



THE CORPORATION OF THE TOWNSHIP OF MAPLETON

COUNCIL AGENDA

TUESDAY, OCTOBER 22, 2019 @ 1:00 P.M.

MAPLETON TOWNSHIP OFFICES

1. **Call to Order**
2. **a) O Canada**
b) Presentation of Award to Firefighter Daryl Brodhaecker
3. **Declaration of Pecuniary Interest**
4. **Confirmation of Minutes**
 - 4.1 Council Meeting dated October 8, 2019
 - 4.2 Public Meeting under the Planning Act dated October 8, 2019
5. **Matters arising from Minutes**
 - 5.1 City of Kitchener resolution dated August 26, 2019
Re: Single Use Disposable Wipes
 - 5.2 City of Hamilton resolution dated September 25, 2019
Re: Endorsing Kitchener's Single Use Disposable Wipes
 - 5.3 Halton Region resolution dated July 10, 2019
Re: Local Planning Appeal Tribunal (LPAT)
6. **Matters under The Planning Act and Matters Arising**
 - 6.1 ZBA2019-06 – Township of Mapleton Housekeeping ZBA
Re: Draft Amending By-law
7. **Delegations and Matters Arising from Delegations**
 - 7.1
 - a) 2019 Mapleton Master Fire Plan, Plan Facilitator Callise Loos
 - b) Matters arising from Delegations

- 7.2 a) County of Wellington Manager of Policy Planning, Sarah Wilhelm
 - i) Committee Report dated September 12, 2019 regarding 2019 Provincial Policy Statement Review
 - ii) Committee Report dated September 12, 2019 regarding County Official Plan Review – Process and Key Phases

- b) Matters arising from Delegations

- 7.3 a) QPA Solar Inc represented by Marjan Stosic

- b) Matters arising from Delegations

8. Minutes from Committees – none

9. Reports and Updates from Staff

9.1 Emergency Management Reports

- i) Emergency Management Report EM2019-01
Re: Status of the Township's Emergency Management Programme

9.2 Fire Department

- i) Fire / Rescue Report FR2019-07
Re: Master Fire Plan Recommendations
- ii) Fire Report FR2019-08
Re: Sharing Resources

9.3 Public Works Department

- i) Public Works Report PW2019-29
Re: Township of Mapleton Source Protection Annual Reports
- ii) Public Works Report PW2019-30
Re: Public Works Department Staff Compliment Increase

10. Approval of By-Laws

10.1 By-law Number 2019-091 being a By-law to amend By-law 2010-080, being a Zoning By-law for the Township of Mapleton, Part Lot 135, Plan 134 (Peel), 3 Peel Street West, Alma ZBA 2019-12

10.2 By-law Number 2019-092 being a By-law to amend By-law 2010-080, being a Zoning By-law for the Township of Mapleton ZBA 2019-06

11. Correspondence for Council's Direction

- 11.1 County of Wellington Engineering Department correspondence dated October 10, 2019 and proposed recommendation
Re: Winter Maintenance (Wellington Road 45)

12. Correspondence for Council's Information

- 12.1 County of Wellington resolution dated September 12, 2019
Re: Rural Green Property Addressing Signage
- 12.2 Enbridge Gas Inc.
Re: Ontario Energy Board Notice for public hearing
- 12.3 City of St. Catharines resolution dated September 23, 2019
Re: Menstrual Products in City Facilities
- 12.4 AMO Watch File
The link to view the October 10, 2019 issue: <https://tinyurl.com/y4u3m4t9>
The link to view the October 17, 2019 issue: <https://tinyurl.com/y6bxxsqu>

13. Notices of Motion

14. Notice Provision – none

15. Other Business

16. Council Tracking Sheet

17. Closed Session – none

18. Confirmatory By-law Number 2019-093

19. Adjournment

PLEASE NOTE: Alternate Formats and Communication Support

The Township is committed to providing residents with communication support and alternate format of documents upon request. For more information or to make a request, please call the Township of Mapleton office at 519-638-3313.



