – September 20, 2010 – [Item 6](#)

Council Minutes – [September 29, 2010](#)

2011

Committee Report: General Issues Committee – [January 26, 2011](#)

Staff Report: 2012 Tax Budget Guidelines and Preliminary Outlook ([FCS11074](#))

Committee Report: General Issues Committee – [September 12, 2011 – Item 7](#)

2012

Staff Report: Emerald Ash Borer (EAB) Action Plan ([PW10088a](#))

[Presentation](#)

Committee Report: General Issues Committee – September 6, 2012 – [item 5](#)

Council Minutes – [September 12, 2012](#)

2013

Mentioned in the Capital budget presentation FCS1275(B)

2014

Emerald Ash Update – [January 13, 2014](#)

Committee Report: Public Works – [January 13, 2014](#)

Council Minutes – [January 29, 2014](#)

2015

[Emerald Ash Update](#)

Committee Report: Public Works Committee – May 4, 2015 – [Item 7.1](#)

Council Minutes – [May 13, 2015](#)

2016

Capital Projects Works in Progress Sub-Committee – [Report Item 8.3](#)

Verbal Update – Emerald Ash Borer Program

Committee report: General Issues Committee – [July 4, 2016](#)

2017

Capital Projects Works in Progress Subcommittee – [Item 8.5](#)

No Presentation

Committee Report: General Issues Committee – [March 1, 2017](#)

2018

Capital Projects Works in Progress Subcommittee – [Item 5.1](#)

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**SUBJECT: Emerald Ash Borer (EAB) Management Plan (10-year Summary)
Report (PW21023(a)) (City Wide) - Page 2 of 2**

No Presentation

Committee Report: General Issues Committee – [February 21, 2018](#)

2019

EAB Management Plan (ES19004) Information Update – [February 22, 2019](#)

Capital Works in Progress Review Subcommittee – [February 4, 2019](#) – recommending Appendix B to Report FCS18077(a), be received.

Committee Report: General Issues Committee – [February 20, 2019](#) – item 7 page 4 Appendix "B" to Report FCS18077(a), be received.

Council Minutes: [February 27, 2019](#) – approving above resolution.

Staff Report: Public Works - [Capital Projects Status Report as of September 30, 2019 \(FCS19077\(a\)\)](#) – Appendix A Page 5 Emerald Ash Borer Plan

2020

EAB Management Plan (ES20001) Information Update – [January 20, 2020](#)

Capital Works in Progress Review Subcommittee Report – Item 3 – [January 27, 2020](#) – recommending Appendix "A" to Report FCS19077(a), be received; Page 2

Committee Report: General Issues Committee – [February 19, 2020](#)– Item 12c Appendix "A" to Report FCS19077(a), be received; - page 9

Council Minutes – [February 26, 2020](#) – approving above resolution.

2021

Emerald Ash Borer Management Plan (ES20001) Information Update – [April 19, 2021](#)

Staff Report Emerald Ash Borer Management Plan ([PW21023](#))

Committee Report: Public Works Committee – [April 19, 2021](#)

Council Minutes – [April 28, 2021](#)

PW23001

Peter Locs, Extension 6015

INTERSECTION CONTROL LIST
Public Works Committee – March 20, 2023
PUBLIC WORKS DEPARTMENT
Transportation Operations & Maintenance Division
Transportation Operations Section

RECOMMENDATION

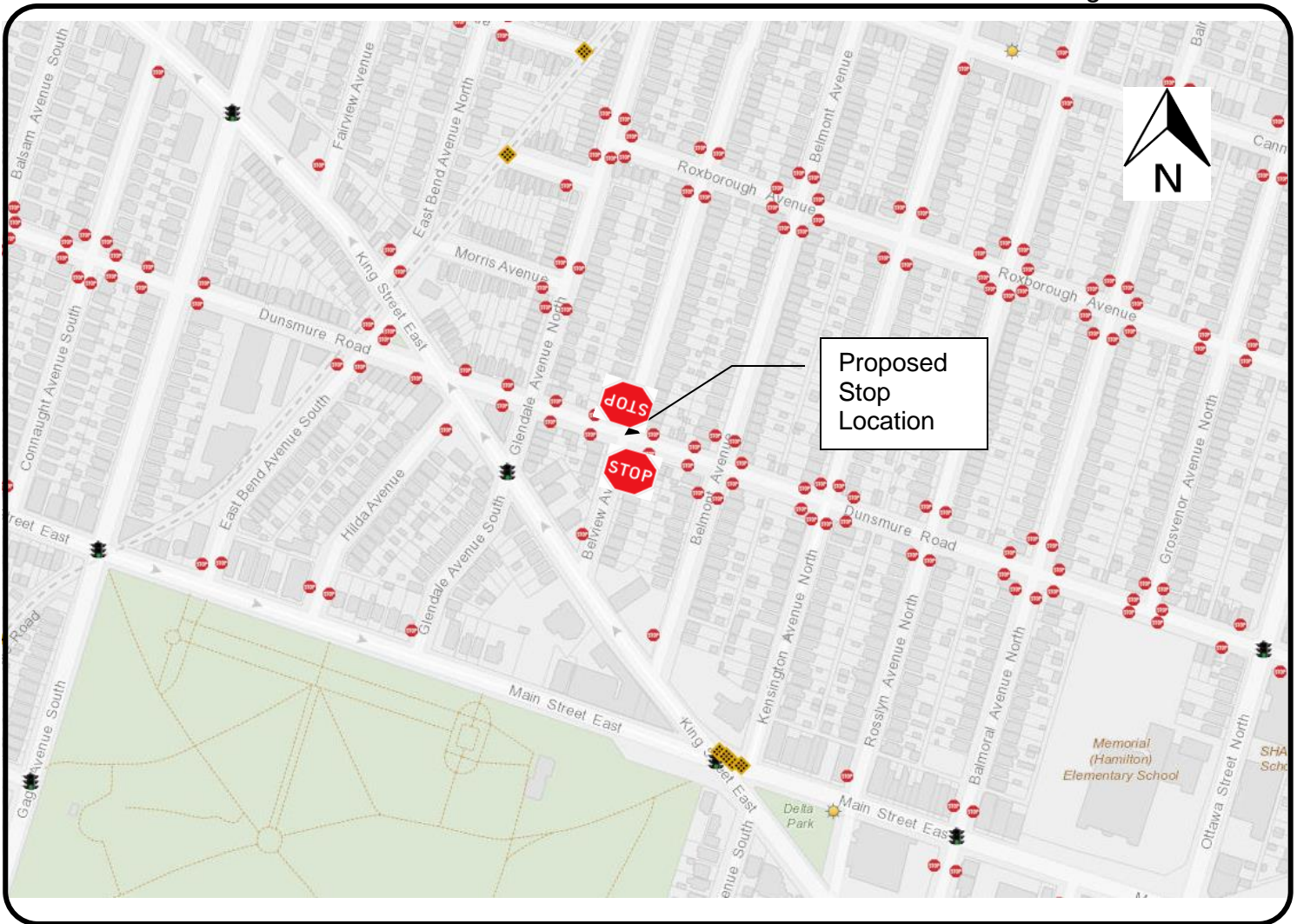
That the appropriate By-law be presented to Council to provide traffic control as follows:

Intersection		Stop Control Direction		Class	Comments / Petition	Ward	
		Existing	Requested				
Street 1	Street 2						
Section "E" Hamilton							
(a)	Dunsmure Road	Belview Avenue	WB/EB	All-way	A	Warranted for an all-way stop	3
(a)	Forsyth Place	Forsyth Avenue North	None	WB	A	Currently an uncontrolled intersection	1
(a)	Troy Avenue	Tate Avenue	None	WB	A	Currently an uncontrolled intersection	4
(a)	Troy Avenue	Dunn Avenue	None	EB	A	Currently an uncontrolled intersection	4

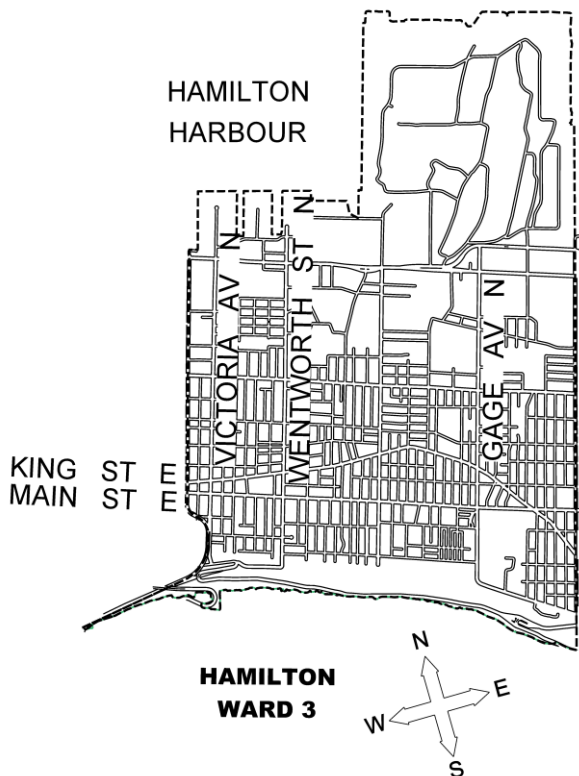
Legend

No Control Existing (New Subdivision) - **NC**

Intersection Class: **A** - Local/Local **B** - Local/Collector **C** - Collector/Collector **D** – Local/Arterial



KEY MAP



PROPOSED STREET SEGMENTS

Dunsmure Road at Belview Avenue

Transportation Operations & Maintenance Division
PUBLIC WORKS DEPARTMENT

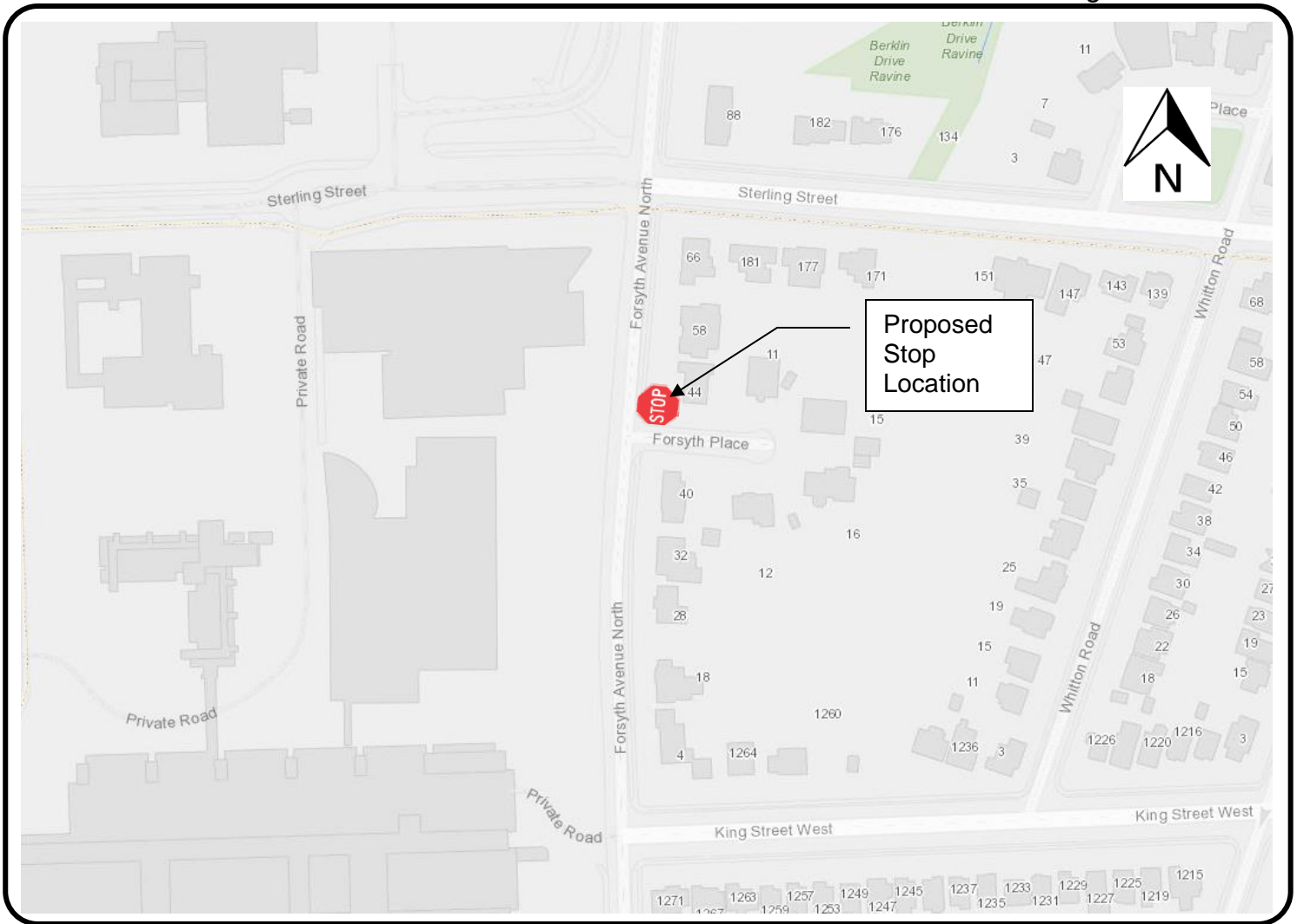
LEGEND



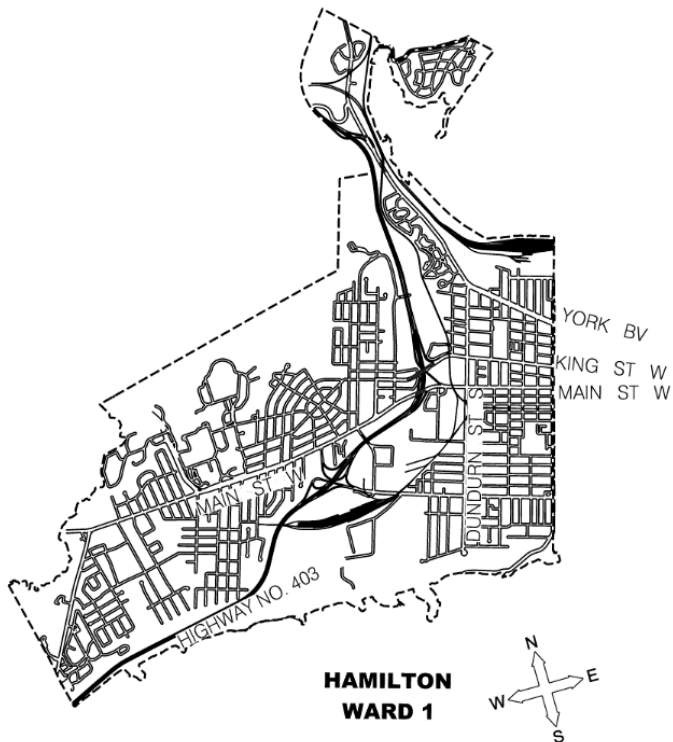
Proposed Stop Sign

SCALE
NOT TO SCALE

DATE
March 20, 2023



KEY MAP



PROPOSED STREET SEGMENTS

Forsyth Avenue North at Forsyth Place

Transportation Operations & Maintenance Division
PUBLIC WORKS DEPARTMENT

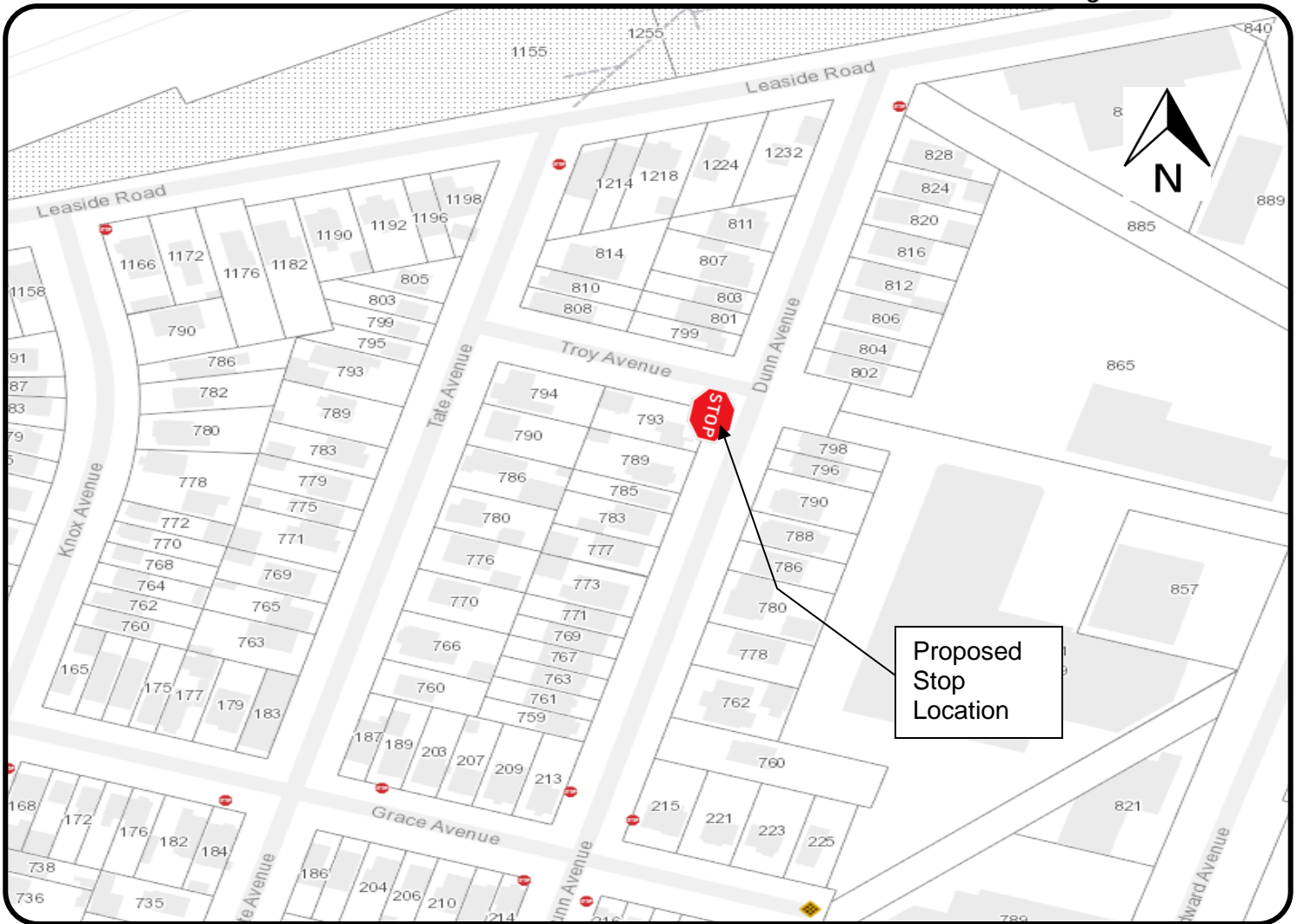
LEGEND



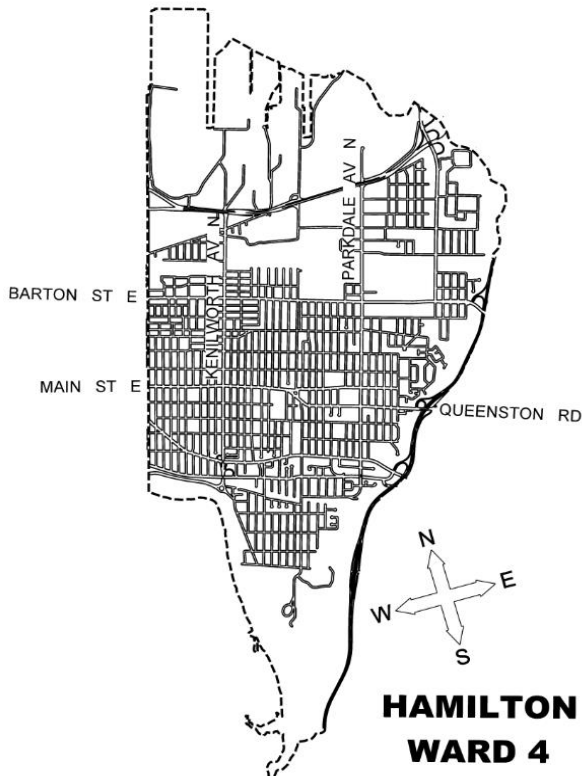
Proposed Stop Sign

SCALE
NOT TO SCALE

DATE
March 20, 2023



KEY MAP



PROPOSED STREET SEGMENTS

Troy Avenue and Dunn Avenue

Transportation Operations & Maintenance Division
PUBLIC WORKS DEPARTMENT

LEGEND



Proposed Stop Sign

SCALE
NOT TO SCALE

DATE
March 20, 2023

Authority:

Report:

Date:

Wards: 1, 3, 4

Bill No.**CITY OF HAMILTON****BY-LAW NO. 23-****To Amend By-law No. 01-215
Being a By-law To Regulate Traffic**

WHEREAS sections 8, 9 and 10 of the Municipal Act, 2001, S.O. 2001, c. 25, authorize the City of Hamilton to pass by-laws as necessary or desirable for the public and municipal purposes, and in particular paragraphs 4 through 8 of subsection 10(2) authorize by-laws respecting: assets of the municipality, the economic, social and environmental well-being of the municipality; health, safety and well-being of persons; the provision of any service or thing that it considers necessary or desirable for the public; and the protection of persons and property;

AND WHEREAS on the 18th day of September 2001, the Council of the City of Hamilton enacted By-law No. 01-215 to regulate traffic;

AND WHEREAS it is necessary to amend By-law No. 01-215.