Township of Mapleton 2019 Council Meeting Dates As of January 17, 2019

Tuesday,	January	8,	2019	7:00 p.m. – Regular Meeting of Council
Tuesday,	January	22,	2019	1:00 p.m. – Regular Meeting of Council
Tuesday,	February	12,	2019	7:00 p.m. – Regular Meeting of Council
Tuesday,	February	26,	2019	1:00 p.m. – Regular Meeting of Council

CANCELLED

Tuesday,	March	12,	2019	7:00 p.m. – Regular Meeting of Council
Tuesday,	March	26,	2019	1:00 p.m. – Regular Meeting of Council
Tuesday,	April	9,	2019	7:00 p.m. – Regular Meeting of Council
Tuesday,	April	23,	2019	1:00 p.m. – Regular Meeting of Council
Tuesday,	May	14,	2019	7:00 p.m. – Regular Meeting of Council
Tuesday,	May	28,	2019	1:00 p.m. – Regular Meeting of Council
Thursday,	June	13,	2019	7:00 p.m. – Regular Meeting of Council
Tuesday,	July	9,	2019	7:00 p.m. – Regular Meeting of Council
Tuesday,	August	13,	2019	7:00 p.m. – Regular Meeting of Council
Tuesday,	September	10,	2019	7:00 p.m. – Regular Meeting of Council
Tuesday,	September	24,	2019	4:00 p.m. – Regular Meeting of Council

CANCELLED

Tuesday,	October	8,	2019	7:00 p.m. – Regular Meeting of Council
Tuesday,	October	22,	2019	1:00 p.m. – Regular Meeting of Council
Tuesday,	November	12,	2019	7:00 p.m. – Regular Meeting of Council
Tuesday,	November	26,	2019	1:00 p.m. – Regular Meeting of Council
Tuesday,	December	10,	2019	7:00 p.m. – Regular Meeting of Council

Note: Dates are subject to change by resolution of Township of Mapleton Council



Township of Mapleton 2019 Committee Meeting Dates

COMMITTEE OF ADJUSTMENT		
Wednesday, April	17, 2019	4:00 p.m. – Regular Scheduled Meeting
Wednesday, May	22, 2019	4:00 p.m. – Regular Scheduled Meeting
Wednesday, June	19, 2019	4:00 p.m. – Regular Scheduled Meeting
Wednesday, July	10, 2019	4:00 p.m. – Regular Scheduled Meeting
Wednesday, August	14, 2019	4:00 p.m. – Regular Scheduled Meeting
Wednesday, September	11, 2019	4:00 p.m. – Regular Scheduled Meeting
Wednesday, October	9, 2019	4:00 p.m. – Regular Scheduled Meeting
Wednesday, November	13, 2019	4:00 p.m. – Regular Scheduled Meeting
Wednesday, December	11, 2019	4:00 p.m. – Regular Scheduled Meeting

PARKS AND RECREATION COMMITTEE		
Thursday, June 20,	2019	6:00 p.m. – Regular Scheduled Meeting
Thursday, August 22,	2019	6:00 p.m. – Regular Scheduled Meeting
Thursday, October 24,	2019	6:00 p.m. – Regular Scheduled Meeting
DATE CHANGE, now October 17		
Thursday, December 19,	2019	6:00 p.m. – Regular Scheduled Meeting

ECONOMIC DEVELOPMENT COMMITTEE		
Monday, July 8,	2019	6:00 p.m. – Regular Scheduled Meeting
Monday, September 9,	2019	6:00 p.m. – Regular Scheduled Meeting
Monday, November 4,	2019	6:00 p.m. – Regular Scheduled Meeting

Committee meeting dates are subject to change, please check www.mapleton.ca for updates.



THE CORPORATION OF THE TOWNSHIP OF MAPLETON

COUNCIL MINUTES

TUESDAY, OCTOBER 8, 2019 @ 3:00 P.M.

MAPLETON TOWNSHIP OFFICES

PRESENT: Gregg Davidson, Mayor
Dennis Craven, Councillor
Paul Douglas, Councillor
Michael Martin, Councillor
Marlene Ottens, Councillor

STAFF PRESENT: Manny Baron, Chief Administrative Officer
Barb Schellenberger, Municipal Clerk
Sam Mattina, Director of Public Works
John Morrison, Director of Finance
Larry Wheeler, Deputy Clerk
Patty Wright, Chief Building Official
Heather Trottier, Financial Analyst – Tax Collector (at 7:00 p.m.)

1. Call to Order

Mayor Davidson welcomed those in attendance and called the meeting to order at 3:00 p.m.

Education Session

CAO Baron introduced consultants John & Peter from Strategy Corp and Political Acuity Institute. In attendance was representation from Centre Wellington. The training commenced.

A break took place at approx. 5:30 p.m. Council resumed at 7:00 p.m.

2. O Canada

3. Declaration of Pecuniary Interest – none

4. Confirmation of Minutes

4.1 Council Meeting dated September 10, 2019

RESOLUTION 2019-22-01

Moved: Councillor Ottens

Seconded: Councillor Douglas

THAT the minutes of the Township of Mapleton Council meeting held on Tuesday, September 10, 2019 be confirmed as circulated in the agenda package.

CARRIED

5. Matters arising from Minutes – none

6. Matters under The Planning Act and Matters Arising

Public Meeting Minutes for the following applications are a separate document and will be placed into the public record.

6.1 a) ZBA2019-06 - Notice of Public Meeting, all lands in the Township of Mapleton

b) Matters arising under The Planning Act (Council Direction)

RESOLUTION 2019-22-02

Moved: Councillor Douglas

Seconded: Councillor Ottens

THAT Zoning application ZBA2019-06 for all lands in the Township of Mapleton be received.

CARRIED

6.2 a) ZBA2019-12 - Notice of Public Meeting, Plan 134 Part Lot 135 Alma, 3 Peel Street West, Alma, 2664897 Ontario Inc., c/o Patel, Dhruvin

b) Matters arising under The Planning Act (Council Direction)

RESOLUTION 2019-22-03

Moved: Councillor Ottens

Seconded: Councillor Douglas

THAT Zoning application ZBA2019-12 located at 134 Part Lot 135 Alma, 3 Peel Street West, Alma, (2664897 Ontario Inc., c/o Patel, Dhruvin) be received; AND FURTHER THAT the draft amending by-law as circulated in the agenda be presented to Council for first, second, and third reading.

CARRIED

7. Delegations and Matters Arising from Delegations

7.1 a) Watson & Associates, Peter Simcisko
Re: Asset Management Plan Presentation

b) Matters arising

RESOLUTION 2019-22-04

Moved: Councillor Douglas

Seconded: Councillor Ottens

THAT the delegation of Peter Simcisko representing Watson & Associates, Re: Asset Management Plan (AMP) presentation be received for information; AND FURTHER THAT staff be authorized to implement the AMP beginning January 1, 2020.

CARRIED

7.2 a) Trees for Mapleton: Chair Bruce Whale, GRCA Meghan Clay

b) Matters arising

RESOLUTION 2019-22-05

Moved: Councillor Douglas

Seconded: Councillor Ottens

That Mapleton Council support the Trees for Mapleton request for \$943 for their Tree Planting Funding Proposal.

CARRIED

7.3 a) County Councillor: Earl Campbell – Semi-annual verbal update

b) Matters arising

RESOLUTION 2019-22-06

Moved: Councillor Ottens

Seconded: Councillor Douglas

THAT County of Wellington Councillor Earl Campbell's verbal update be received for information.

CARRIED

8. Minutes from Committees – none

9. Reports and Updates from Staff

9.1 Building Department

- i) Building Report BD2019-13
Re: September Month End and Year to Date (YTD)

RESOLUTION 2019-22-07

Moved: Councillor Douglas

Seconded: Councillor Ottens

THAT Township of Mapleton Council receive Building Department Report BD2019-13 dated October 8, 2019 regarding September Month End and Year to Date (YTD).

CARRIED

9.2 CAO and Clerk's Department

- i) CAO Clerk's Report CL2019-32
Re: Surplus Roads, Glen Allan, Centre-George #2

RESOLUTION 2019-22-08

Moved: Councillor Ottens

Seconded: Councillor Douglas

THAT Township of Mapleton Council receive CAO Clerk's Report CL2019-32 dated October 8, 2019 regarding Glen Allan, Road (Centre - George Street) #2; AND FURTHER THAT notice of the draft bylaw declaring the roads surplus be given in accordance with the Township's notice provision by-law; AND the Mayor and Clerk be authorized to sign any and all ancillary documents pertaining to the sale of the said roads.