NOW THEREFORE the Council of the City of Hamilton enacts as follows:

1. Schedule 5 (Stop Control) of By-law No. 01-215, as amended, is hereby further amended by adding to Section "E" (Hamilton) thereof the following item, namely;

Dunsmure Road	Northbound/Southbound	Belview Avenue
Forsyth Place	Westbound	Forsyth Avenue North
Troy Avenue	Eastbound	Dunn Avenue
Troy Avenue	Westbound	Tate Avenue

2. Subject to the amendments made in this By-law, in all other respects, By-law No. 01-215, including all Schedules thereto, as amended, is hereby confirmed unchanged.

To Amend By-law No. 01-215
Being a By-law to Regulate Traffic

Page 2 of 2

3. This By-law shall come into force and take effect on the date of its passing and enactment.


PASSED this 29th day of March, 2023.

A. Horwath
Mayor

A. Holland
City Clerk



CITIZEN COMMITTEE REPORT

To:	Public Works Committee
From:	Keep Hamilton Clean & Green Committee  Brenda Duke, Chair
Date:	February 27, 2023
Re:	Accessing the Keep Hamilton Clean & Green Committee Reserve

Recommendation:

The KHCG Committee recommends accessing the reserve budget in the amount of \$9,955.30 to have our Community Clean Trailers re-wrapped in Vinyl, as well as a marketing budget not to exceed \$2,000 to promote the Community Clean Trailer Program.

Background

The KHCG Committee currently owns two Community Clean Trailers that can be rented by members of the community for beautification and cleanup events at no charge. Prior to COVID-19 these trailers were incredibly popular and well-used. Since the commencement of the pandemic, the trailers have remained unavailable, leaving them to sit outside in the elements for three years. The current vinyl wraps are deteriorating (peeling and chipping) and the graphics including program sponsors that are outdated.

Analysis/Rationale

During COVID-19 participation in our programs decreased and the trailers have not been available since. These trailers are moving advertisements for not just the Community Clean Trailers, but also for the Team Up to Clean Up program, the Adopt-A-Park program, and the Keep Hamilton Clean & Green Committee. Having the trailers restored to a vibrant, updated, and clean look will get the attention of community members and encourage participation in our programs. The reserve for this Committee currently holds \$36,408.16, so even with the withdrawal for this project, the Committee will retain a healthy reserve.



CITY OF HAMILTON
PUBLIC WORKS DEPARTMENT
Waste Management Division

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	March 20, 2023
SUBJECT/REPORT NO:	Standardization of Waste Mobile and Web Application (PW23013) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Jacque Colangelo (905) 546-2424 Extension 4634
SUBMITTED BY:	Angela Storey Director, Waste Management Public Works Department
SIGNATURE:	

RECOMMENDATIONS

- (a) That Council approve the standardization of the Recycle Coach Mobile and Web Waste Application (Waste App) provided by Municipal Media Inc. pursuant to Procurement Policy #14 – Standardization, for five years from the expiration date of the existing contract with the vendor; and
- (b) That the General Manager, Public Works Department, or their designate, be authorized to negotiate, enter into and execute any required contract and any ancillary documents required to give effect thereto with Municipal Media Inc., in a form satisfactory to the City Solicitor.

EXECUTIVE SUMMARY

The Waste Management Division of the Public Works Department is responsible for educating residents about the City's recycling and waste programs, and technology is an increasingly important communication platform. The City's current technical option is an application contracted to Municipal Media Inc. and is known as the Recycle Coach Mobile and Web Waste Application (Waste App).

The Waste App makes it easy for residents to get fast and accurate information and updates online or using their smartphones. Both formats offer the same services such

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**SUBJECT: Standardization of Waste Mobile and Web Application (PW23013)
(City Wide) – Page 2 of 7**

as a “what goes where” search tool, a calendar to inform when their collection day occurs and provides the opportunity to sign-up for collection reminders.

Through a municipal scan, staff found that other municipalities with an application for waste program information either use the same Waste App that Hamilton has, contract with one other vendor in the marketplace or have developed an internal solution. Although the other options are available to the City of Hamilton, staff is seeking approval to make the City’s current Waste App the standard for a period of five years following the expiration of the current contract with the vendor to maintain the consistency of information and functionality for the 20,000 mobile app subscribers and more than 100,000 users of the web tool.

Pursuant to the City’s Procurement Policy, Policy #14 – Standardization, Section 4.14, Report PW23013 seeks to establish the continued use of the current Waste App provided by Municipal Media Inc. as a corporate standard in the Public Works Department. Prior to the end of the five-year standardization period, this standardization will be reviewed to investigate all suitable applications available for the purpose of providing waste education and notifications on both mobile and web platforms. If staff believe the continuation of standardization is appropriate for this product, a recommendation report will be brought back to Council for further direction.

Alternatives for Consideration – See Page 5

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: The annual contractual cost to the City for the Recycle Coach Mobile and Web Waste Application is included in the annual operating budget for the Waste Policy and Planning section. Municipal Media Inc. has confirmed the annual costs will range between \$13,000 and \$17,000 for the years 2023 to 2027.

Staffing: N/A

Legal: N/A

HISTORICAL BACKGROUND

In 2015, Hamilton implemented a web tool for waste information on the City’s website and made a standalone app available for smart devices for resident use. This Waste App has seen many iterations over the years and today provides a robust tool that offers residents waste education information, provides collection updates and notifications, includes a dynamic “what goes where” search tool and provides up-to-date tailored collection calendars by address in a quick and easy fashion.

**SUBJECT: Standardization of Waste Mobile and Web Application (PW23013)
(City Wide) – Page 3 of 7**

Earlier versions of the Waste App with less functionality resulted in the annual cost being less than \$10,000, and as such, was a low-dollar acquisition under the Procurement By-Law. In 2019, the annual cost of the Waste App surpassed \$10,000 and a Policy 11 was completed to continue the use of the Waste App.

This Policy 11 is set to expire mid-2023.

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

By-Law #20-205 as amended Procurement Policy, Policy 4.14, Standardization.

The intent of Report PW23013 is to comply with Procurement Policy #14 – Standardization, Section 4.14, which requires Council approval for the establishment of a standard where the procurement of the good or services is a single source.

RELEVANT CONSULTATION

The recommendation in Report PW23013 was prepared in consultation with staff from:

- Corporate Services Department – Information Technology Division
 - IT Operations (IT Contract and Vendor Management)
 - IT Infrastructure and Security (Network and Security)
 - Business Applications (Spatial Solutions and Data Services)
- City Manager’s Office – Communications and Strategic Initiatives Division
 - Web Strategy and User Experience

ANALYSIS AND RATIONALE FOR RECOMMENDATION

In 2022, Waste Management staff began the procurement process for the Waste App as the existing contract is set to expire in June 2023. After reviewing options which included investigating other Waste Apps in the market and developing an internal Waste App, the option to standardize the current Waste App was recommended. Hamilton is one of the top performers with the current Waste App and the number of users continues to climb. The Waste App and searchable material lists have been promoted regularly through education material and advertising tactics, with the goal to continue to increase the number of mobile downloads and web app users.

Table 1 illustrates the high usage of the Waste App web tool in the last three years including over 450,000 material searches and over 8,000,000 reminder messages sent. In addition to the high use of the web Waste App, at the end of 2022, the Waste App mobile version was downloaded by more than 20,000 Hamilton residents.

**SUBJECT: Standardization of Waste Mobile and Web Application (PW23013)
(City Wide) – Page 4 of 7**

Table 1: Usage of Recycle Coach Web Waste App 2020-2022

Year	Web App Users	Collection Schedule Downloads	Material Searches	Reminder Messages Sent
2020	122,630	11,421	158,260	1,565,627
2021	238,336	12,775	200,216	2,942,882
2022	409,710	13,691	98,133	3,968,654
Total	770,676	13,691	456,609	8,477,163

Benefits of continuing with the existing Waste App include:

- Consistency – As seen in Table 1 above, by continuing with the current App, the high number of existing customers would not be required to download and use a new application. It is common that changing apps can cause users to be discouraged and choose not to move to the new app;
- Current functionality – The current App has been integrated and tailored to work in conjunction with the City’s website with the many features outlined in Report PW23013;
- Communications – Allowing custom messaging such as recycling tips, reminders, and collection changes;
- Customer service – Residents are familiar with the current App features and its continued use would avoid any interruptions to information available through the Waste App, i.e. waste collection calendars, auto-reminders, and subscriptions to additional tips and information;
- Diverse communication – The current App is available in English and up to five additional languages. Languages can be changed annually and are selected to align with the most common languages used in the City; and
- Value – The City receives a discounted cost for using the Waste App as a current customer compared to new customers.

Risks associated with moving away from the current Waste App include:

- Cost – The contractual cost to move to another waste app in the market is not known however, staff in the City’s Information Technology Operations section advise costs would range from \$65,000 - \$90,000 to procure a company to develop a medium complexity application for the City, with annual costs of \$20,000 - \$30,000 to host and maintain the application on both web and mobile platforms and support required upgrades to the application as needed;
- Functionality – A new waste app may not have the necessary functionality to meet the needs of the organization, such as embedding the app directly into the City’s website, offering the mobile app on both iOS and Android platforms and

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**SUBJECT: Standardization of Waste Mobile and Web Application (PW23013)
(City Wide) – Page 5 of 7**

the ability for staff to update content using an editor tool which could result in inefficiencies and potentially added costs;

- Storage of historical data – Moving to a new application may result in the loss of data stored in the current app; and
- Transition delay – The transition to a new waste app could result in a temporary interruption of service and resistance from citizens to download a new app, leading to low participation.

Following consultation with staff from the Information Technology Division and the Communications and Strategic Initiatives Division, the recommendation was to not look further into the development of an internal waste app and to pursue Standardization of the current Waste App for a period of five years. In doing so, the current Waste App will continue to provide the required functionality and remove the potential barriers, support from internal resources and added costs to implement a different waste app.

The City's Procurement Policy #14 specifies the requirements for goods/services standardization. This process assists the City in selecting a product or service that best meets the City's operational requirements. Using Policy #14 for the current Waste App acquisition allows the City to continue using the Recycle Coach Web and Mobile Waste App platform without disruption.

ALTERNATIVES FOR CONSIDERATION

Alternative #1 – Competitive Bid Process

Council may choose to not standardize the existing Waste App and instead direct staff to secure a waste app through a competitive procurement process. As there is currently only one other waste app provider in North America with a comparable product, it is staff's opinion that there is no real advantage, financial or operational, to implementing a new waste app. There is however the potential for operational issues during the implementation and maintenance of a new waste app unfamiliar to staff and residents. This alternative is not being recommended as it would greatly impact residents that currently use the existing Waste App and could result in significant user loss and a disruption in service for a product that may not provide any advantage over the current Waste App.

Financial: The assumed cost for using a different waste app on the market is relatively comparable to the costs for the existing Waste App, however additional budget would be required for activities related to implementing the new app such as advertising and promotion and IT resources required to assist with the integration of a new app.

Staffing: N/A

**SUBJECT: Standardization of Waste Mobile and Web Application (PW23013)
(City Wide) – Page 6 of 7**

Legal: N/A

Alternative #2 – Development of an In-house Waste App

Council may choose to ask staff to develop a Hamilton specific waste app. During consultation, the Information Technology Division and Communications and Strategic Initiatives Division stated that the cost to build a custom browser solution would be significantly greater, and likely less efficient, than using a pre-built waste app with web browser features currently available to us. In addition, all mobile applications the City has available to residents are developed and managed by third party vendors as they do not have the expertise for in-house mobile application development. This alternative also has additional time associated with it as the selection of an app developer would be through a competitive procurement process that is estimated to take between six and 12 months. This alternative is not being recommended as a new application would not likely be developed by the time the contract for the current Waste App expires on June 30, 2023 and the cost to develop and maintain the in-house app would exceed the cost of the current Waste App.

Financial: Budget would be required to advertise and promote a new waste app to residents to replace current messaging as well as to fund the development of the in-house waste app. The Information Technology Division estimates the cost to procure a vendor to develop a medium complexity database and support it would be in the range of \$65,000 - \$90,000. The ongoing maintenance costs of a Hamilton specific waste app is in the range of \$20,000 to \$30,000 annually.

Staffing: N/A

Legal: Legal resources would be required to support a City-developed Waste App including review of liability and handling of personal information with providing an app to residents.

ALIGNMENT TO THE 2016 – 2025 STRATEGIC PLAN

Community Engagement and Participation

Hamilton has an open, transparent and accessible approach to City government that engages with and empowers all citizens to be involved in their community

Clean and Green

Hamilton is environmentally sustainable with a healthy balance of natural and urban spaces.

**SUBJECT: Standardization of Waste Mobile and Web Application (PW23013)
(City Wide) – Page 7 of 7**

Built Environment and Infrastructure

Hamilton is supported by state-of-the-art infrastructure, transportation options, buildings and public spaces that create a dynamic City.

Our People and Performance


Hamiltonians have a high level of trust and confidence in their City government.

APPENDICES AND SCHEDULES ATTACHED

N/A



CITY OF HAMILTON
PUBLIC WORKS DEPARTMENT
Hamilton Water Division

TO:	Chair and Members Public Works Department
COMMITTEE DATE:	March 20, 2023
SUBJECT/REPORT NO:	Wastewater Quality Management System Operational Plan Summary Report (PW23017) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Susan Girt (905) 546-2424 Ext. 2671 Jesmy D'Cruz (905) 546-2424 Ext. 5833
SUBMITTED BY:	Nick Winters Director, Hamilton Water Public Works Department
SIGNATURE:	

RECOMMENDATIONS

- (a) That Appendix "A" to Report PW23017 respecting the Wastewater Quality Management System Operational Plan Summary Report be approved; and
- (b) That the Mayor, City Clerk, General Manager, Public Works and Director, Hamilton Water, be authorized and directed to execute the Wastewater Quality Management System Operational Plan Summary Report by signing the Commitment and Endorsement page within the Summary Report.

EXECUTIVE SUMMARY

The Hamilton Water Division developed a Wastewater Quality Management System (WWQMS) as part of the City's efforts to:

- consistently process wastewater that meets applicable legislative, regulatory and other requirements, and
- enhance environmental performance through the effective application and continual improvement of the Quality Management System.

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SUBJECT: WWQMS Operational Plan Summary Report (PW23017) (City Wide)
- Page 2 of 5

Following the Chedoke Creek Discharge event, Council approved the hiring of a Wastewater Compliance Technologist to develop and implement a WWQMS for the City.

The WWQMS is a framework that documents processes, procedures, and responsibilities to effectively and efficiently collect and treat wastewater. Revised processes and procedures have been integrated within the City of Hamilton's Beyond Compliance Operating System (BCOS). A highly successful staff engagement exercise was undertaken to develop the WWQMS Policy that is referred to by the acronym "CLEAN" and can be found in Section 2.2 of the WWQMS Operational Plan Summary Report attached as Appendix "A" to Report PW23017. In 2019/2020, the team developed the Standard, performed a WWQMS Gap Analysis on the current program, established a WWQMS Working Group, facilitated a Wastewater Compliance Audit completed by a third-party, and developed associated documents and this Operational Plan.

The "Owner" of a wastewater system (Mayor and Council) has specific responsibilities under the Environmental Compliance Approvals issued to the City by the Province for various wastewater related assets. The Hamilton Water Division acts as the "Operating Authority" for the City's wastewater systems and is responsible for the development of the WWQMS Operational Plan and all ancillary documentation.

In 2020, Council approved the first WWQMS Operational Plan Summary Report. In 2023, the WWQMS Operational Plan Summary Report has been revised to reflect the current Hamilton Water organizational structure and current operating procedures. As required by the internal WWQMS Standard, Top Management (General Manager, Public Works and the Director, Hamilton Water) for the WWQMS is seeking Council's endorsement of the first WWQMS Policy and Operational Plan Summary Report, attached as Appendix "A" to Report PW23017.

Alternatives for Consideration – See Page 4

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: All costs to support the WWQMS Operational Plan were approved as part of the 2023 Rate Budget.

Staffing: NA

Legal: There is currently no legal requirement to have an approved Operational Plan for wastewater.

SUBJECT: WWQMS Operational Plan Summary Report (PW23017) (City Wide)
- Page 3 of 5

HISTORICAL BACKGROUND

The implementation of the Wastewater Quality Management System (WWQMS) is a continual improvement action following the Chedoke Creek Discharge event. Council discussed the need for greater oversight of the City's wastewater operations, especially with regards to overflows and by-passes where there could be an impact to the environment.

The WWQMS is a companion to the City's provincially required Drinking Water Quality Management System (DWQMS) that has been successfully implemented and maintained since 2008. The DWQMS has helped the City deliver safe, high quality, and consistent supply of drinking water to customers, while always improving the DWQMS, following and complying with applicable legislation and ensuring effective and open communication with the community concerning matters of drinking water quality.