CARRIED

9.3 Finance Department

- i) Finance Report FIN2019-17
Re: Water and Wastewater Rates 2020 - 2023

RESOLUTION 2019-22-09

Moved: Councillor Craven

Seconded: Councillor Martin

THAT Township of Mapleton Council receive Finance Report FIN2019-17 regarding Water and Wastewater rates for the years 2020 to 2023.

AND FURTHER

1. effective April 1st, 2020, that the Fees and Charges By-law be amended per appendix "A" of this report; and
2. that this resolution be only undertaken should there be no successful proponent for the request for proposals being issued for the provision of Water and Wastewater services for the Township of Mapleton.

CARRIED

- ii) Finance Report FIN2019-18
Re: Fees and Charges Increase of User Fees

RESOLUTION 2019-22-10

Moved: Councillor Martin

Seconded: Councillor Craven

THAT Finance Report FIN2019-18 dated October 8, 2019 reporting on our User Fees and Charges be received for information.

CARRIED

RESOLUTION 2019-22-11

Moved: Councillor Ottens

Seconded: Councillor Craven

THAT Finance Report FIN2019-18 recommendation Building Fees for 2020 January 1 be approved.

CARRIED

RESOLUTION 2019-22-12

Moved: Councillor Douglas

Seconded: Councillor Martin

THAT Finance Report FIN2019-18 recommendation Planning Fees for 2020 January 1 be approved.

CARRIED

RESOLUTION 2019-22-13

Moved: Councillor Martin

Seconded: Councillor Ottens

THAT Finance Report FIN2019-18 recommendation Parks & Recreation be:

DEFERRED

9.4 Public Works Department

i) Public Works Report PW2019-28

Re: Followup to County Trail Program September 10, 2019

RESOLUTION 2019-22-14

Moved: Councillor Craven

Seconded: Councillor Martin

THAT Township of Mapleton Council receive Public Works Report PW2019-28 dated October 8, 2019 regarding Wellington County Trail Funding Program. AND FURTHER THAT Council approve the revised plan for the trails presented within the report with the estimated cost of \$129,925 and support the application for funding from the County Trail Program for the eligible amount of \$50,000, with the potential eligibility for an additional grant of \$25,000 from the Wellington County Business Retention and Expansion Grant Program.

CARRIED

10. Approval of By-Laws

10.1 By-law Number 2019-089 being a by-law to authorize the Mayor and Clerk to execute Agreements (Sales Trailer and Model Home) between Activa Holdings Inc. and The Corporation of the Township of Mapleton.

RESOLUTION 2019-22-15

Moved: Councillor Martin

Seconded: Councillor Craven

THAT By-law Numbered 2019-089 Being a by-law to authorize the Mayor and Clerk to execute Agreements (Sales Trailer and Model Home) between Activa Holdings Inc. and The Corporation of the Township of Mapleton be hereby read a first, second and third time, signed by the Mayor and the Clerk and sealed with the Corporate Seal.

CARRIED

11. Correspondence for Council's Direction – none

12. Correspondence for Council's Information was circulated with the agenda.

The following resolution was introduced.

RESOLUTION 2019-22-16

Moved: Councillor Craven

Seconded: Councillor Martin

THAT Township of Mapleton Council hereby supports AMO submission to the Attorney General of Ontario dated October 1, 2019 regarding: Towards a Reasonable Balance - Addressing growing municipal liability and insurance costs.

AND FURTHER that AMO be notified of our support.

CARRIED

13. Notices of Motion - none

14. Notice Provision – none

15. Other Business - none

16. Council Tracking Sheet – no revisions were requested.

17. Closed Session

RESOLUTION 2019-22-17

Moved: Councillor Martin

Seconded: Councillor Craven

THAT Mapleton Township Council move into closed session for the following reason(s):

- The Illott Group Human Resources Services, Steve Illott, Market Rate presentation/Information Update [Municipal Act 239 (2)(b)]
- Verbal update, Sale of land to Dozlan Construction, Drayton Industrial Park, Ph, 2, 2 ac. [Municipal Act 239 (2)(c)]
- Correspondence dated October 2, 2019 from Glenaviland Development Corp., Phase 2, Stage 2, Carriage Crossing [Municipal Act 239 (2)(e)]
- Discussion pertaining to Family Health Team needs [Municipal Act 239 (2)(e)]

CARRIED

Open Session Resumed. Rise and Report on Closed Session took place.