The WWQMS Operational Plan Summary Report is re-endorsed every four (4) years following the municipal election cycle and once new Council members attend Due Diligence Training. The latest WWQMS Operational Plan Summary Report was signed in 2020.

The 2023 version of the WWQMS Operational Plan Summary Report requires the signing of the Commitment and Endorsement by the "Owner" Mayor and Council.

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

The WWQMS Operational Plan Summary Report meets the intent of the WWQMS Policy approved by Council on December 16, 2020 (PW20076).

Of environmental interest, the WWQMS is a sub-system of the Beyond Compliance Operating System (BCOS) which is Hamilton Water's integrated environmental, health & safety management system. With the implementation of WWQMS, BCOS continues to expand and improve Hamilton Water processes.

RELEVANT CONSULTATION

Staff have scheduled Wastewater Due Diligence training sessions for the Mayor, Council, City Manager, Senior Management Team of Hamilton Water, and the General Manager, Public Works. The purpose of the training is to formally inform the Owner of the legislative framework for wastewater and its responsibilities under the WWQMS.

Following the endorsements of the WWQMS Operational Plan Summary Report, signed copies of the WWQMS Operational Plan Summary Report are made available to the

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public on the City's website, at the Clerk's Office, City Hall, and the Hamilton Water storefront at 330 Wentworth Street North.

Should the public have any questions, comments or suggestions, they can contact the WWQMS System Management Representative (Manager, Compliance and Regulations) and their comments will be considered for continual improvement of the WWQMS.

ANALYSIS AND RATIONALE FOR RECOMMENDATION

The WWQMS Operational Plan Summary Report is an integrated document for all the Hamilton Wastewater Systems including the Woodward Avenue Wastewater Treatment Plant, Dundas Wastewater Treatment Plant and Wastewater Collection System.

A full copy of the WWQMS Operational Plan Summary Report is attached as Appendix "A" to Report PW23017. The WWQMS Operational Plan Summary Report provides a concise summary of the entire WWQMS and refers to the more detailed Level III system procedures and records.

It is recommended that the Operational Plan Summary Report be endorsed by the System Owner and Top Management of the Wastewater System(s) similar to the Drinking Water Quality Management System (DWQMS). As such, Section 3.0 of the Operational Plan Summary Report includes a section entitled Commitment and Endorsement. Space has been allotted for the signatures of the Mayor and City Clerk as signing authority for the Owner, and the General Manager, Public Works and the Director, Hamilton Water as Top Management of the Operating Authority. Signatures will be added after Council endorses the WWQMS Operational Plan Summary Report as evidence of Owner and Operating Authority's commitment and endorsement.

ALTERNATIVES FOR CONSIDERATION

The Ministry of Environment, Conservation and Parks (MECP) is supporting the Canadian Standards Association (CSA) in the development of a Wastewater Quality Management System Standard. This Standard will be voluntary across Canada. The City has supported this initiative and a staff member is on the Technical Committee responsible for its development.

Staff will continue to monitor the development of the voluntary CSA WWQMS and will consider making changes to the City's WWQMS as part of continual improvement.

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ALIGNMENT TO THE 2016 – 2025 STRATEGIC PLAN

Community Engagement and Participation

Hamilton has an open, transparent and accessible approach to City government that engages with and empowers all citizens to be involved in their community.

Economic Prosperity and Growth

Hamilton has a prosperous and diverse local economy where people have opportunities to grow and develop.

Healthy and Safe Communities

Hamilton is a safe and supportive City where people are active, healthy, and have a high quality of life.

Clean and Green

Hamilton is environmentally sustainable with a healthy balance of natural and urban spaces.

Built Environment and Infrastructure

Hamilton is supported by state-of-the-art infrastructure, transportation options, buildings and public spaces that create a dynamic City.

Our People and Performance

Hamiltonians have a high level of trust and confidence in their City government.

APPENDICES AND SCHEDULES ATTACHED

Appendix “A” to Report PW23017 – Wastewater Quality Management System
Operational Plan Summary Report



Hamilton

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PREFACE

Hamilton Water is committed to the protection of worker health, public health, property, and the environment. Beyond Compliance Operating System (BCOS) was developed to support this commitment. BCOS is an integrated management system that currently oversees the Drinking Water Quality Management System, Environmental Laboratory QMS and the Occupational Health and Safety Management System.

The Wastewater Quality Management System (WWQMS) falls within the BCOS umbrella. WWQMS is being implemented to effectively collect and treat wastewater and protect the environment. As no WWQMS Standard currently exists, the voluntary standard for the WWQMS was developed internally by Hamilton Water by merging the existing ISO14001:2015 Environmental Management Systems Standard and the Drinking Water Quality Management Standard. The requirements of the WWQMS are stated throughout the Operational Plan Summary Report and have been developed by subject matter experts within Hamilton Water.

BCOS Framework & WWQMS

Beyond Compliance Operating System (BCOS)



Access to Reports

Following the endorsement of the WWQMS Operational Plan Summary Report, signed copies of the WWQMS Operational Plan Summary Report will be made available to the public on the City's website, Clerk's Office at City Hall and the Hamilton Water storefront at 330 Wentworth.



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The WWQMS Operational Plan Summary Report is also accessible to staff through the BCOS Database and the Sectional Workspaces.

1 QUALITY MANAGEMENT SYSTEM

1.1 Purpose

The purpose of the Wastewater Quality Management System (WWQMS) Operational Plan is to document the City of Hamilton's WWQMS as part of the City's efforts to:

- a. consistently process wastewater that meets applicable legislative, regulatory and other requirements, and
- b. enhance environmental performance through the effective application and continual improvement of the Quality Management System.

1.2 Scope

The WWQMS Operational Plan applies to Hamilton Water (HW), which is the Operating Authority for the City's wastewater collection and treatment system (WWS).

HW has developed a WWQMS Operational Plan Manual (PW-WW-M-001-007) outlining the procedures and documents appropriate to the wastewater systems located in the City of Hamilton. The purpose of the WWQMS Operational Plan Manual (PW-WW-M-001-007) is to ensure that the requirements of the WWQMS is efficiently and effectively communicated to HW staff and key stakeholders. The WWQMS Operational Plan Manual also includes a map entitled "[City of Hamilton Wastewater Collection System Map \(PW-WW-V-011-001\)](#)" which illustrates the geographic scope of the City's wastewater systems.

1.3 Definitions

BCOS	Beyond Compliance Operating System – Environmental, Health and Safety Management System for the Hamilton Water Division. BCOS is an umbrella system to the Environmental Laboratory QMS, DWQMS, and WWQMS sub-systems.
BCOS Database	Electronic management system software provided by Intelx. Scope of software is EQH&S and meets the requirements of the BCOS standards.



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BLT	BCOS Lead Team - Includes SMR, Compliance Support Group, and Sectional QAs or designates from the Hamilton Water Division.
COH	City of Hamilton
Combined Sewer Overflow Tank (CSO Tank)	Tanks designed for the storage of combined sewage during heavy rain events. Gates in the sewer system direct flow into the CSO tanks. The combined sewage is stored in the tanks until the rain event has ceased at which point the wastewater is directed back to the sewer system and onto the WWTP for treatment. These tanks help decrease the volume of water in the combined sewer system being transported to the WWTP and also decrease the number of CSOs to the natural environment.
Combined Sewer System (CSS)	A wastewater collection system which conveys sanitary wastewaters (domestic, commercial and industrial wastewaters) and stormwater runoff through a single-pipe system to a Sewage Treatment Plant (STP) or treatment works. Combined sewer systems which have been partially separated and in which roof leaders or foundation drains contribute stormwater inflow to the sewer system conveying sanitary flows are still defined as combined sewer systems.
Continual Improvement	Recurring process of enhancing the management system in order to achieve improvements in overall performance consistent with the organization's policy. Continual improvement tools include identification of existing or potential non-conformances, root cause analysis, implementation of corrective / preventive action requests and verification of the effectiveness of corrective / preventive actions.



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Controlled documents	<p>Document deemed to be important to the functioning of Hamilton Water Division, as updated, reviewed, approved by the indicated staff, and authorized for release and distribution. The document is available to staff in a format that cannot be modified without appropriate approval. The document available to staff is always the most current version of the document. The document is subject to monitoring, auditing and update. Controlled documents have a unique BCOS issuance number.</p> <ul style="list-style-type: none"> Includes: procedures, manuals, checklists, forms, templates, lists, visual aids, guidelines and brochures.
Corrective Action	Action to eliminate the cause of a detected non-conformance or non-compliance.
CSG	Compliance Support Group
DWQMS	Drinking Water Quality Management System
ECA	Environmental Compliance Approval
E2	<p>The Environmental Emergency (E2) Regulations came into force under the authorities of the Canadian Environmental Protection Act, 1999 (CEPA 1999). The E2 Regulations were put in place to enhance the safety of the environment and human life and health of Canadians by preventing, preparing for, responding to and recovering from environmental emergencies. Under the E2 Regulations, any person who owns or has the charge, management or control of a listed substance on a fixed facility may be required to:</p> <ul style="list-style-type: none"> identify substance and place; prepare an environmental emergency plan (E2 plan); implement, update and test the E2 plan annually; provide notice of closure or decommissioning; and report environmental emergencies involving regulated substances.



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EQH&S	Environmental, quality, health and safety
Hamilton Water (HW)	Hamilton Water Division, which is the water, wastewater, and stormwater Operating Authority for the City of Hamilton.
HW - SMT	The Hamilton Water Senior Management Team includes the Directors & Section Managers of the Hamilton Water Division.
IPS	Infor Public Sector (formerly HANSEN). Departmental and cross-sectional modular software system, offering a variety of packages designed to handle different aspects of municipal operations such as infrastructure assets inventory, work management, stock inventory systems, service applications and call centers, licensing and enforcement.
Level III Document	A controlled document that applies to the Hamilton Water Division.
Level III Document (Scoped)	A controlled document that applies to two or more but not all the sections of the Hamilton Water Division.
Level IV Document	A controlled document that applies to one Section of the Hamilton Water Division.
MOE	Ontario Ministry of Environment as amended (i.e. Ministry of Environment (MOE), Ministry of Environment and Energy (MOEE), Ministry of Environment and Climate Change (MOECC), Ministry of Environment, Conservation and Parks (MECP))
Operating Authority	Staff within the Hamilton Water Division responsible for the operation, maintenance and providing support services to the COH DWSs (including water treatment and distribution) and WWSs (including collection and wastewater treatment).



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Owner (DWS / WWS)	Every person who is a legal or beneficial owner of the City's DWSs and WWSs. Since the City's DWSs and WWSs are publicly owned and operated, the Mayor and Council of the City of Hamilton have been identified as Owners of the City's DWSs and WWSs.
PMATS	Plant Maintenance and Technical Services Section
PO	Plant Operations Section
Preventative Maintenance (PM)	Schedule of planned maintenance actions aimed at the prevention of breakdowns and failures.
QA	<p>Quality Assurance (process): Planned and systematic pattern of actions necessary to ensure that management and technical controls are being followed.</p> <p>Quality Assurance (staff): Staff who are responsible for maintaining quality within HW's Quality Management Systems. e.g. Sectional Quality Assurance Analyst, Quality Assurance Supervisor etc.</p>
RTC	Real Time Control
SMR	Systems Management Representative (for the BCOS, DWQMS, and WWQMS Systems) - Manager of Compliance and Regulations Section. Equivalent to QMS Representative as described in the DWQMS Standard.
Top Management (DWQMS / WWQMS)	The DWQMS and WWQMS Top Management has been identified as: the General Manager, Public Works and the Director, Hamilton Water Division.
Wastewater	Water that has been used at home, in a business or as a part of an industrial process. Excludes surface runoff or stormwater unless it enters combined sewer systems.



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Wastewater Collection System	A system of sewage works, excluding plumbing, that is established for the purpose of collecting sewage from users of the system and includes: a) Anything used for the collection, storage, pumping, or transmission of sewage; b) Anything used for the management of residue from collections system or the management of the discharge of a substance into the natural environment from the collection system c) That for greater certainty does not include anything within the property line of the sewage treatment plant.
Wastewater Objective	Objective set by Hamilton Water consistent with its WWQMS Policy
Wastewater Target	Means for providing verifiable evidence that wastewater objectives have been met
Wastewater System (WWS)	Any works for the collection, transmission, treatment and disposal of sewage or any part of such works, but does not include plumbing
WD&WWC	Water Distribution and Wastewater Collection Section
WWQMS	Wastewater Quality Management System

2 QUALITY MANAGEMENT SYSTEM POLICY

2.1 Requirements

2.1.1 The Operational Plan shall document a Quality Management System Policy that provides the foundation for the Quality Management System, and:

- a. includes a commitment to the maintenance and continual improvement of the Quality Management System,
- b. includes a commitment to comply with applicable legislation and regulations,
- c. includes a commitment to pollution prevention, and



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d. is in a form that can be communicated to all Operating Authority personnel and the Owner.

2.1.2 The Operating Authority shall establish and maintain a Quality Management System that is consistent with the Quality Management System Policy.

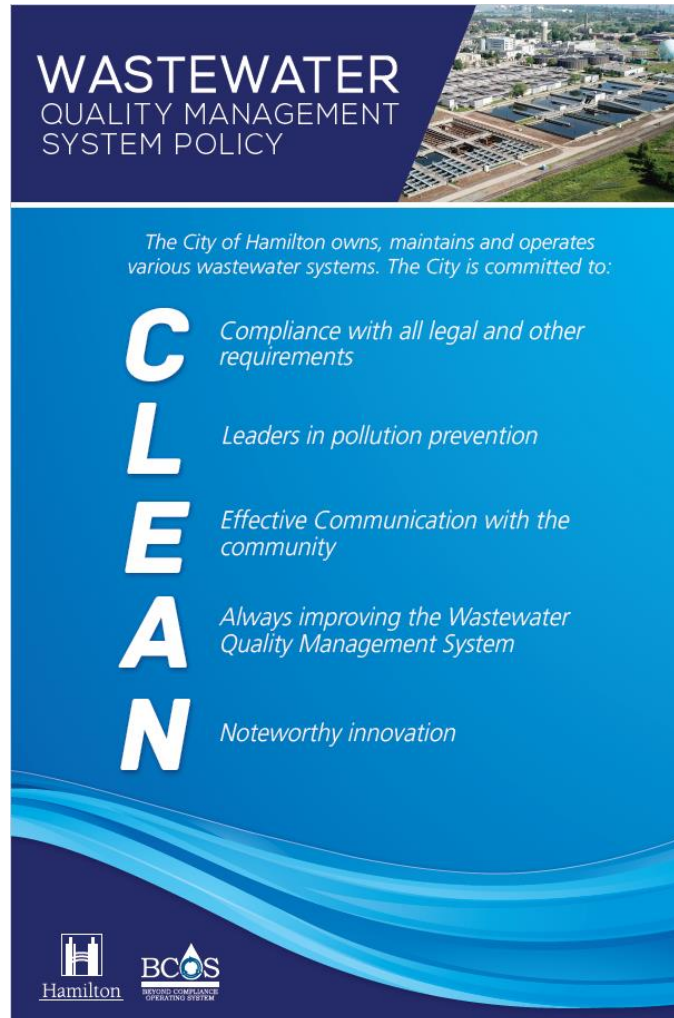
2.2 WWQMS Policy

2.2.1 The [WWQMS Policy \(PW-WW-R-002-003\)](#) was approved by Top Management on January 27, 2020. It has been communicated to HW staff as per the [Internal Communications \(PW-WW-P-008-001\)](#) procedure.

The WWQMS Policy is communicated to the public through posting on the City's website.

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WWQMS Policy



3 COMMITMENT AND ENDORSEMENT

3.1 Requirements

- 3.1.1 The Operational Plan shall contain a written endorsement of its contents by Top Management and the Owner.
- 3.1.2 Top Management shall provide evidence of its commitment to an effective Quality Management System by:



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- a. ensuring that a Quality Management System is in place that meets the requirements of this Standard,
- b. ensuring that the Operating Authority is aware of all applicable legislative and regulatory requirements,
- c. communicating the Quality Management System according to the procedure for communications, and
- d. determining, obtaining or providing the resources needed to maintain and continually improve the Quality Management System.

3.2 Commitment and Endorsement

- 3.2.1 The Owner (Mayor and Council) and Top Management (General Manager, Public Works and the Director, HW) of the Operating Authority (HW) support the development, implementation, maintenance and continual improvement of the WWQMS, which supports the COH's WWS.
- 3.2.2 The Owner acknowledges their role through the receipt and review of WWQMS reports related to the adequacy of infrastructure, audits and management reviews, and by provision of resources to support the WWQMS.
- 3.2.3 Top Management supports the WWQMS through provision of resources, ensuring staff are aware of relevant legal requirements, and supporting WWQMS communications.
- 3.2.4 The WWQMS Operational Plan will be endorsed at minimum every four years, following the municipal election cycle. The signatures that follow serve as evidence of the endorsement of the WWQMS Operational Plan Manual (PW-WW-M-001-007).



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Andrea Horwath
Mayor
WWS Owner Representative

Carlyle Khan
General Manager, Public Works Department
WWQMS Top Management Representative

Andrea Holland
City Clerk
(Signing Authority on Behalf of Council)

Nick Winters
Director, Hamilton Water Division
WWQMS Top Management Representative

4 WWQMS SYSTEM REPRESENTATIVE

4.1 Requirements

4.1.1 The Operational Plan shall identify a Quality Management System representative.

4.1.2 Top Management shall appoint and authorize a Quality Management System representative who, irrespective of other responsibilities, shall:

- a. administer the Quality Management System by ensuring that processes and procedures needed for the Quality Management System are established and maintained
- b. report to Top Management on the performance of the Quality Management System and any need for improvement,
- c. ensure that current versions of documents required by the Quality Management System are being used at all times,
- d. ensure that personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the Subject System, and
- e. promote awareness of the Quality Management System throughout the Operating Authority.



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4.2 WWQMS Representative

4.2.1 The Manager, Compliance & Regulations has been appointed as the Systems Management Representative (SMR) for WWQMS. The SMR is responsible for:

- ensuring that the WWQMS is established, implemented, and maintained,
- reporting to Top Management and HW - SMT regarding WWQMS performance including recommended continual improvement initiatives,
- promoting awareness of the WWQMS and of HW staff roles and responsibilities,
- overseeing the document control process including the development, review, approval and release of WWQMS System procedures and revoking obsolete documents,
- ensuring that HW and other staff are aware of all applicable legal requirements related to their duties and the WWQMS, and
- managing the WWQMS Internal Audit Program.

5 DOCUMENTS AND RECORDS CONTROL

5.1 Requirements

5.1.1 The Operational Plan shall document a procedure for Documents and Records Control that describes how:

Documents required by the Quality Management System are:

- a. kept current, legible and readily identifiable,
- b. retrievable,
- c. stored, protected, retained and disposed of, and

Records required by the Quality Management System are:

- a. kept legible, and readily identifiable,
- b. retrievable, and
- c. stored, protected, retained and disposed of.

5.1.2 The Operating Authority shall implement and conform to the procedure for Document and Records control and shall ensure that the Quality Management System documentation for the WWQMS includes:

- a. the Operational Plan and its associated policies and procedures,



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- b. documents and records determined by the Operating Authority as being needed to ensure the effective planning, operation and control of its operations, and
- c. the results of internal and third-party Audits and management reviews.

5.2 Hamilton Water Document and Record Management System

- 5.2.1 Procedures have been developed that outline the document and record control processes for the Operating Authority.
- 5.2.2 The procedure entitled [Control of Documents \(PW-WW-P-010-001\)](#) is an integrated procedure that outlines document control processes for the Operating Authority. The purpose of this procedure is to control the issue, change, and approval of documents, ensuring that only up to date, approved documentation is used by Operating Authority staff. The Control of Documents procedure also ensures that staff can locate and access documents relevant to their work, in the format most suitable to their work, whether the documents are created internally or externally to the Operating Authority.
- 5.2.3 [Control of Records \(PW-WW-P-016-001\)](#) is an integrated procedure that applies to all HW sections. The purpose of this procedure is to ensure that both COH and externally generated non-COH records identified as critical are properly collected, identified, accessed, filed, stored, maintained, reviewed, and disposed of after their designated retention times.

6 WASTEWATER SYSTEMS DESCRIPTIONS

6.1 Requirements

- 6.1.1 The Operational Plan shall document for the Wastewater System:
 - a. the name of the Owner and Operating Authority,
 - b. a general description of the system including all components of Wastewater Collection and applicable Treatment System processes
 - c. a description including:
 - general characteristics of the receiving water body(ies),
 - common event-driven fluctuations, and
 - any resulting operational challenges and threats.
- 6.1.2 The Operating Authority shall ensure that the description of the Wastewater System is kept current.



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6.2 Wastewater System Process Descriptions

6.2.1 Process descriptions meeting the WWQMS requirements are found in [WWQMS Descriptions of Hamilton Wastewater Systems \(PW-WW-P-004-009\)](#). The map entitled [City of Hamilton Wastewater Collection System Map \(PW-WW-V-011-001\)](#) illustrates the geographic scope of the COH's wastewater collection and treatment systems.

7 ENVIROMENTAL ASPECTS & IMPACTS

7.1 Requirements

7.1.1 The Operational Plan shall develop an environmental aspects and impacts process to identify and assess environmental aspects and impacts associated with the collection and treatment of wastewater that:

- a. identifies the environmental aspects of its activities, and services (outputs) within the scope of the WWQMS that it can control or influence,
- b. takes into account planned or unplanned changes or modified activities, products and services,
- c. takes into account abnormal conditions and reasonably foreseeable emergency situations,
- d. identifies the environmental aspects that can have a significant impact on the environment using established criteria,
- e. identifies control measures to address the potential impacts,
- f. ensures that the significant environmental aspects are taken into account in establishing, implementing and maintaining the wastewater management system,
- g. describes how it shall communicate its significant environmental aspects among various levels and functions of the organization,
- h. identifies a method to verify, at least once every calendar year, the currency of the information, and
- i. conducts the assessment at least once every three years.

7.1.2 The Operational Plan shall document:

- a. the identified environmental aspects and associated impacts,
- b. criteria used to determine its significant environmental aspects, and
- c. the impacts rated significant.



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The Operating Authority shall ensure that the record of environmental aspects and impacts is kept current.

7.2 Hamilton Wastewater Systems' Aspects and Impacts Assessment

7.2.1 The procedure entitled [Environmental Aspects & Impacts Assessment \(PW-WW-P-003-001\)](#) has been developed to document the process followed by HW to identify and assess the environmental aspects and impacts associated with the activities, products and services related to the collection and treatment of wastewater. Once the Aspect and Impact pairs are identified and rated, their Significant Impact Rating can be calculated as the product of likelihood, severity and detectability. A summary of the significant aspects and associated control measures are identified and recorded in [Aspects and Impacts Register \(PW-WW-R-003-001\)](#).

7.2.2 The Aspects and Impacts Assessment is conducted every 3 years and the WWQMS Environmental Aspects and Impacts Register is assessed annually. The Aspects and Impacts Assessment is also conducted for a new wastewater facility or a major process modification within six months after the commissioning date. Communication about significant environmental aspects is carried out as per the [Internal Communications \(PW-WW-P-008-001\)](#) procedure.

8 OBJECTIVES & TARGETS

8.1 Requirements

8.1.1 The Operating Authority shall ensure that wastewater objectives and targets are established considering significant environmental aspects and associated compliance obligations. The environmental objectives shall be:

- a. consistent with the policy,
- b. measurable (if practicable),
- c. monitored,
- d. communicated, and
- e. updated as appropriate.

When setting objectives, the Operating Authority shall determine:

- a. what will be done,
- b. what resources will be required,
- c. who will be responsible,



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- d. when it will be completed, and
- e. how the results will be evaluated, including applicable indicators for monitoring progress towards achievement.

The Operating Authority shall establish, implement, and maintain a programme(s) for achieving its objectives and targets. Programme(s) shall include:

- a. designation of responsibility for achieving objectives and targets at relevant functions and levels of the organization, and
- b. the means and time frame by which they are to be achieved.

- 8.1.2 The Operating Authority shall maintain documented information about its environmental objectives, targets, and management programmes.

The Operating Authority shall consider how actions to achieve its environmental objectives can be integrated into the organization's business processes.

8.2 Hamilton Wastewater Systems' Objectives and Targets

- 8.2.1 The procedure entitled [Wastewater Objectives and Targets \(PW-WW-P-005-001\)](#) documents the process by which Hamilton Water sets objectives and targets to avoid or minimize environmental impacts of WWS. Objectives are established after considering evaluation criteria outlined in the procedure. Targets established provide quantifiable milestones for measuring performance against set objectives. Management programmes established list the specific tasks or means by which to achieve the desired objective and target.

- 8.2.2 The list of objectives, targets and wastewater management programmes is recorded in [Summary of Objectives, Targets and Management Programmes for Wastewater Systems \(PW-WW-R-005-001\)](#) and approved by Top Management annually.

9 ORGANIZATIONAL STRUCTURE, ROLES, RESPONSIBILITIES & AUTHORITIES

9.1 Requirements

- 9.1.1 The Operational Plan shall:
- a. describe the organizational structure of the Operating Authority including respective roles, responsibilities and authorities,
 - b. delineate corporate oversight roles, responsibilities and authorities where the Operating Authority operates multiple Wastewater Systems,



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- c. identify the person, persons or group of people within the management
- d. identify the structure of the organization responsible for undertaking the Management Review described in Section 21,
- e. identify the person, persons or group of people, having Top Management responsibilities required by this Standard, along with their responsibilities, and
- f. identify the Owner of the Wastewater System.

9.1.2 The Operating Authority shall keep current the description of the organizational structure including respective roles, responsibilities and authorities, and shall communicate this information to Operating Authority personnel and the Owner.

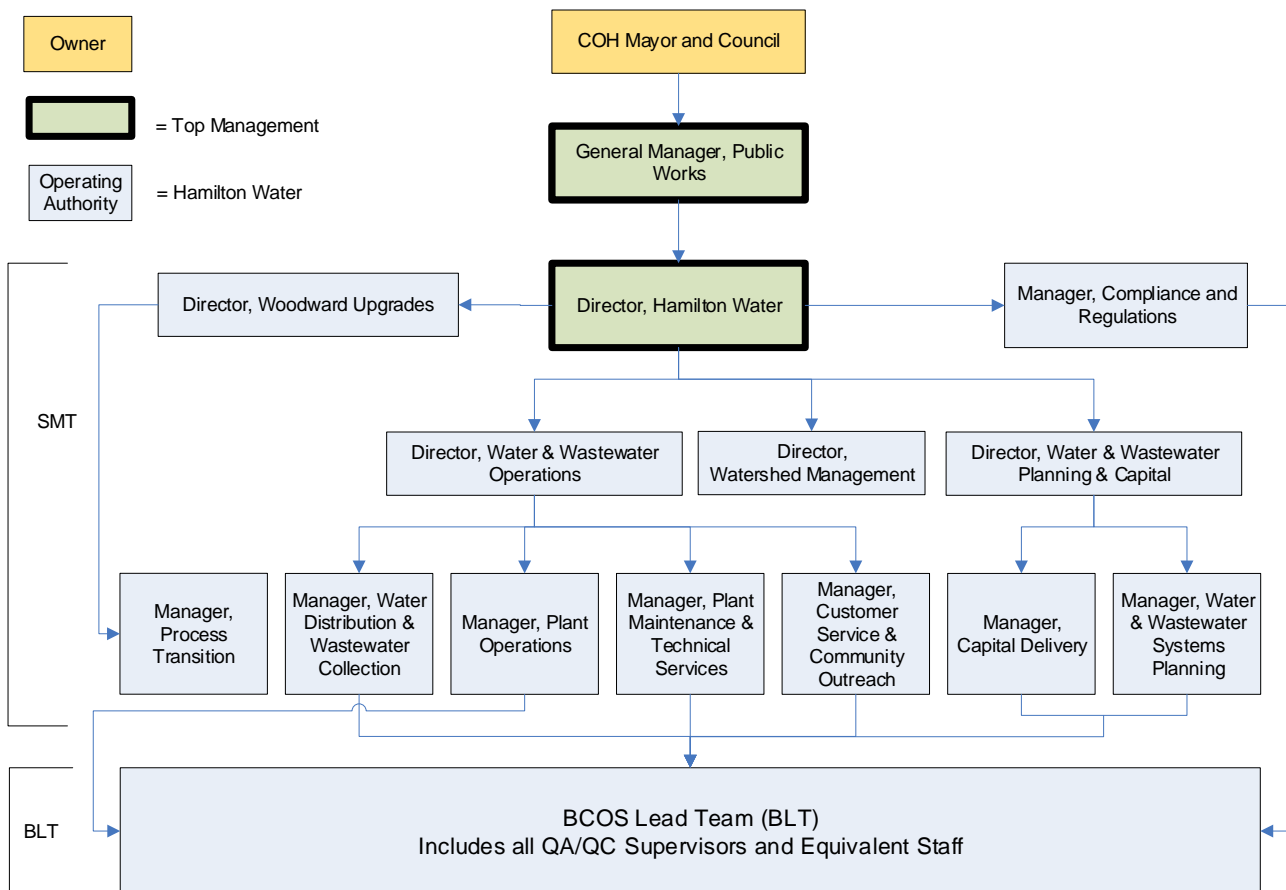
9.2 **Hamilton Water Organizational Structure, Roles, Responsibilities, and Authorities**

9.2.1 [Roles, Responsibilities & Authorities \(PW-WW-P-006-001\)](#) is an integrated procedure for BCOS including DWQMS and WWQMS that describes how roles, responsibilities, and authorities are defined, communicated, and maintained to ensure accountability in the implementation of these systems. The [Hamilton Water – Photo Organizational Chart \(PW-WW-R-006-002\)](#) identifies key roles and/or titles within HW. The [Roles, Responsibilities and Authorities Matrix \(PW-WW-G-006-001\)](#) outlines the roles, responsibilities and authorities relating to the BCOS systems.

9.2.2 The Roles, Responsibilities & Authorities Procedure applies to all sections of HW. CSG and BLT are responsible for ensuring that Operating Authority staff are kept aware of their respective roles, responsibilities and authorities as they relate to WWQMS. The organizational chart below delineates key wastewater positions.



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10 COMPETENCIES

10.1 Requirements

10.1.1 The Operational Plan shall document:

- competencies required for personnel performing duties directly affecting quality of wastewater collected and treated,
- activities to train, develop and/or maintain competencies for personnel performing duties directly affecting quality of treated wastewater, and
- activities to ensure that personnel are aware of the relevance of their duties and how they affect the quality of wastewater discharges into the environment.

10.1.2 The Operating Authority shall undertake activities to:

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- a. meet and maintain competencies for personnel directly affecting quality of treated wastewater and shall maintain records of these activities, and
- b. ensure that personnel are aware of the relevance of their duties and how they affect the quality of wastewater discharges into the environment and shall maintain records of these activities.

10.2 WWQMS Competencies

- 10.2.1 The [Competency and Training Procedure \(PW-WW-P-033-001\)](#) provides the framework for the identification, delivery and tracking of training requirements related to the Hamilton Water Division. The procedure is also created to document how the Division ensures competencies of staff that could have a direct impact on wastewater collection and treatment.
- 10.2.2 The [Hamilton Water Division Core Training Guideline \(PW-WW-G-033-002\)](#) lists required core and developmental competencies for job positions that could impact wastewater quality. Positions potentially impacting quality of wastewater have been identified as:
 - Positions that require a Wastewater Operator's License (Treatment or Collection) Positions that supervise licensed Operators or Water Quality Analysts and
 - Other positions recommended by Section Manager
- 10.2.3 All Operating Authority staff are expected to be aware of their roles, responsibilities and authorities. WWQMS Awareness Training is a core training requirement for all staff of the Operating Authority. WWQMS Awareness Training is an on-going training provided to new staff at the Hamilton Water New Employee Orientation. In addition, refresher training may be provided as needed. Staff are also updated about WWQMS as per [Internal Communications \(PW-WW-P-008-001\)](#) procedure.
- 10.2.4 Further, this training may be provided to other City staff outside of the Operating Authority as required.
- 10.2.5 In order to better connect staff to available training, use training resources effectively and help manage training records, HW utilizes the IT Tool – the Learning Management Database.



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11 PERSONNEL COVERAGE

11.1 Requirements

11.1.1 The Operational Plan shall document, implement and conform to a procedure to ensure that sufficient personnel meeting identified competencies are available for duties that directly affect wastewater collection and treatment.

11.2 Wastewater System Personnel Coverage

11.2.1 The [Personnel Coverage \(PW-WW-P-034-003\)](#) procedure outlines the process by which the Hamilton Water Division ensures that adequate staffing and personnel coverage are maintained for its water and wastewater operations. The procedure details personnel coverage measures followed during regular business hours as well as evenings, weekends and holidays. Where applicable, Level 4 (Sectional) personnel coverage procedures should be referenced for Section-specific Personnel Coverage processes.

12 COMMUNICATION

12.1 Requirements

12.1.1 The Operational Plan shall implement, document and conform to a procedure for communications that describes how the relevant aspects of the WWQMS are communicated between Top Management and:

- a. the Owner,
- b. Operating Authority personnel,
- c. Suppliers that have been identified as essential, and
- d. the Public.

12.2 Communications

12.2.1 The [Internal Communications \(PW-WW-P-008-001\)](#) procedure describes processes for internal communications on various elements of the organization's management systems, policies and objectives. This procedure has been developed to ensure effective and timely communication with internal stakeholders.

12.2.2 [External Regulatory and Other Communications \(PW-WW-P-008-002\)](#) describes HW communication processes with regulatory agencies, general public and other external stakeholders.



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13 OPERATIONAL PLANNING AND CONTROLS

13.1 Requirements

13.1.1 The Operational Plan shall establish, implement, control, and maintain processes needed to meet WWQMS requirements, and shall implement actions identified in the aspects and impacts assessment process and Objectives planning process by:

- a. establishing operating criteria for the process(es), and
- b. implementing control of the process(es), in accordance with the operating criteria.

The Operating Authority shall control planned changes and review the consequences of unintended changes, taking action to mitigate any adverse effects, as necessary.

The Operating Authority shall ensure that outsourced processes are controlled or influenced. The type and extent of control or influence to be applied to the process(es) shall be defined within the WWQMS.

13.1.2 The Operational Plan shall maintain documented information to the extent necessary to have confidence that the processes have been carried out as planned.

13.2 WWQMS Operational Planning Controls for Wastewater System

13.2.1 The [Environmental Aspects & Impacts Assessment \(PW-WW-P-003-001\)](#) procedure documents the process followed by Hamilton Water to identify operational controls to address significant environmental impacts related to the collection and treatment of wastewater. The [Aspects and Impacts Register \(PW-WW-R-003-001\)](#) records the control measures associated with aspects and impacts including preventative maintenance, inspections and monitoring, standardized work instructions and/or improvement projects.

13.2.2 The [Essential Supplies and Services \(PW-WW-P-035-001\)](#) procedure documents the process followed by Hamilton Water to identify and review the quality of essential supplies and services provided from outside of the City of Hamilton Drinking Water and Wastewater Systems managed by the HW Division that can introduce quality, safety or environmental risks.

14 EVALUATION OF COMPLIANCE

14.1 Requirements

14.1.1 The Operational Plan shall:



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- a. document a procedure for periodically evaluating compliance with legal and other requirements and taking actions if needed,
- b. keep records of the results of the periodic evaluations and action taken,
- c. maintain knowledge and understanding of its compliance status, and
- d. establish implement and maintain processes to evaluate and fulfill its compliance obligations.

14.1.2 The Operating Authority shall implement and conform to the procedure and communicate the findings to the Owner.

14.2 Hamilton Wastewater Systems' Compliance

14.2.1 The [Legal and Other Requirements \(PW-WW-P-004-004\)](#) procedure indicates how applicable legal and other requirements related to COH's WWS are identified, communicated and managed. The BCOS Database is used to list requirements, track and assign tasks associated with legal and other requirements. Wastewater approval related requirements are tracked in the [Approvals Register \(PW-WW-R-004-020\)](#) that is updated at least annually. In addition, external third-party compliance audits of WWS may be conducted as required.

15 REVIEW AND PROVISION OF INFRASTRUCTURE

15.1 Requirements

15.1.1 The Operational Plan shall document a procedure for reviewing the adequacy of the infrastructure necessary to operate and maintain the wastewater System that:

- a. considers the significant impacts described in Section 7, and
- b. ensures that the adequacy of the infrastructure necessary to operate and maintain the wastewater System is reviewed at least once every Calendar Year.

15.1.2 The Operating Authority shall implement and conform to the procedure and communicate the findings of the review to the Owner.

15.2 Hamilton Water Infrastructure Review

15.2.1 The [Review and Provision of Infrastructure procedure \(PW-WW-P-025-001\)](#) documents the process followed by Hamilton Water in reviewing the adequacy of its wastewater system infrastructure. The procedure applies to all City of Hamilton WWS infrastructure, including both vertical and horizontal infrastructure and other



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infrastructure required for the operation of the WWS including offices, workspaces, buildings and critical software.

16 INFRASTRUCTURE MAINTENANCE, REHABILITATION & RENEWAL

16.1 Requirements

16.1.1 The Operational Plan shall document:

- a. a summary of the Operating Authority's infrastructure maintenance, rehabilitation and renewal programs for the wastewater System, and
- b. a long term forecast of major infrastructure maintenance, rehabilitation and renewal activities.

16.1.2 The Operating Authority shall:

- a. keep the summary of the infrastructure maintenance, rehabilitation and renewal programs current,
- b. ensure that the long-term forecast is reviewed at least once every Calendar Year,
- c. communicate the programs to the Owner, and
- d. monitor the effectiveness of the maintenance program.

16.2 Hamilton Water Infrastructure Maintenance, Rehabilitation and Renewal

16.2.1 The procedure [Infrastructure Maintenance, Rehabilitation and Renewal \(PW-WW-P-026-001\)](#) describes how Hamilton Water implements infrastructure maintenance, rehabilitation, and renewal programs depending on the condition of infrastructure, redundancy of equipment and the related operational risk. Infrastructure maintenance is addressed by both planned and unplanned maintenance activities carried out by PMATS, PO and WD&WWC.

17 SAMPLING, TESTING AND MONITORING

17.1 Requirements

17.1.1 The Operational Plan shall document:

- a. a sampling, testing, and monitoring procedure for process control and finished wastewater quality including requirements for sampling, testing, and monitoring at the conditions most challenging to the wastewater System,



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- b. a description of relevant sampling, testing or monitoring activities, if any, that take place downstream of the wastewater System, and
- c. a procedure that describes how sampling, testing and monitoring results are recorded and shared between the Operating Authority and the Owner, where applicable.