Mayor Davidson reported that Township of Mapleton Council discussed the following in Closed Session:

- The Illott Group Human Resources Services, Steve Illott, Market Rate presentation/Information Update
- Verbal update, Sale of land to Dozlan Construction, Drayton Industrial Park, Ph, 2, 2 ac.
- Correspondence dated October 2, 2019 from Glenaviland Development Corp., Phase 2, Stage 2, Carriage Crossing
- Discussion pertaining to Family Health Team needs.

The following resolution was introduced.

RESOLUTION 2019-22-17B

Moved: Councillor Craven

Seconded: Councillor Douglas

WHEREAS Mapleton Council received on August 13, 2019 the market salary summary compiled and presented by Steve Illott:

AND the CAO was tasked to develop a 2020 budget based on the market salary summary;

NOW BE IT RESOLVED THAT:

1. The verbal update presentation by The Illott Group on October 8, 2019 be received for information
2. The salary budget 2020 as amended be approved
3. Council approved the amended salary information as presented and to be incorporated into the 2020 budget effective January 1, 2020
4. The participating municipalities be provided with a copy of the Mapleton Market Survey 2019.

CARRIED

18. Confirmatory By-law Number 2019-090

RESOLUTION 2019-22-18

Moved: Councillor Martin

Seconded: Councillor Craven

THAT By-law Number 2019-090 being a by-law to confirm all actions and proceedings of the Council of the Corporation of The Township of Mapleton be hereby read a first, second and third time signed by the Mayor and the Clerk and sealed with the Corporate Seal.

CARRIED

19. Adjournment

There being no further business, the meeting adjourned at 10:59 p.m.

Mayor Gregg Davidson

Clerk Barb Schellenberger

PLEASE NOTE: Alternate Formats and Communication Support

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THE CORPORATION OF THE TOWNSHIP OF MAPLETON
PUBLIC MEETING MINUTES
TUESDAY, OCTOBER 8, 2019 @ 7:00 P.M
MAPLETON TOWNSHIP OFFICES

PRESENT: Gregg Davidson, Mayor
Dennis Craven, Councillor
Paul Douglas, Councillor
Michael Martin, Councillor
Marlene Ottens, Councillor

STAFF PRESENT: Manny Baron, CAO
Barb Schellenberger, Clerk
Larry Wheeler, Deputy Clerk
Linda Redmond, Township Planner

The Chairman announced that this is a Public Meeting under the *Planning Act* to hear comments from the public and agencies and give consideration to an application for a proposed Zoning By-law Amendment known as ZBA2019-06.

Location of the Subject Land for the proposed amendment affects all lands in the Town of Mapleton.

The Purpose and Effect of the Application of the proposed amendment is to provide for Township initiated “housekeeping” amendments to the Comprehensive Zoning By-law as itemized below. Please note this is not a complete list and more information can be obtained at the Township office:

- i) General typographical and mapping corrections.
- ii) Add and update definitions mostly related to parking (i.e. parallel, tandem, angled, stacking).
- iii) Clarification of text for regulations such as air conditioner units, tarped structures, temporary sales trailer.
- iv) Amend provisions for accessory structures, including increasing the size.
- v) Amend provisions to clarify permitted home industries uses and associated lot size criteria.
- vi) Include new provisions for lots created as surplus farm dwelling to recognize lot size.
- vii) Include new provisions to permit an accessory dwelling unit on a rural lot.
- viii) Modify parking requirements for aisle, access width and barrier free and add criteria for parallel and angled parking requirements.
- ix) Amend minimum lot area, frontage and interior side yard setbacks in residential zones.
- x) Remove and/or amend site specific exemptions for expired uses, redundant restrictions and general adjustments.
- xi) Amend minimum distances between townhouses and apartments.
- xii) Amend permitted uses within the Future Development zone to existing uses only.

Staff confirmed the following:

- Property owners and agencies were provided with the required notice by prepaid, first class mail or by email on September 18, 2019
- Public Notice was placed in the September 5, 12 and October 3, 2019 issues of the Wellington Advertiser
- Public Notice was placed in the September 19 and 26, 2019 issues of the Community News.
- Grand River Conservation Authority correspondence dated September 19, 2019 indicated no objections to the proposed amendments.
- Manager of Planning & Environment comments dated September 30, 2019 prepared by Linda Redmond were also received.