17.1.2 The Operating Authority shall implement and conform to the procedures.

17.2 Hamilton Water Sampling, Testing and Monitoring

17.2.1 The [Sampling, Testing and Monitoring \(PW-WW-P-013-004\)](#) procedure describes how wastewater sampling, testing and monitoring activities are undertaken and how the results are communicated as per regulatory requirements.

17.2.2 The responsibilities for performing the required sampling in the City of Hamilton's wastewater collection system and wastewater treatment plants are outlined in the [City of Hamilton Wastewater Sampling Plan \(PW-WW-P-013-006\)](#). The [City of Hamilton Wastewater Sampling Schedule \(PW-WW-L-013-003\)](#) identifies the list of samples to be collected and tests to be performed by staff to meet City of Hamilton's compliance obligations.

18 MEASUREMENT AND RECORDING EQUIPMENT, CALIBRATION AND MAINTENANCE

18.1 Requirements

18.1.1 The Operational Plan shall document, implement and conform to a procedure for the calibration and maintenance of measurement and recording equipment.

18.2 Hamilton Water Measurement and Recording Equipment, Calibration and Maintenance

18.2.1 The procedure entitled [Calibration & Maintenance of Measurement and Recording Equipment \(PW-WW-P-036-001\)](#) describes the requirements for the calibration, verification and maintenance of measurement and recording equipment used in the operation of WWS. The procedure identifies responsible personnel, recording requirements, frequency and method for calibration, verification and maintenance of measurement and recording equipment.



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19 EMERGENCY MANAGEMENT

19.1 Requirements

19.1.1 The Operational Plan shall document a procedure to maintain a state of emergency preparedness that includes:

- a. a list of potential emergency situations or service interruptions,
- b. processes for emergency response and recovery,
- c. emergency response training and testing requirements,
- d. Owner and Operating Authority responsibilities during emergency situations,
- e. references to municipal emergency planning measures as appropriate, and
- f. an emergency communication protocol and an up-to-date list of emergency contacts.

19.1.2 The Operating Authority shall implement and conform to the procedure.

19.2 Hamilton Water Emergency Management

19.2.1 The [Hamilton Water Emergency Response Plan \(PW-WW-P-012-001\)](#) describes the City's Corporate, Departmental, Divisional, and Sectional Emergency Response structure. Emergency Response Plan (ERP) Manuals (binders) are available at various locations within Hamilton Water inclusive of the Hamilton Water Emergency Response Plan. A Risk Assessment approach is used to identify possible risks or emergencies that could potentially impact the City's WWS, Annual testing of the COH (Corporate) Emergency Response Plan, the HW Emergency Response Plan, and the Plant Operations' E2 Plan is required. Upon completion of testing, a debrief is held to determine possible improvement actions and document any procedural upgrades that may be required.

19.2.2 HW staff must receive training for all emergency response plans and/or procedures related to their job or responsibilities. Divisional training requirements are listed in the [Hamilton Water Division Core Training Guideline \(PW-WW-G-033-002\)](#). The City's Emergency Management Office determines training requirements for the COH's Emergency Response Plan.



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20 INTERNAL AUDITS

20.1 Requirements

- 20.1.1 The Operational Plan shall document a procedure for internal Audits that:
- evaluates conformity of the Quality Management System with the requirements of this Standard,
 - identifies internal Audit criteria, frequency, scope, methodology and record-keeping requirements,
 - considers previous internal and third-party Audit results, and
 - describes how Quality Management System Corrective Actions are identified and initiated.
- 20.1.2 The Operating Authority shall implement and conform to the procedure and shall ensure that internal Audits are conducted at least once every Calendar Year.

20.2 WWQMS Internal Audit

- 20.2.1 The [Internal Auditing procedure \(PW-WW-P-017-001\)](#) is an integrated procedure that describes how HW conducts objective and systematic internal audits as a means of measuring the performance of its BCOS, including WWQMS.
- 20.2.2 The SMR holds overall responsibility for ensuring that internal audits are planned and executed annually according to the requirements of this procedure. Internal auditors are appointed by HW - SMT and are identified in the [BCOS Auditor List \(PW-WW-L-017-003\)](#).
- 20.2.3 Audit findings are recorded in the BCOS database and may indicate the need for corrective, preventive, or improvement actions (See Section 22.0 of this Operational Plan).
- 20.2.4 Once scheduled internal audits are completed, the SMR (or designate) reviews audit findings and compiles the information for presentation to SMT. In addition, the Internal Audit Program is reviewed on an annual basis as an input to Management Review (See Section 21.0 of this Operational Plan).



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21 MANAGEMENT REVIEW

21.1 Requirements

21.1.1 The Operational Plan shall document a procedure for management review that evaluates the continuing suitability, adequacy and effectiveness of the Quality Management System and that includes consideration of:

- a. incidents of regulatory non-compliance and response actions,
- b. the effectiveness of the wastewater aspects and impacts process (changes in significant wastewater aspects),
- c. objectives and targets, and status of wastewater Management Programmes,
- d. internal audit results,
- e. summary of WWQMS non-conformance reports, including Essential Supplies and Services' non-conformances,
- f. results of emergency response testing,
- g. operational performance,
- h. influent and effluent wastewater quality trends,
- i. follow-up on action items from previous management reviews,
- j. the status of management action items identified between reviews,
- k. changes that could affect the Quality Management System,
- l. internal & external communication,
- m. the resources needed to maintain the Quality Management System,
- n. the results of the infrastructure review,
- o. Operational Plan currency, content and updates, and
- p. staff suggestions.

21.1.2 Top Management shall implement and conform to the procedure and shall:

- a. ensure that a management review is conducted at least once every Calendar Year,
- b. consider the results of the management review and identify deficiencies and actions items to address the deficiencies,



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- c. provide a record of any decisions and action items related to the management review including the personnel responsible for delivering the action items and the proposed timelines for their implementation, and
- d. report the results of the management review, the identified deficiencies, decisions and action items to the Owner.

21.2 Hamilton Water Management Review

- 21.2.1 The [Management Review procedure \(PW-WW-P-018-001\)](#) documents the process for planning, executing, and documenting Management Reviews, including provision of feedback to the Hamilton Water Division and reporting of review results to the Owner.
- 21.2.2 The SMR coordinates the annual Management Review meetings and compiles the required input data for presentation to Top Management. Top Management is responsible for reviewing the input materials presented and generating outputs as specified in the Management Review procedure. The SMR or delegate prepares minutes of Management Review meetings as proof of completion.
- 21.2.3 Top Management or their delegates are responsible for communicating Management Review results to the Owner. In addition, results of management reviews are summarized in the annual WWQMS Summary Report which is circulated to the WWS Owner.

22 NON-CONFORMANCE, CORRECTIVE & PREVENTIVE ACTION

22.1 Requirements

- 22.1.1 The Operating Authority shall develop a procedure for tracking and measuring effectiveness of its Quality Management System by:
 - a. documenting a process for identification and management of Quality Management System Corrective Actions that includes:
 - investigating the cause(s) of an identified non-conformity,
 - documenting the action(s) that will be taken to correct the nonconformity and prevent the non-conformity from re-occurring, and
 - reviewing the action(s) taken to correct the non-conformity, verifying that they are implemented and are effective in correcting and preventing the re-occurrence of the nonconformity.



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b. documenting a process for identifying and implementing Preventive Actions to eliminate the occurrence of potential non-conformities in the Quality Management System that includes:

- reviewing potential non-conformities that are identified to determine if preventive actions may be necessary,
- documenting the outcome of the review, including the action(s), if any, that will be taken to prevent a non-conformity from occurring, and
- reviewing the action(s) taken to prevent a non-conformity, verifying that they are implemented and are effective in preventing the occurrence of the non-conformity.

22.1.2 The Operating Authority shall implement and conform to the procedure

22.2 Hamilton Water Non-Conformance, Corrective and Preventative Action Process

22.2.1 The integrated [Non-conformance, Corrective & Preventive Action Process procedure \(PW-WW-P-015-002\)](#) documents the non-conformance, corrective and preventative action process that ensures the effective resolution of system non-conformances and legal non-compliances related to the WWQMS.

Non-conformances are entered into the "Findings" Application of the BCOS Database. Once details of the nature of the non-conformance are entered into BCOS, a root cause analysis can be completed, and an action plan can be developed to correct or prevent the non-conformance. All action plans are verified as being complete. Verification for effectiveness may occur at the discretion of the SMR. All of the above information must be entered into the BCOS Database. Once the completion of the plan has been verified, the non-conformance report can be closed out.

23 CONTINUAL IMPROVEMENT

23.1 Requirements

23.1.1 The Operating Authority shall develop a procedure for tracking and measuring continual improvement of its Quality Management System.

23.1.2 The Operating Authority shall strive to continually improve the effectiveness of its Quality Management System by implementing and conforming to the procedure.



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23.2 Hamilton Water Continual Improvement Process

23.2.1 The COH is committed to continually improving its WWQMS. The Public Works departmental Continual Improvement procedure is currently under development. In addition, Hamilton Water follows the section on continual improvement found in [Non-conformance, Corrective & Preventive Action Process procedure \(PW-WW-P-015-002\)](#). Hamilton Water uses tools such as management reviews, internal audits, communications, BIMA scorecard and benchmarking initiatives to track and measure the continual improvement of WWQMS.

BCOS software tracks the revision history of document.



CITY OF HAMILTON
PUBLIC WORKS DEPARTMENT
Hamilton Water Division

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	March 20, 2023
SUBJECT/REPORT NO:	DWQMS Operational Plan Summary Report (PW23019) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Susan Girt (905) 546-2424 Ext. 2671
SUBMITTED BY:	Nick Winters Director, Hamilton Water Public Works Department
SIGNATURE:	

RECOMMENDATIONS

- a) That Appendix “A” attached to Report PW23019 respecting the Drinking Water Quality Management System Operational Plan Summary Report be approved; and
- b) That the Mayor, City Clerk, General Manager of Public Works, and Director of Hamilton Water, be authorized and directed to execute the Drinking Water Quality Management System Operational Plan Summary Report by signing the Commitment and Endorsement page within the Summary Report.

EXECUTIVE SUMMARY

The Hamilton Water Division of Public Works developed a Drinking Water Quality Management System (DWQMS) which was endorsed by Council in 2008. The DWQMS meets Ontario’s legislative requirements under the *Safe Drinking Water Act, 2002* and Ontario Regulation (O.Reg.) 188/07 entitled “Licensing of Municipal Drinking Water Systems”. The Ministry of Environment, Conservation and Parks’ (MECP) Drinking Water Quality Management Standard prescribes the requirements of the DWQMS. The legislation and the DWQMS Standard have specific requirements for the “Owner” of a drinking water system, which includes endorsement of the DWQMS Operational Plan. Following the DWQMS Guidance document, the “Owner” of a drinking water system is

OUR Vision: To be the best place to raise a child and age successfully.

OUR Mission: To provide high quality cost conscious public services that contribute to a healthy, safe and prosperous community, in a sustainable manner.

OUR Culture: Collective Ownership, Steadfast Integrity, Courageous Change, Sensational Service, Engaged Empowered Employees.

SUBJECT: DWQMS Operational Plan Summary Report (PW23019) (City Wide)
– Page 2 of 5

defined as the Mayor and Council. “Top Management” of the Operating Authority is defined as the General Manager of Public Works and the Director of Hamilton Water. The Operating Authority submitted the original DWQMS Operational Plan to the MECP by January 1, 2009, as required. The DWQMS Operational Plan Summary Report documents the Operating Authority’s DWQMS including procedures and descriptions of the five drinking water systems. The DWQMS Operational Plan Summary Report must be developed as one of the requirements for a drinking water system licence.

Staff hosted Drinking Water Standard of Care Training for the Mayor and Council and the Hamilton Water Senior Management Team. The purpose of the training was to formally advise the Owner of the legislative framework for drinking water and their responsibilities under the *Safe Drinking Water Act* and DWQMS System. In 2023, the DWQMS Operational Plan Summary Report was revised to reflect the current Hamilton Water organizational structure and current operating procedures. As required by the DWQMS Standard, Top Management for the DWQMS is seeking Council’s endorsement of the 2023 revision of the DWQMS Operational Plan Summary Report, attached as Appendix “A” to Report PW23019.

Alternatives for Consideration – See Page 4

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: All costs associated with the Operational Plan were approved as part of the 2023 Rate Budget and are sufficient to support the plan.

Staffing: All staffing requirements necessary to support the Operational Plan were approved through the 2023 Rate Budget and are sufficient to support the plan.

Legal: Appendix “A” to Report PW23019 satisfies the City’s obligations under O. Reg. 188/07 and the requirement to have an approved Operational Plan for a Municipal Drinking Water Licence.

HISTORICAL BACKGROUND

The DWQMS Operational Plan was first required to be submitted to the MECP by January 1, 2009. Council endorsed the DWQMS Operational Plan on November 12, 2008, and it was submitted to the MECP and the accreditation body (Canadian General Standard Board) for acceptance prior to the January 1, 2009, legislated deadline. The DWQMS Operational Plan Summary Report is re-endorsed every four years following the municipal election cycle and once new Council members attend Standard of Care training. The latest DWQMS Operational Plan Summary Report was signed in 2019.

SUBJECT: DWQMS Operational Plan Summary Report (PW23019) (City Wide)
– Page 3 of 5

The 2023 version of the DWQMS Operational Plan Summary Report requires the signing of the Commitment and Endorsement by the “Owner” Mayor and Council.

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

The DWQMS Operational Plan Summary Report meets the intent of the approved DWQMS Policy approved by Council on June 27, 2007 (PW07095).

The DWQMS will assist in the promotion of a healthy environment and secure services. The DWQMS supports Hamilton Water’s ability to continue the provision of clean, safe drinking water to City of Hamilton customers and, therefore, enhances the Hamilton community and its citizens’ quality of life. The DWQMS has enhanced planning and communication related to water operations, subsequently enhancing the security and readiness of the Operating Authority to address nonconforming water incidents, if they occur. Of environmental interest, the DWQMS is a sub-system of the Division-wide Beyond Compliance Operating System (BCOS). BCOS is an environmental, health & safety management system which continues to expand and improve Hamilton Water processes.

RELEVANT CONSULTATION

Staff have hosted Drinking Water Standard of Care Training for the Mayor, Council, City Manager, Senior Management Team of Hamilton Water, General Manager of Public Works, and the Director of the Engineering Services Division. The purpose of the training was to formally inform the Owner of the legislative framework for drinking water and its responsibilities under the *Safe Drinking Water Act* and the DWQMS.

Following the original and re-endorsements of the DWQMS Operational Plan Summary Report, signed copies of the DWQMS Operational Plan Summary Report are made available to the public on the City’s website. In addition, the MECP Accreditation Body verifies that the “Plan” meets the requirements of the DWQMS Standard. The auditor from the Accreditation Body completed the re-Accreditation Audit in May 2021 and recommended the City of Hamilton for re-Accreditation. A new Certificate of Accreditation was issued on May 28, 2021.

ANALYSIS AND RATIONALE FOR RECOMMENDATION

The DWQMS Operational Plan Summary Report is an integrated document for all five Hamilton Drinking Water Systems (DWSS) including the Hamilton (Woodward and Fifty Road (distribution only) sub-systems); and the Carlisle, Freelton, Greenville and Lynden communal well DWSSs.

SUBJECT: DWQMS Operational Plan Summary Report (PW23019) (City Wide)
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A full copy of the DWQMS Operational Plan Summary Report is attached as Appendix “A” of this Report. The DWQMS Operational Plan Summary Report provides a concise summary of the entire DWQMS and refers to the more detailed Level III system procedures and records.

The Operational Plan must be endorsed by the System Owner and Top Management of the Drinking Water System(s). As such, Section 3.0 of the Operational Plan Summary Report includes a section entitled Commitment and Endorsement. Space has been allotted for the signatures of the Mayor and City Clerk as signing authority for the Owner, and the General Manager of Public Works and the Director of Hamilton Water as Top Management of the Operating Authority. Signatures will be added after Council endorses the DWQMS Operational Plan Summary Report as evidence of Owner and Operating Authority’s commitment and endorsement.

ALTERNATIVES FOR CONSIDERATION

The signing of the Commitment and Endorsement of the DWQMS Operational Plan Summary Report by the Owner (Council) is a legal requirement under the *Safe Drinking Water Act* and the related O. Reg. 188/07 entitled Licensing of Drinking Water Systems. Council has the option of not signing the DWQMS Operational Plan, but the absence of an approved Operational Plan is considered a non-compliance which may lead to Orders or possibly charges under the Act.

ALIGNMENT TO THE 2016 – 2025 STRATEGIC PLAN

Community Engagement and Participation

Hamilton has an open, transparent, and accessible approach to City government that engages with and empowers all citizens to be involved in their community.

Economic Prosperity and Growth

Hamilton has a prosperous and diverse local economy where people have opportunities to grow and develop.

Healthy and Safe Communities

Hamilton is a safe and supportive City where people are active, healthy, and have a high quality of life.

SUBJECT: DWQMS Operational Plan Summary Report (PW23019) (City Wide)
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Built Environment and Infrastructure

Hamilton is supported by state-of-the-art infrastructure, transportation options, buildings and public spaces that create a dynamic City.

Our People and Performance

Hamiltonians have a high level of trust and confidence in their City government.

APPENDICES AND SCHEDULES ATTACHED

Appendix “A” to Report PW23019 – Drinking Water Quality Management System
Operational Plan Summary Report.



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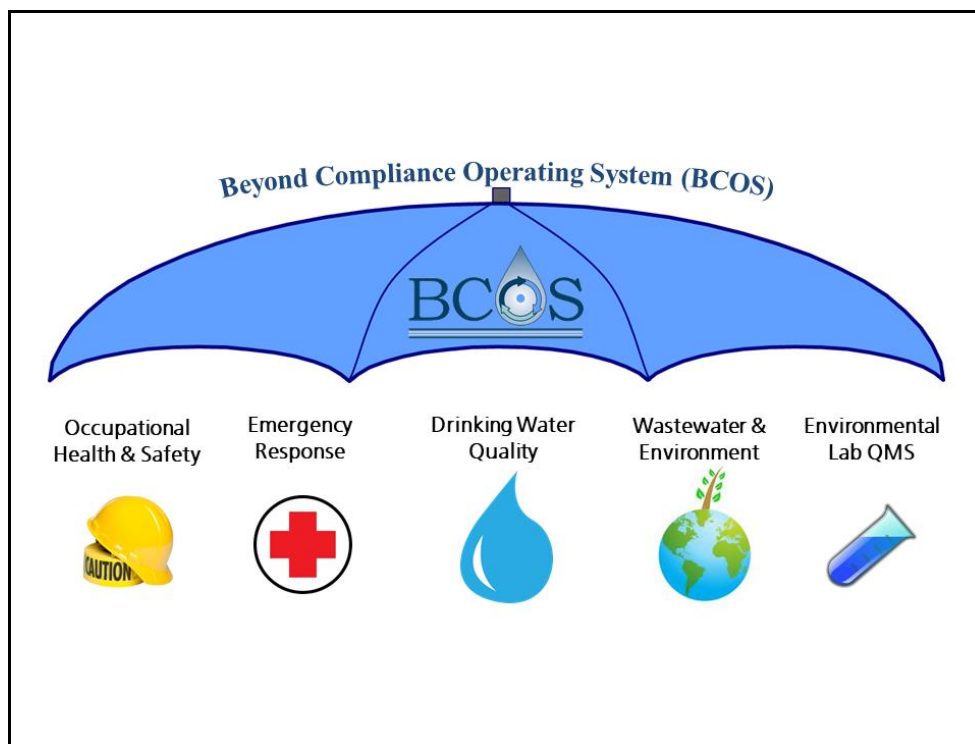


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Preface

A key priority of the Hamilton Water Division (HW) of the City of Hamilton (COH) is to ensure the protection of worker health, public health, property, and the environment. To support this objective, HW has developed the Beyond Compliance Operating System (BCOS). BCOS is an environmental, health and safety management system. Its successful implementation and use is a key component of our continuous improvement process and supports an environment, health and safety (EHS) compliance culture throughout HW. BCOS will strive to conform to environmental and occupational health and safety standards and is an umbrella program that oversees conformance to the Drinking Water Quality Management System (DWQMS), Wastewater Quality Management System (WWQMS), the Environmental Laboratory QMS, and future QMS (Occupational Health and Safety, etc.). Select DWQMS elemental procedures have been integrated with BCOS procedures. Integrated procedures are identified through the "BCOS + DWQMS" text in the procedure title. Procedures pertaining to DWQMS alone are identified by the "DWQMS" in the procedure title. The figure below identifies BCOS as an "umbrella" program that supports other scoped management systems of HW.

BCOS Framework & DWQMS





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Access to Reports

The DWQMS Operational Plan Summary Report is posted on the COH website and DWQMS Operational Plan Binders are available at the Clerk’s Office, City Hall (PW-WW-M-001-002) and the Hamilton Water storefront (PW-WW-M-001-003) at 330 Wentworth.

The DWQMS Operational Plan Summary Report is also accessible to staff through the BCOS Database, Sectional Workspaces and the internal DWQMS website.

1 QUALITY MANAGEMENT SYSTEM

1.1 Purpose

The purpose of the DWQMS Operational Plan is to document the COH’s DWQMS as part of the City’s efforts to ensure that clean, safe, and reliable drinking water is supplied to all of its customers. The DWQMS Operational Plan meets and sometimes exceeds the requirements of the Ministry of the Environment, Conservation and Park’s (MECP) Drinking Water Quality Management Standard.

1.2 Scope

This DWQMS Operational Plan applies to HW which is the Operating Authority for the City’s drinking water systems (DWSs).

HW has developed an integrated DWQMS Operational Plan Manual. The documents in the DWQMS Operational Plan pertain to all five of the City’s DWSs. The use of integrated procedures ensures the DWQMS is efficient and effectively communicates common requirements for the DWSs to HW staff. The DWS descriptions are system specific descriptions of the City’s DWSs. The DWQMS Operational Plan also includes a map entitled “Drinking Water Systems – DWS” which illustrates the geographic scope of the City’s water distribution systems.

1.3 Definitions

AWQI	Adverse Water Quality Incident. Any situation where the drinking water in the system (treatment / distribution) does not meet the requirements listed in O. Reg. 170/03 Schedule 16
BCOS	Beyond Compliance Operating System – Environmental, Health and Safety Management System for the Hamilton Water Division. BCOS is an umbrella system to the Environmental Laboratory QMS, the DWQMS, and the WWQMS sub-systems.





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BLT	BCOS Lead Team. Includes SMR, Compliance Support Group, and Sectional QA's or designates from the Hamilton Water Division.
C&R Section	Compliance and Regulations Section
CD Section	Capital Delivery Section in Hamilton Water including Water and Wastewater Asset Management for vertical infrastructure
CHEL QMS	City of Hamilton Environmental Laboratory (CHEL) Quality Management System (QMS). CHEL is accredited to ISO/IEC 17025 - general requirements for the competence of testing and calibration laboratories for specific tests which are listed in their scope of accreditation. If testing laboratories comply with the requirements of ISO/IEC 17025, they operate a QMS for their testing activities that also meets the principles of ISO 9001. May also be referred to as Environmental Laboratory QMS.
CMMS	Computerized Maintenance Management System
Controlled Document	Document deemed to be important to the functioning of Hamilton Water Division, as updated, reviewed, approved by the indicated staff, and authorized for release and distribution. The document is available to staff in a format that cannot be modified (i.e., BCOS Database) without appropriate approval. The document available to staff is always the most current version of the document. The document is subject to monitoring, auditing, and update. Controlled documents have a unique BCOS issuance number. Includes: procedures, manuals, checklists, forms, templates, lists, visual aids, guidelines and brochures.
COH	City of Hamilton
Corrective Action	Action to eliminate the cause of a detected non-conformance or non-compliance.
CS&CO Section	Customer Service and Community Outreach Section
DWQMS	Drinking Water Quality Management System
DWS	Drinking Water System Works established for the collection, treatment, storage, supply, or distribution of drinking water.



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E2	The Environmental Emergency (E2) Regulations came into force under the authorities of the Canadian Environmental Protection Act, 1999 (CEPA 1999). The E2 Regulations were put in place to enhance the safety of the environment and human life and health of Canadians by preventing, preparing for, responding to and recovering from environmental emergencies. Under the E2 Regulations, any person who owns or has the charge, management or control of a listed substance on a fixed facility may be required to: <ul style="list-style-type: none"> • identify substance and place; • prepare an environmental emergency plan (E2 plan); • implement, update and test the E2 plan annually; • provide notice of closure or decommissioning; and • report environmental emergencies involving regulated substances.
EQH&S	Environmental, quality, health and safety
Hamilton Water (HW)	The Hamilton Water Division, which is the water and wastewater, and stormwater Operating Authority for the City of Hamilton.
HW - SMT	The Hamilton Water Senior Management Team includes the Directors & Section Managers of the Hamilton Water Division
IPS	Infor Public Sector (formerly HANSEN). Departmental and cross-sectional modular software system, offering a variety of packages designed to handle different aspects of municipal operations such as infrastructure assets inventory, work management, stock inventory systems, service applications and call centers, licensing and enforcement.
Level III System Procedure	A procedure which relates to the Hamilton Water Division, but may not fall under the scope of the DWQMS. Related to how Divisional activity is conducted. May be related to the DWQMS but does not provide direction on how DWQMS item is being addressed.
Level III DWQMS Procedure	A procedure which relates to the Hamilton Water Division and falls under the scope of the DWQMS.
Level IV Procedure	Sectional Procedure



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Level V and Higher Procedure	Procedure within units of the sections within the Hamilton Water Division, broken down / organized based on criteria and requirements set by each section.
OIC	Operator in Charge
ORO	Overall Responsible Operator
Operating Authority	Staff within Hamilton Water Division responsible for the operation, maintenance and providing support services to the COH DWSs, SWSs and WWSs (including water treatment and distribution)
Owner (AWQI)	Manager of C&R Section (owner for the purpose of adverse water quality notifications) with their designate as the backup.
Owner	Every person who is a legal or beneficial owner of the City's DWSs and WWSs. Since the City's DWSs and WWSs are publicly owned and operated, the Mayor and Council of the City of Hamilton have been identified as Owners of the City's DWSs.
PMATS Section	Plant Maintenance & Technical Services Section
PO Section	Plant Operations Section
Preventive Action	Action to eliminate the cause of a <i>potential</i> non-conformance (an action or lack of action that is not a non-conformance, however, over time could lead to a non-conformance).
QA	Quality Assurance (process) - planned and systematic pattern of actions necessary to ensure that management and technical controls are being followed. Quality Assurance (staff): Staff who are responsible for maintaining quality within HW's Quality Management Systems. e.g. Sectional Quality Assurance Analyst, Quality Assurance Supervisor etc.
Regulators	Regulatory bodies which oversee activities, products and services of the Hamilton Water Division including Ministry of the Environment, Conservation and Parks (MECP), Ministry of Labour (MOL), Public Health Services (PHS) and others.
Scoped Level III Document	A controlled procedure, or other document, that applies to 2 or more but not all the sections of the Hamilton Water Division.



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SMR	Systems Management Representative (for both the BCOS, DWQMS and WWQMS Systems) - Manager of Compliance and Regulations Section. Equivalent to QMS Representative as described in the DWQMS Standard.
SMT (DWQMS)	The DWQMS Senior Management Team, includes the Directors and Section Managers of the Hamilton Water Division.
SW	Stormwater
Top Management (DWQMS)	The General Manager of Public Works and the Director of Hamilton Water have been identified as Top Management of the DWSs.
Wastewater System (WWS)	Any works for the collection, transmission, treatment and disposal of sewage or any part of such works but does not include plumbing.
WD&WWC Section	Water Distribution & Wastewater Collection Section
WWPC	Water & Wastewater Planning & Capital
WWWSP or WWSP	Water & Wastewater Systems Planning

2 QUALITY MANAGEMENT SYSTEM POLICY

The DWQMS Policy (PW-WW-R-002-002) was endorsed by the Owner (Mayor and Council) on November 12, 2008 and has since been re-formatted into the visual aid shown on page 9. The DWQMS Policy is posted internally at several HW facilities. It has been communicated to HW staff during the following events:

- BCOS and DWQMS System Awareness training and DWQMS Refresher training
- Annual internal audits
- New staff BCOS Database and DWQMS training sessions

The DWQMS Policy is communicated to the public through posting on the City's website.



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DWQMS Policy

**DRINKING WATER
QUALITY MANAGEMENT
SYSTEM POLICY**

The City of Hamilton owns, maintains and operates various drinking water systems. The City is committed to:

S *Safe, high quality, consistent supply of drinking water*

A *Always improving the Drinking Water Quality Management System*

F *Following and complying with applicable legislation*

E *Effective and open communication with the community concerning matters of drinking water quality*

BCOS
BEYOND COMPLIANCE
OPERATING SYSTEM

Hamilton





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3 COMMITMENT AND ENDORSEMENT

The Owner (Mayor and Council) and Top Management (General Manager of the Public Works and the Director of HW) of the Operating Authority (HW) support the development, implementation, maintenance, and continual improvement of the DWQMS, which supports the COH’s five DWSs. The Owner acknowledges their role through the receipt and review of DWQMS reports related to the adequacy of infrastructure, audits and management reviews, and by provision of resources to support the DWQMS. Top Management of the Operating Authority includes the General Manager of the Public Works and the Director of HW. Top Management supports the DWQMS through provision of resources, ensuring staff are aware of relevant legal requirements, and supporting DWQMS communications. The Owner and Top Management attend Safe Drinking Water Act Due Diligence Training and Standard of Care training. The training sessions include an overview of Ontario’s legal framework for drinking water and Owner and Top Management’s roles and responsibilities.

The DWQMS Operational Plan was originally endorsed by Council on November 12, 2008 and is re-endorsed at minimum every four years, following the municipal election cycle. The signatures below serve as evidence of the endorsement of the DWQMS Operational Plan Manual.

Andrea Horwath
 Mayor
 DWS Owner Representative

Carlyle Khan
 General Manager, Public Works Department
 DWQMS Top Management Representative

Andrea Holland
 Deputy City Clerk
(Signing Authority on behalf of Council)

Nick Winters
 Director Hamilton Water Division
 DWQMS Top Management Representative





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4 QUALITY MANAGEMENT SYSTEM REPRESENTATIVE

The Manager of the Compliance & Regulations Section, has been appointed as the Systems Management Representative (SMR) for the DWQMS and BCOS. The SMR is responsible for:

- Ensuring that the DWQMS is established, implemented, and maintained;
- Reporting to Top Management and SMT regarding DWQMS performance including recommended continual improvement initiatives;
- Promoting awareness of the DWQMS and of HW staff roles and responsibilities;
- Overseeing the document control process including the development, review, approval and release of DWQMS System procedures and revoking obsolete documents;
- Ensuring that HW and other staff are aware of all applicable legal requirements related to their duties and the DWQMS; and
- Managing the DWQMS Internal Audit Program.

5 DOCUMENT AND RECORDS CONTROL

5.1 Control of Documents

A procedure has been developed that outlines document control processes for the Operating Authority. The procedure entitled Control of Documents (PW-WW-P-010-001) is an integrated procedure (BCOS + DWQMS) that applies to the Operating Authority. The purpose of this procedure is to control the issue, change, and approval of documents, ensuring that only up to date, approved documentation is used by Operating Authority staff. The Control of Documents procedure also ensures that staff can locate and access documents relevant to their work, in the format most suitable to their work, whether the documents are created internally or externally to the Operating Authority.

BCOS and DWQMS documentation can be identified using a unique numbering system specified in the Control of Documents Procedure (PW-WW-P-010-001). The BCOS Database stores and protects DWQMS procedures and also has the ability to track all reviews, revisions, and approvals to procedures. HW staff access DWQMS procedures through the BCOS Database or specialized sectional workspaces. Sectional workspaces help to ensure efficient access to Level III, IV and V DWQMS procedures.

Level III procedures which apply to all HW Sections are considered non-Scoped and





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procedures which apply to 2 or more but not all Sections of HW are considered Scoped procedures. Level III procedures are developed by the Compliance Support Group (CSG) or by an individual with the relevant technical background. Level III procedures are reviewed by BLT Members, SMT, and other staff if applicable. Some Scoped Level III procedures are developed at the Sectional level and approved with Sectional Managers.

Final approval of Level III procedures is completed by the Director of HW, for scheduled reviews, and by the System Management Representative for non-scheduled reviews. As stated, the BCOS Database tracks the document release, review, and approval process. The need for Level IV and V Sectional Documents is determined by each Section Manager and/or other Senior Sectional staff. A Sectional staff member is assigned responsibility for development of the draft procedure. The corresponding Section Manager approves Level IV and V procedures.

Electronic copies of documents are considered to be Controlled Documents. Hard copies of these documents are considered to be uncontrolled copies unless categorized as controlled with an electronic or physical stamp stating "This is a Controlled Document. Do Not Photocopy" printed or stamped in the footer or other location on the page. Hardcopy-Controlled documents are stored in designated locations and are updated by CSG, the QA Supervisor or equivalent, Administrative Assistant or the Section representative.

The review cycle of all DWQMS procedures is listed in Control of Documents (PW-WW-P-010-001), Operational Plan Procedure Review Frequency (PW-WW-L-010-004) and in the BCOS Database. Should there be discrepancies between the procedure, the list and BCOS, the frequency in the list will be taken as the correct review period. Obsolete documents are retained within the BCOS Database but only limited staff have access to obsolete documentation.

5.2 Control of Records

A procedure has been developed that outlines record control processes for the Operating Authority. Control of Records (PW-WW-P-016-001) is an integrated procedure (BCOS + DWQMS) that applies to all HW sections. The purpose of this procedure is to ensure that both COH and externally generated non-COH records identified as critical to the BCOS and DWQMS Systems are properly collected, identified, accessed, filed, stored, maintained, reviewed, and disposed of after their designated retention times.

Record profiles are developed in the BCOS Database which identify record type, record name, record identification method, storage location, retention time, person



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responsible, and review frequency. At minimum, record profiles are created for critical records which are records related to regulatory or legal requirements. In some cases, records are uploaded or attached to the record profiles. Record retention times are defined in individual BCOS Database record profiles. All retention times stated are minimum times and do not supersede legal, governmental, or other requirements. After the indicated storage period, unless otherwise specified, all records are destroyed by deletion, shredding, disposal in trash or recycling as determined by the controlling Supervisor, Director of HW, or the Manager of the C&R Section, as relevant. Electronic copies are removed from the active BCOS Database and labeled "obsolete".

6 DRINKING WATER SYSTEM PROCESS DESCRIPTIONS

The COH owns and operates the Hamilton DWS (treatment, distribution and the Fifty Road Subsystem) as well as the communal well DWSs (Carlisle, Freelon, Greenville and Lynden). Process descriptions are found in the following procedure:

- DWQMS Descriptions of Hamilton Drinking Water Systems (PW-WW-P-030-007)

Included in the Drinking Water Works Permits are process flow diagrams illustrating the treatment processes.

The map entitled "Drinking Water Systems – DWS" (PW-WW-V-030-001) illustrates the geographic scope of the COH's water distribution systems.

7 RISK ASSESSMENT

A procedure entitled DWQMS Risk Assessment (PW-WW-P-031-001) has been developed that documents the process followed by the COH's Operating Authority in planning, completing, documenting, reviewing, and maintaining its DWQMS Risk Assessment. The DWQMS Risk Assessment examines all aspects of the water uptake, treatment, and distribution processes controlled by the Operating Authority.

The DWQMS Risk Assessment is reviewed annually to verify the currency of the DWS information, and any assumptions made in completing the Assessment. A new DWQMS Risk Assessment is conducted every three years.

8 RISK ASSESSMENT OUTCOMES

The DWQMS Risk Assessment was initially completed in the summer of 2008. Core outcomes are reviewed annually, with the Risk Assessment being redone in 2014, 2017 and 2020. Risk Assessment outcomes are recorded in the BCOS Database.





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A summary of relevant Critical Control Points identified during the Risk Assessment exercise is documented in the DWQMS Risk Assessment Critical Control Point Summary Chart (PW-WW-R-032-009). Outcomes of the DWQMS Risk Assessment are stored in the Risk Assessment Database and included in the Operational Plan.

9 ORGANIZATIONAL STRUCTURE, ROLES, RESPONSIBILITIES, AND AUTHORITIES

The Roles, Responsibilities, and Authorities Procedure (PW-WW-P-006-001) is an integrated procedure for BCOS and DWQMS that describes how roles, responsibilities and authorities are defined, communicated, and maintained to ensure accountability in the implementation of these Systems.

The Roles, Responsibilities, and Authorities Procedure applies to all sections of HW. Roles, responsibilities, and authorities relating to other sub-systems under the BCOS umbrella are defined in Level IV procedures and do not fall within the scope of the DWQMS.

The following Organizational Chart identifies key roles and/or titles within HW:

- Hamilton Water - Photo Organizational Charts (PW-WW-R-006-002)

The roles, responsibilities and authorities relating to the BCOS and DWQMS Systems are defined in Roles, Responsibilities and Authorities Matrix (PW-WW-G-006-001). This document is reviewed every three years or sooner if significant organizational changes occur within HW.

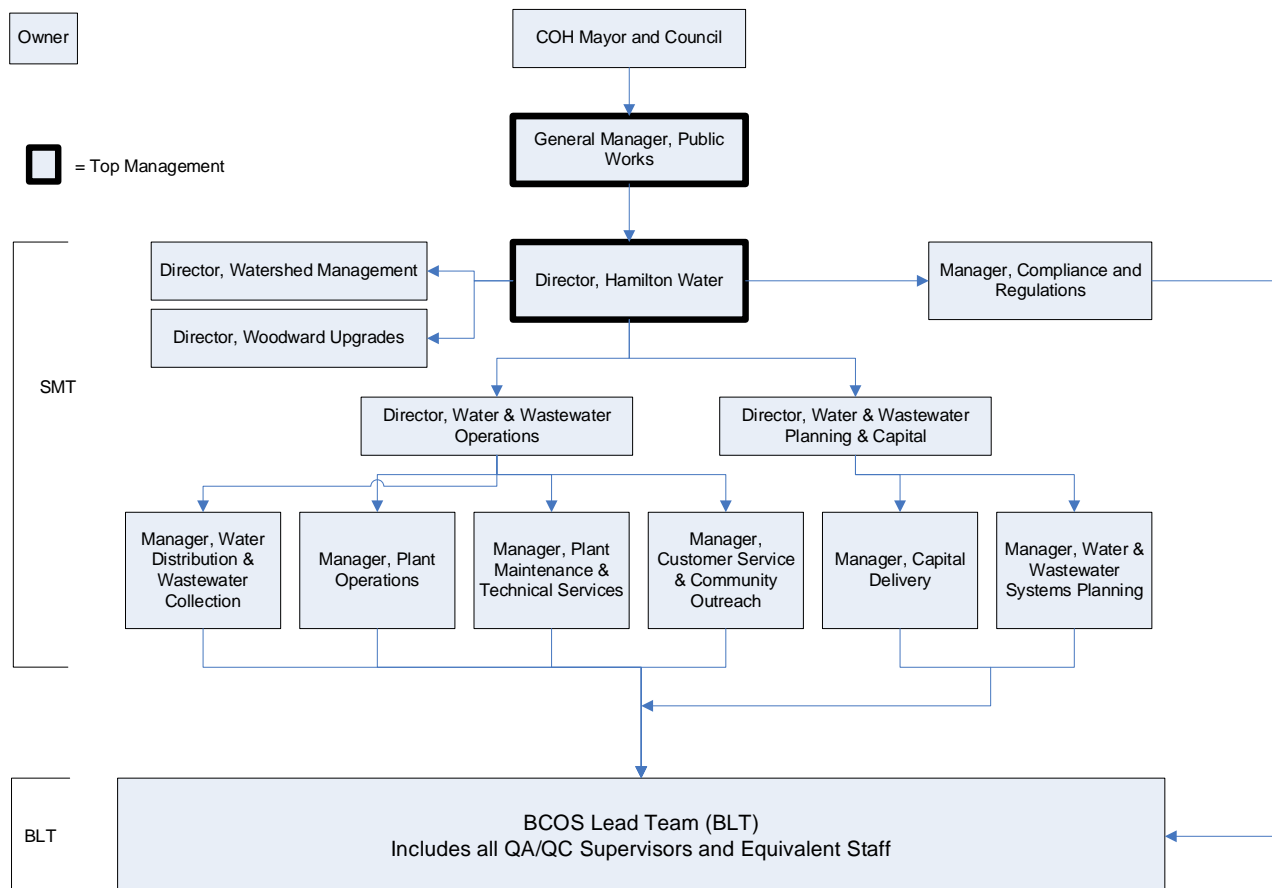
CSG and BLT are responsible for ensuring that Operating Authority staff are kept aware of their respective roles, responsibilities, and authorities as they relate to the DWQMS. BCOS and DWQMS System Awareness Training was conducted across the Operating Authority in the summer of 2008. Awareness training for new staff is on-going. Refresher training is offered to staff, as required. All Operating Authority staff are expected to be aware of their roles, responsibilities, and authorities. The following is an Organizational Chart defining the Owner, Top Management, SMT, and the BLT. This organizational chart delineates only water related positions and sections.





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Organizational Structure (Operating Authority)



10 COMPETENCIES

The Competency and Training Procedure (PW-WW-P-033-001) is an integrated procedure (BCOS and DWQMS) that applies across the Operating Authority and to all types of training including, but not limited to, water quality, environmental, and health and safety training. The procedure defines the framework for identification, delivery, and tracking of training requirements related to the Operating Authority and documents how the Operating Authority ensures competencies of staff that could have a direct input on water quality.

The Hamilton Water Division Core Training Guideline (PW-WW-G-033-002) lists required core and developmental competencies for job positions that could potentially impact the quality of water. Training requirements listed are established



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and approved by the respective Section Managers. Positions potentially impacting the quality of water have been identified as follows:

- Positions that require a Drinking-Water Operator’s Certificate (Treatment Operator, Distribution Operator, or Water Quality Analyst);
- Positions that supervise licensed Operators or Water Quality Analysts; and
- Other positions as recommended by the respective Section Manager.

Supervisors and Superintendents review training requirements with staff during an annual meeting or during their performance appraisals with the purpose of the development and/or maintenance of job position Training Plans.

Training can include a mix of training methods including classroom, hands-on, web-based, self-paced, on-the-job, equipment/site specific training, conferences, seminars, off-site training, operational meetings, one-to-one training, job shadowing, and video presentations. Inputs to Training Plans are identified in the Competency and Training Procedure (PW-WW-P-033-001).

DWQMS Awareness Training is considered to be a Core Training requirement for all staff of the Operating Authority. This training may also be provided to other City staff outside of the Operating Authority, as required, as well as to Vendors providing essential supplies and services (refer to Section 13.0 of this Operational Plan).

Training records may include Certificates/Licenses, training matrices, sign-in sheets, registration forms, attendance lists, tests/quizzes, comment sheets, etc. These records are managed according to the Control of Records procedure (PW-WW-P-016-001).

In order to better connect staff to available training (i.e., catalogue), use training resources more effectively (i.e., competency tests) and help us manage our training records, HW utilizes these IT tools; the Learning Management Database (LMD) and the Corporate My Learning Connection (SAP).

11 PERSONNEL COVERAGE

The Personnel Coverage Procedure (PW-WW-P-034-003) is a DWQMS-specific procedure that describes how adequate staffing and personnel coverage are ensured and maintained within the Operating Authority. The procedure describes personnel coverage measures followed during regular business hours as well as during evenings, weekends, and holidays, and applies to both water and wastewater operations as relevant to the Operating Authority. Level IV (Sectional) Personnel Coverage procedures should be referenced for Section-specific processes, where applicable.



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12 COMMUNICATIONS

12.1 Internal Communications

The Internal Communications procedure (PW-WW-P-008-001) has been developed to describe HW communication processes with internal stakeholders. The annual DWQMS Communication Plan has been developed to support the implementation and communication needs of the DWQMS and ensures the Owner, HW staff, suppliers, contractors, and customers understand the efforts and measures being put in place to protect the City’s DWSs.

Top Management ensures that Council is aware of the DWQMS and communicates with Council to seek decisions/approval and input through Council meetings, informal DWQMS meetings, and Council Update documents.

DWQMS Refresher Training for HW staff is undertaken as needed. DWQMS Refresher Training should include quality management systems, roles and responsibilities under the DWQMS, elements of the DWQMS, including the Operational Plan, and impacts to staff. Staff can access the Operational Plan using the DWQMS website. Staff meetings may also be used as a forum for informing staff of DWQMS news, changes, and updates.

12.2 External Regulatory and Other Communications

The BCOS + DWQMS External Regulatory and Other Communications procedure (PW-WW-P-008-002) is an integrated procedure for the BCOS and DWQMS Systems. The purpose of this procedure is to describe HW communication processes with regulatory and other external environmental stakeholders.

Provisions for communication with the public are established in the DWQMS Communication Plan for each calendar year. The C&R and CS&CO Sections work together to provide the public with updated information regarding the DWQMS Operational Plan, the DWQMS Financial Plan, and Water Quality Reports. These documents are made available for review electronically (City website) or upon request. The Control of Records procedure (PW-WW-P-016-001) describes the control and management of these documents. Communication with suppliers is completed according to the Essential Supplies & Services Procedure (PW-WW-P-035-001) and the annual DWQMS Communication Plan.

The External Regulatory and Other Communications procedure (PW-WW-P-008-002) also discusses processes for communication with the Accreditation Body, the MECP, and other related environmental regulatory communications.





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12.3 Licencing and Permitting Procedure

The procedure entitled DWQMS Approvals Process for Alterations of Drinking Water Systems (PW-WW-P-004-001) outlines the approvals process and identifies specific requirements needed to make alterations to the COH’s DWSs under the licencing and permitting process. This procedure applies to all DWS alterations including: additions, modifications, replacements, or extensions of watermains as well as treatment, storage, and pumping infrastructure. Activities deemed to be maintenance and/or repair to infrastructure are not subject to the approvals requirements specified in this procedure. Alterations to service lines are also outside the scope of this procedure. The procedure applies to staff of HW as well as select staff from the Planning & Economic Development Department and Engineering Services Division.

13 ESSENTIAL SUPPLIES AND SERVICES

The Essential Supplies and Services Procedure (PW-WW-P-035-001) is a DWQMS-specific procedure that describes the processes by which the Operating Authority identifies the supplies and services that are deemed essential to water-related operations. The procedure also documents the process followed by the Operating Authority in completing QA reviews for the essential supplies and services.

The BCOS Database application entitled “Supplier Management” lists the Operating Authority’s water essential supplies and services. A supply or service is identified as essential if, and only if, it meets at least one of the following requirements:

- Essential to the safe delivery of water
- Related to drinking-water disinfection (primary or secondary).

A QA Review of all DWQMS essential supplies and services is undertaken at minimum once per year. The SMR, HW - SMT and BLT review the results of the QA review on an annual basis and suggest potential continual improvement initiatives for DWQMS essential supplies and services, with guidance from HW - SMT. Vendor QA reviews, vendor non-conformances, and resolution actions are discussed as an input to DWQMS Management Review.

All vendors providing essential supplies and services will be informed of their role in the DWQMS and records will be maintained by the Operating Authority. Quality requirements for supplies and services are determined through provincial regulations, City standards, industry best practices, and purchasing practices.



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14 REVIEW AND PROVISION OF INFRASTRUCTURE

The Review and Provision of Infrastructure procedure (PW-WW-P-025-001) has been developed to document the process followed by the Operating Authority in reviewing the adequacy of its drinking-water system infrastructure. This is a DWQMS-specific procedure that applies to all of the City’s DWS-related infrastructure, including both horizontal and vertical infrastructure.

15 INFRASTRUCTURE, MAINTENANCE, REHABILITATION AND RENEWAL

The procedure entitled Infrastructure Maintenance, Rehabilitation & Renewal (PW-WW-P-026-001) describes how the Operating Authority undertakes maintenance and infrastructure renewal programs related to the water infrastructure. Infrastructure maintenance is addressed by both planned and unplanned maintenance.

Planned maintenance is scheduled and records are stored in the CMMS (PO and PMATs Sections) and IPS (WD&WWC Section) databases. Server files are backed up daily. Planned maintenance tasks are communicated to the person responsible by issuance of work orders from CMMS (PO and PMATS Section staff) or IPS (WD&WWC Section staff). Completed work orders are reviewed by the designated Superintendent, Supervisor, or Maintenance Tradesperson, Maintenance Planner, Technologist, or Operator of the respective Section.

Unplanned maintenance tasks result from equipment malfunction or breakage and / or customer complaints. Measures to prepare for and expedite unplanned maintenance include equipment redundancy (back-up units), spare parts inventory, availability of updated GIS maps of water infrastructure, as well as documented repair and safety procedures.

Replacement of aging fixed heavy equipment, as well as upgrades, expansions, and in-ground systems improvements are planned by the infrastructure review teams as described in Section 14 of this DWQMS Operational Plan Summary Report.

16 SAMPLING, TESTING AND MONITORING

16.1 General Sampling, Testing and Monitoring

The Sampling, Testing and Monitoring procedure (PW-WW-P-013-004) describes how the Operating Authority undertakes water sampling, testing, and monitoring to ensure the production and distribution of safe drinking water. A description of how results are communicated and how regulatory requirements are met is also provided in this procedure.



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Sampling, testing and monitoring requirements are identified and incorporated into various sampling plan and schedule documents such as the DWQMS City of Hamilton Drinking Water Sampling Procedure (PW-WW-P-013-002). The plans and schedules are reviewed and updated as necessary to incorporate regulatory and/or operational sampling, testing, and monitoring requirements.

The Sampling, Testing and Monitoring procedure includes both grab sampling (i.e. discrete samples representing water characteristics at a particular time) and continuous sampling (i.e. the measurement of parameters and processes through the use of online monitors and instruments). All grab samples brought for analysis to the COH's Environmental Laboratory are collected according to protocols as specified by the City of Hamilton Environmental Laboratory General Sampling Protocols (PW-WW-CR-EL-V-011) and Ontario Regulation 170/03 Sampling Protocols for Lead (PW-WW-CR-EL-V-012). Continuous samples are collected and analyzed through the use of online analyzers and instruments as per the Water Regulatory Devices Operations Procedure (PW-WW-PO-P-011-001).

As required, and/or regulated, sampling, testing and monitoring results are communicated to: the Operating Authority, Owner (AWQI), Owner (DWS), Regulators, and to the public. In the event of an AWQI, staff follow the steps outlined in the procedure Adverse Water Quality Incidents (AWQIs) and Corrective Actions (PW-WW-P-015-001).

16.2 Regulatory Lead Sampling

To ensure the COH's Lead Sampling Program is implemented in accordance with Ontario Regulation 170/03, Schedule 15.1, the Regulatory Lead Sampling Program (PW-WW-P-013-009) was developed. This procedure applies to the COH's DWSs and to all aspects of the Lead Sampling Program from the initial point of contact with the consumer to delivery of the Final Report. The Program includes both Industrial/Commercial/Institutional and residential customers.

17 MEASUREMENT AND RECORDING EQUIPMENT CALIBRATION AND MAINTENANCE

The procedure entitled Calibration & Maintenance of Measurement & Recording Equipment (PW-WW-P-036-001) describes the requirements for the calibration and verification of measurement and recording equipment used for sampling, testing, and monitoring.

Types of recording equipment used for sampling testing and monitoring may include:

- Chlorine field kits





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- Continuous chlorine analyzers
- Flow meters
- Fluoride meters
- pH meters
- Turbidity analyzers
- UV intensity analyzers
- Orthophosphate analyzers

For each type of recording equipment, the procedure provides information including maintenance frequency, methods, and a description of how records of maintenance activities are kept. Also provided is a listing of who is responsible for the maintenance of equipment and related record keeping.

18 EMERGENCY MANAGEMENT

The Hamilton Water Emergency Response Plan (PW-WW-P-012-001) is an integrated procedure for BCOS and DWQMS. This procedure describes processes developed to meet Emergency Preparedness and Response requirements of the DWQMS. The procedure also describes the City’s Corporate, Departmental, Divisional, and Sectional Emergency Response structure.

The procedure includes a list of emergencies that could potentially impact one or more of the City’s DWSs. A Risk Assessment approach is used to identify possible risks and to highlight risks requiring Emergency Response Instructions.

Annual testing of the COH (Corporate) Emergency Response Plan, the HW Emergency Response Plan, and the Plant Operation’s E2 Plan is required. Upon completion of testing, a debrief is held to determine possible improvement actions and document any procedural upgrades that may be required.

HW staff must receive training for all emergency response plans and/or procedures related to their job or responsibilities. Divisional training requirements are listed in the Hamilton Water Division Core Training Guideline (PW-WW-G-033-002). The City’s Emergency Management Office determines training requirements for the COH’s Emergency Response Plan.

19 INTERNAL AUDIT

The Internal Auditing procedure (PW-WW-P-017-001) is an integrated procedure that describes how HW conducts objective and systematic internal audits as a means of measuring the performance of its BCOS and its DWQMS. DWQMS Internal Audits assess DWQMS-related processes against the DWQMS Standards



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and relevant system procedures.

Internal auditors are appointed by HW - SMT and are identified in the Internal Auditor List (PW-WW-L-017-003). Auditors must remain objective and unbiased in their assessments of DWQMS processes and procedures and are prohibited from auditing their own work.

The SMR holds overall responsibility for ensuring that internal audits are planned and executed according to the requirements of the DWQMS Standard and of the Internal Auditing procedure (PW-WW-P-017-001). The SMR appoints a Lead Auditor on a per-audit basis to assist in planning the internal audit and to oversee the execution of the internal audit.

At minimum, all elements or clauses of the DWQMS must be audited in the year prior to the re-accreditation audit. Select elements/clauses as identified in the procedure will be audited annually as per the Internal Auditing procedure (PW-WW-P-017-001).

Audit findings may indicate the need for corrective, preventive, or improvement actions. Corrective, preventive, and improvement actions are recorded in the BCOS Database (See Section 21.0 of this Operational Plan).

Once scheduled internal audits are completed, the SMR (or designate) reviews audit findings and compiles the information for presentation to SMT. Audit findings must be considered in future relevant audits. In addition, the Internal Audit Program is reviewed on an annual basis as an input to DWQMS Management Review.

20 MANAGEMENT REVIEW

The Management Review procedure (PW-WW-P-018-001) is a procedure that has been developed to document the process followed in planning, executing, and documenting DWQMS Management Reviews. This includes provision of feedback to HW sections and reporting of review results to the Owner (DWS). The Management Review process ensures that all levels of the organizational structure are kept informed and aware of DWQMS and DWS performance.

The SMR has a significant role in the DWQMS Management Review process, including the coordination and facilitation of Management Review meetings and the compilation of required input data for presentation to Top Management. Required inputs to Management Review are listed in the Management Review procedure (PW-WW-P-018-001). Other Managers or Operating Authority staff may be invited to assist in presenting information to the Management Review Team or to assist in the review of information where they offer additional expertise or insight. Top Management is responsible for reviewing the input materials presented and



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generating outputs as specified in the Management Review procedure (PW-WW-P-018-001).

Management Review Meetings are held at minimum on an annual basis. The Management Review can be conducted as one meeting per year or be split into several smaller meetings over the course of the year. Either method is acceptable as long as all required review inputs and agenda items are addressed over the course of the year.

DWQMS Management Review outputs must be documented and retained as proof of completion. The SMR or delegate prepares minutes of Management Review meetings for this purpose. Top Management or their delegates are responsible for communicating Management Review results to the Owner as per the Management Review procedure (PW-WW-P-018-001).

Results of management reviews are summarized in the annual DWQMS Summary Report which is circulated to the Owner (DWS) (Mayor and Council).

21 CONTINUAL IMPROVEMENT

The COH is committed to continually improving its DWQMS. Several methods of improvement are embedded in and essential to the system but are not limited to:

- Management Review
- Internal/External Audits
- Kaizens
- Six Sigma Projects

The integrated Non-conformance, Corrective & Preventive Action Process procedure (PW-WW-P-015-002) applies to both the BCOS and DWQMS Systems. This procedure documents the process to be taken to ensure the effective resolution of BCOS and DWQMS system non-conformances, potential non-conformances, and legal non-compliances. The process includes a root cause analysis, identification of corrective / preventive actions, and verification of completeness and effectiveness, as required. Corrective actions are generated through audits and management reviews and on an ongoing basis through NC/PNC/OFI submissions. The scope of the procedure does not include the management of adverse water quality events. This process is documented in Adverse Drinking Water Quality Incidents (AWQIs) and Corrective Actions (PW-WW-P-015-001).

The Corrective and Preventive Action procedure (PW-WW-P-015-002) specifically illustrates how DWQMS non-conformances are resolved. Non-conformances are






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entered into the "Findings" Application of the BCOS Database. Once details of the nature of the non-conformance are entered into BCOS, a root cause analysis can be completed, and an action plan can be developed to correct or prevent the non-conformance. All action plans are verified as being complete. Verification for effectiveness may occur at the discretion of the SMR. All of the above information must be entered into the BCOS Database. Once the completion of the plan has been verified, the non-conformance report can be closed out.

BCOS software tracks the revision history of document.



CITY OF HAMILTON
PUBLIC WORKS DEPARTMENT
Transportation Operations and Maintenance Division

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	March 20, 2023
SUBJECT/REPORT NO:	Alternation to Kenora Avenue and Bancroft Street for GO Confederation Station Construction (PW23018) (Ward 5)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Mushfiqur Rahman (905) 546-2424 Ext. 4391 Peter Locs (905) 546-2424 Ext. 6015
SUBMITTED BY:	Mike Field Acting Director, Transportation Operations and Maintenance Public Works Department
SIGNATURE:	

RECOMMENDATIONS

- (a) That the intersection of Kenora Avenue and Bancroft Street be modified to permit through north-south vehicle movements on Kenora Avenue, and to close off the east and west approaches of Bancroft Street to maintain compliance with Transport Canada Grade Crossing Standards as it pertains to the construction of the Confederation GO Station; and
- (b) That the General Manager of Public Works, or their designate, be authorized and directed to negotiate and enter into an agreement with Canada National Railway (CNR) and Metrolinx to design and reconstruct the intersection.

EXECUTIVE SUMMARY

The Confederation GO Station near Centennial Parkway is projected to be completed by 2025 as part of the expansion of GO Transits Lakeshore West line. As part of this project work a third track is planned to be added south of the existing tracks, which will place the intersection of Kenora Avenue and Bancroft Street within 10 metres of the rail crossing. The separation requirement is to maintain a minimum of 30 metres separation according to Transport Canada's (TC) Grade Crossings Standards Section 11.1.

OUR Vision: To be the best place to raise a child and age successfully.

OUR Mission: To provide high quality cost conscious public services that contribute to a healthy, safe and prosperous community, in a sustainable manner.

OUR Culture: Collective Ownership, Steadfast Integrity, Courageous Change, Sensational Service, Engaged Empowered Employees.

SUBJECT: Alternation to Kenora Avenue and Bancroft Street for the GO Centennial Station Construction (PW23018) (Ward 5) – Page 2 of 5

In order to meet this requirement, the City of Hamilton must introduce approximately 21 metres of additional separation distance between the intersection of Kenora Avenue/Bancroft Street, and the rail track crossing. Working together with Canadian National Railway Company (CNR), City of Hamilton staff have determined the only viable means of proceeding is to modify the intersection of Kenora Avenue and Bancroft Street by closing the east and west approaches of Bancroft Street, effectively eliminating the intersection, and subsequently the conflict with TC's Grade Crossing Standards.

The modification to the intersection would maintain the north/south movements on Kenora Avenue ensuring Kenora remains open as an access point to the businesses north of the railway track crossing. Businesses along Bancroft Avenue remain accessible from Nash Road and Arrowsmith Road respectively. Out of all options, exploring this option presents the least amount of impact to local businesses.

This work is needed to support the construction of the Confederation GO Station. Design and construction will be undertaken by Metrolinx/CRN, including all associated costs.

Alternatives for Consideration – See Page 4

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: The proposed closure of east and west approaches of Bancroft Street will be funded and works carried out by Metrolinx/CNR as part of the Confederation GO Station construction project. There are no cost impacts to the City of Hamilton.

Staffing: N/A

Legal: N/A

HISTORICAL BACKGROUND

In May 2015 the Province of Ontario committed funding for the Confederation GO Station and in November of 2019 the location began to service GO Busses for Route 12 – Niagara Falls/Toronto. The new station, located on Centennial Parkway North at Goderich Road is part of the Metrolinx expansion of the GO Transit Lakeshore West corridor.

On April 30, 2020 the Province of Ontario issued a construction tender to support construction of the full train/bus Confederation GO Station and post tender award construction began on October 11, 2022.

SUBJECT: Alternation to Kenora Avenue and Bancroft Street for the GO Centennial Station Construction (PW23018) (Ward 5) – Page 3 of 5

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

Section 11.1 of the Transport Canada Grade Crossings Standards stipulates that: “A public grade crossing where the railway design speed is more than 25 km/h (15 mph) must be constructed so that no part of the travelled way of an intersecting road or entranceway (other than a railway service road), is closer than 30m to the nearest rail of the grade crossing”.

RELEVANT CONSULTATION

The following internal and external parties have been consulted in the development of this report:

- Environmental Services Division
- Waste Management Division
- Transit Division
- Planning and Economic Development, Transportation Parking & Planning Division
- Canadian National Railway
- Metrolinx
- Transport Canada

ANALYSIS AND RATIONALE FOR RECOMMENDATION

Metrolinx is expanding their GO Transit Lakeshore West line by adding a station (Confederation GO Station) at Centennial Parkway North and Goderich Road.

The intersection of Kenora Avenue and Bancroft Street is presently located approximately 20 metres south of the existing CNR rail line. In its present configuration, the separation requirement of 30 metres as required by TC Grade Crossing Standards Section 11.1 is not met but permitted to remain as a legacy installation up to and until any revisions to the roadway or railway are made. With the construction of the Confederation GO Station, which includes the addition of another rail track to service the passenger platforms, the sub-standard condition of the separation distance between the Kenora Avenue and Bancroft Street intersection and the rail tracks is required to be resolved. Separation requirements are in place to ensure safety in operations by minimizing potential conflict between vehicles and trains.

The intersection of Kenora Avenue and Bancroft Street presents a conflict with the adjacent railway tracks due to proximity. Southbound traffic is prone to queuing as vehicles attempt to make turning movements onto Bancroft Street. Based on field observations, vehicles can queue up to 100 metres on Kenora Avenue north of Bancroft Street during peak periods. This queuing places vehicles stopped on the tracks and

SUBJECT: Alternation to Kenora Avenue and Bancroft Street for the GO Centennial Station Construction (PW23018) (Ward 5) – Page 4 of 5

potentially in conflict with on-coming trains. This type of traffic conflict is the under-lying reason for the TC standards which prohibits intersections in close proximity to rail crossings.

The area north of the CNR rail line is land-locked by the Red Hill Valley Parkway (RHVP), the Queen Elizabeth Way (QEW) and Centennial Parkway North. It is only accessible via Nash Road and Kenora Avenue. It is critical that Kenora Avenue be maintained as an entrance point to service the local businesses, including the City of Hamilton Kenora Waste Transfer Station and Community Recycling Centre, located north of the CNR rail line.

Through an iterative review process facilitated by Transportation Operations & Maintenance staff that included Metrolinx GO Transit, CNR and TP, a variety of solutions were developed and considered. These solutions placed focused attention on operating adjustments to the intersection of Kenora Avenue and Bancroft Street, ensuring they would not prohibit reasonable public access to the area north of the CNR rail line and in compliance with Section 11.1 of the Transport Canada Grade Crossings Standards. The proposed option, attached to Report PW23018 as Appendix “A”, which involves closing off the east and west approaches of Bancroft Street via the introduction of cul-de-sacs allows for uninhibited north-south through movements to continue on Kenora Avenue and eliminates the grade crossing compliance issue, which is acceptable to Metrolinx Go Transit, CNR and meets/exceeds TP regulations.

In consideration that the need for making the proposed alterations to the intersection of Kenora Avenue and Bancroft Street are required to support the construction of the GO Confederation Station, all design and construction costs will be borne by Metrolinx/CNR and not the City of Hamilton. Additionally, Metrolinx/CNR will facilitate the reconstruction works and ensure completion to the satisfaction to the City of Hamilton.

ALTERNATIVES FOR CONSIDERATION

N/A

ALIGNMENT TO THE 2016 – 2025 STRATEGIC PLAN

Community Engagement and Participation

Hamilton has an open, transparent and accessible approach to City government that engages with and empowers all citizens to be involved in their community

Economic Prosperity and Growth

Hamilton has a prosperous and diverse local economy where people have opportunities to grow and develop.

**SUBJECT: Alternation to Kenora Avenue and Bancroft Street for the GO
Centennial Station Construction (PW23018) (Ward 5) – Page 5 of 5**

Healthy and Safe Communities

Hamilton is a safe and supportive City where people are active, healthy, and have a high quality of life.

Built Environment and Infrastructure

Hamilton is supported by state-of-the-art infrastructure, transportation options, buildings and public spaces that create a dynamic City.

APPENDICES AND SCHEDULES ATTACHED

Appendix “A” to Report PW23018 – Preferred Option – Closure of Eastbound and Westbound Approach by Creating Cul-de-Sac

Preferred Option
Closure of Eastbound and Westbound Approach by Creating Cul-de-Sac
Kenora Avenue and Bancroft Street



12.1

CITY OF HAMILTON

MOTION

Public Works Committee: March 20, 2023

MOVED BY COUNCILLOR M. SPADAFORA.....

SECONDED BY COUNCILLOR M. WILSON.....

Review of Level of Service for Winter Control in Alignment with the Principles of Vision Zero

WHEREAS, the City of Hamilton’s vision is to be the best place to raise a child and to age successfully;

WHEREAS, the City of Hamilton has adopted Vision Zero to guide its approach to road safety;

WHEREAS, children and the elderly are the most vulnerable road users, particularly around vehicles;

WHEREAS, the City of Hamilton is continuing its commitment to a ten-year transit plan and year-round access to transit stops and bus boarding is necessary to support this strategic investment;

WHEREAS, the City of Hamilton’s climate action strategy identifies the importance of reducing transportation disruption due to extreme weather events and improve the safety of travel on roads, sidewalks, and trails;

WHEREAS, the City of Hamilton recorded seven ice related events during the 2022-2023 winter season, an increase from one event in the 2021-2022 winter season, impacting the municipality’s snow clearing experience and residents’ safe and equitable mobility;

WHEREAS, the City of Hamilton implemented a level of service enhancement for sidewalk snow clearing along priority 1 and 2A roadways where transit operates and for all transit stops to aid residents in accessing transit options City-wide during winter months;

WHEREAS, during the 2022-2023 winter service period, residents in all new service areas have been filing concerns about child safety and challenges in pedestrian mobility due to the piling up of snow and ice from road plows; and

WHEREAS, any changes in service levels to the City of Hamilton's snow clearance contract to support accessibility and Hamilton's commitment to Vision Zero would have to be made in advance of August 31, 2023.

THEREFORE, BE IT RESOLVED:

- (a) That staff undertake a review of the City of Hamilton's current level of service for winter control and provide options on how operations could be adapted to enhance accessibility and safety in alignment with the principles of Vision Zero, thereby protecting the interests of vulnerable road users;
- (b) That staff report back to the Public Works Committee with the results of the review of the City of Hamilton's current level of service for winter control in advance of August 31, 2023, with possible level of service revisions and best practices including any cost and resourcing implications; and
- (c) That the staff ensure the following areas of focus are included in the review of the City of Hamilton's current level of service for winter control;
 - (i) HSR transit stops including boarding access;
 - (ii) Controlled crosswalks, crosswalks with stationed crossing guards, school crossings, sidewalks with sloped access, neighbourhood pedestrian and multimodal pathways; and
 - (iii) School zones.
- (d) That staff consult with the Advisory Committee for Persons with Disabilities and the Seniors Advisory Committee when reviewing snow clearing needs of the community; and
- (e) That staff report back in full the comments and opinions of the disability and senior's communities including the Committee for Persons with Disabilities and the Seniors Advisory Committee.

12.2

CITY OF HAMILTON

MOTION

Public Works Committee: March 20, 2023

MOVED BY COUNCILLOR A. WILSON.....

SECONDED BY COUNCILLOR.....

Beverly Community Park, 680 Hwy. No. 8 (Flamborough), Pathway Proposal by the Rockton Lions Club (Ward 13)

WHEREAS, Beverly Community Park is located at 680 Hwy. No. 8 (Flamborough), Hamilton;

WHEREAS, this park is a rural community park maintained by the Rockton Sub-Committee;

WHEREAS, the Rockton Lions Club has submitted a proposal to fund the development of a new pedestrian walkway at Beverly Community Park;

WHEREAS, this proposal recognizes public access to health (PATH) as a guiding principle, recognizing the challenges of rural communities' access to sidewalks;

WHEREAS, this proposed path will also benefit the park amenity users;

WHEREAS, City of Hamilton staff will assist with in-kind project management and detailed design of the proposed path, and any permits required by the Hamilton Conservation Authority; and

WHEREAS, an agreement would be required between the Rockton Lions Club (donor) and the City of Hamilton to formalize the project details.

THEREFORE, BE IT RESOLVED:

- (a) That staff be directed to review the feasibility and design of a new pedestrian path at Beverly Community Park located at 680 Hwy. No. 8 (Flamborough) and to support the development of agreements as needed for the donation to be funded by the Rockton Lions Club;

- (b) That staff be directed to report back with estimates for construction and ongoing operating costs and related financing plan upon completion of the review of the feasibility and design of a new pedestrian path at Beverly Community Park located at 680 Hwy. No. 8 (Flamborough); and
- (c) That the General Manager of Public Works be authorized and directed to approve and execute any and all required agreements and ancillary documents related to the review of the feasibility and design of a new pedestrian path at Beverly Community Park located at 680 Hwy. No. 8 (Flamborough).

12.3

CITY OF HAMILTON

MOTION

Public Works Committee: March 20, 2023

MOVED BY COUNCILLOR N. NANN.....

SECONDED BY COUNCILLOR.....

Community Garden and Outdoor Natural Ice Rink Water Infrastructure Improvements at Birge Park, 167 Birge Street, Hamilton (Ward 3)

WHEREAS, the neighborhoods surrounding Birge Park, 167 Birge Street, Hamilton, are underserved for park and greenspace;

WHEREAS, Birge Park has the ability to be an all-season community hub, where residents can skate in the winter; swim, garden, and play basketball in the summer, and use the play structure year-round;

WHEREAS, local residents have an established a community garden at Birge Park in the warmer months and have requested support to create a community rink in the winter months;

WHEREAS, there is no water source in the park to allow for watering the gardens and flooding the rink; and

WHEREAS, staff have identified the infrastructure needs to allow for a water source and the safe construction of a community rink.

THEREFORE, BE IT RESOLVED:

- (a) That the water infrastructure improvements for a community garden and natural outdoor ice rink, including an ice rink hut, at Birge Park, 167 Birge Street, Hamilton, be funded from the Ward 3 Special Capital Re-investment Reserve Fund (#108053) at an upset limit, including contingency, not to exceed \$150,000;
- (b) That the annual operating impacts for the required maintenance and repairs for the natural outdoor ice rink and water infrastructure at Birge Park, 167 Birge

Street, Hamilton, in the amount of \$8,000, be included in the 2024 Public Works Department base operating budget; and

- (c) That the Mayor and City Clerk be authorized and directed to approve and execute required agreements and ancillary documents related to the water infrastructure improvements for a community garden and natural outdoor ice rink at Birge Park, 167 Birge Street, Hamilton, with such terms and conditions in a form satisfactory to the City Solicitor.

12.4

CITY OF HAMILTON

MOTION

Public Works Committee: March 20, 2023

MOVED BY COUNCILLOR N. NANN.....

SECONDED BY COUNCILLOR.....

Basketball Court Improvements at Powell Park, 53 Birch Avenue, Hamilton (Ward 3)

WHEREAS, Powell Park, 53 Birch Avenue, Hamilton, was once home to a complete basketball court facility with two nets and backboards until the 1990s when it served as a dynamic community space for friendly competition, game play and gathering among neighbors and friends after school and on weekends;

WHEREAS, basketball provides a routine, purpose, and fosters community among young residents and newcomers alike, many who want to contribute to community space in Powell Park;

WHEREAS, the removal of the second hoop has led to this court not being used properly and discourages kids from enjoying the purpose of play;

WHEREAS, Powell Park is slated for reconstruction, with consultation beginning in 2024 and residents have requested a temporary restoration of the basketball court to include two nets;

WHEREAS, a full basketball court will allow kids to play better, build confidence and further develop skills to use on and off the court; and

WHEREAS, City staff have assessed the feasibility of installing a second basketball net and backboard and recommended installing fencing to prevent the basketballs from impacting the pathway.

THEREFORE, BE IT RESOLVED:

- (a) That the installation of a second basketball net and additional court fencing at the Powell Park basketball court, 53 Birch Avenue, Hamilton, to be funded from the Ward 3 Special Capital Re-Investment Discretionary Fund (#3302109300) with an upset limit of \$10,000 be approved;
- (b) That the Mayor and City Clerk be authorized and directed to approve and execute required agreements and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor, related to the installation of a second basketball net and additional court fencing at the Powell Park basketball court, 53 Birch Avenue, Hamilton.

12.5

CITY OF HAMILTON

MOTION

Public Works Committee: March 20, 2023

MOVED BY COUNCILLOR C. KROETSCH.....

SECONDED BY COUNCILLOR.....

Installation of Pride Crosswalks at the intersection of King William Street and Ferguson Avenue North (Ward 2)

WHEREAS, Council approved a Decorative Crosswalk Guideline on July 17, 2020 which promotes and enables the installation of decorative crosswalks in the City; and

WHEREAS, the International Village Business Improvement Area (BIA) applied for and received funding through the My Main Street Community Activator grant to fund the majority of this work.

THEREFORE, BE IT RESOLVED:

- (a) That Transportation Operations and Maintenance staff be authorized and directed to install four Pride Crosswalks at the intersection of King William Street and Ferguson Avenue North in 2023;
- (b) That all costs associated with the installation of four Pride Crosswalks at the intersection of King William Street and Ferguson Avenue North not to exceed \$5,000, be funded from the Ward 2 Area Rating Reserve Fund (108052);
- (c) That \$400 for the annual maintenance of the four Pride Crosswalks at the intersection of King William Street and Ferguson Avenue North be added to the Transportation Operations and Maintenance Division’s 2024 annual base operating budget; and
- (d) That the Mayor and City Clerk be authorized and directed to execute any required agreement(s) and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor, related to the installation of four Pride Crosswalks at the intersection of King William Street and Ferguson Avenue North.

12.6

CITY OF HAMILTON

MOTION

Public Works Committee: March 20, 2023

MOVED BY COUNCILLOR N. NANN.....

SECONDED BY COUNCILLOR.....

Crime Prevention Through Environmental Design Review of the City-owned Escarpment Staircases

WHEREAS, in the United Nations report [Cities Alive: Designing Cities That Work For Women](#) published in October 2022, it is stated that “without a gender-responsive approach to urban planning, cities often compound gender inequalities that restrict women’s social and economic opportunities, health and wellbeing, sense of safety and security, and access to justice and equity”;

WHEREAS, the rate of police-reported sexual assaults in Canada has reached its [highest levels](#) since 1996;

WHEREAS, Hamilton’s sexual assault centre has seen a ‘dramatic increase’ in calls to their 24-hour support line over the past three years;

WHEREAS, the City of Hamilton is responsible for five escarpment staircases to provide recreational facility and active transportation links between the mountain and lower city;

WHEREAS, in December 2021, an unknown man approached a resident, Tara McFadyen, and attempted to sexually assault her during her morning daylight workout on the escarpment stairs; and

WHEREAS, other residents who have survived sexual violence that has occurred on the escarpment stairs have raised the alarm bell on the need for the City of Hamilton to do better and be responsive;

THEREFORE, BE IT RESOLVED:

- (a) That staff be directed to conduct a Crime Prevention Through Environmental Design (CPTED) review of the five City-owned escarpment staircases and report

back on recommendations to improve the safety of escarpment staircase use specifically to prevent sexual violence, including any considerations to be referred to the 2024 budget process for consideration.