- Ratepayer
 - 1) Opposition letter received from Donna and Peter Fulcher, 154 Ridgeview Drive dated October 7, 2019.
 - 2) Opposition letter received from Mapleton resident Dahl Atin dated October 7, 2019.
 - 3) Opposition letter received from June and David Ebertt, 156 Ridgeview Drive dated October 7, 2019.

Township Planner Redmond reviewed the planning report that was enclosed with the agenda package providing a high level overview of numerous and various changes.

Persons in attendance, who wished to make oral or written submission concerning this Zoning By-law Amendment application, were given the opportunity. No one came forth.

Council questions and remarks discussed with the Planner concerned the following:

- Growth plan and intensification
- Reduced front yard/side yard & the level of setback flexibility
- Density issues such as 6.5 units per acre relevant to the Growth Plan & Official Plan mandates and the variety of mechanisms available to achieve
- 40 foot lots incongruent with small town feel but essential to affordable housing
- Specifics of cluster townhouses & relevant setbacks
- Alterations to accessory structure dimensions & potential consequences.

In response to a request, the CAO read out loud the ratepayer comment letters.

An attendance sheet was circulated for any interested persons to sign their full name, address and postal code.

The Chairman asked if there were any further questions regarding the proposed zoning by-law amendment. There were none.

There being no further discussion, the first Public Meeting was adjourned.

SECOND PUBLIC MEETING

The Chairman announced that this is a Public Meeting under the *Planning Act* to hear comments from the public and agencies and give consideration to an application for a proposed Zoning By-law Amendment known as ZBA2019-12.

Location of the Subject Land - The property subject to the proposed amendment is legally described as Part Lot 135, Plan 134 (Peel) with a civic address of 3 Peel Street West, Alma. The property is approximately 673.30 m² (0.16 acres) in size and occupied by a single commercial/residential structure. The location is shown on the map below.

The purpose and effect of the proposed amendment is to rezone the subject lands to permit the sale of alcohol and bottle returns in the existing convenience store through a partnership with the Liquor Control Board of Ontario (LCBO). Additional relief may be considered at this meeting.

Staff confirmed the following:

- Property owners and agencies were provided with the required notice by prepaid, first class mail or by email on September 18, 2019
- Proper postings were completed on September 18, 2019
- Public Notice was placed in the September 26, 2019 issue of the Drayton Community News.
- Grand River Conservation Authority comments dated September 18, 2019 state no objection.
- Planner's comments dated September 30, 2019 and prepared by Senior Planner Michelle Innocente were also received.
- CBO P. Wright comments dated September 25, 2019 were received and included in the agenda package.

- Wellington Source Water Protection Risk Management Inspector E. Vandermuelen comments dated September 25, 2019 were received and included in the agenda package.
- Fire Chief R. Richardson Comments dated September 18, 2019 state no issues.
- Director of Public Works S. Mattina Comments dated September 18, 2019 state no objection or concerns from public works perspective.
- Ratepayer: Negative implications letter received from Ken Buehler, 9 Peel St West received Oct 8, 2019.

Township Planner Linda Redmond reviewed her planning report that was enclosed with the agenda package. The Chairman asked the property owner if he had any comments.

The property owner discussed his growth plans for the business, the parking situation as it currently exists, future parking issue mitigation strategies, and the benefit of enhanced LCBO services for Alma.

Council questions and remarks discussed with the property owner concerned potential improved parking signage & ideas for relief of negative impacts on neighbours.

Persons in attendance, who wished to make oral or written submission concerning this Zoning By-law Amendment application, were given the opportunity. No one came forth.

An attendance sheet was circulated for any interested persons to sign their full name, address and postal code.

The Chairman asked if there were any further questions regarding the proposed zoning by-law amendment. There were none.

There being no further discussion, the second Public Meeting was adjourned.

Mayor Gregg Davidson

Clerk Barb Schellenberger



Director of Legislated Services & City Clerk
Corporate Services Department
Kitchener City Hall, 2nd Floor
200 King Street West, P.O. Box 1118
Kitchener, ON N2G 4G7
Phone: 519.741.2200 x 7809 Fax: 519.741.2705
christine.tarling@kitchener.ca
TTY: 519-741-2385

September 5, 2019

Dear Municipal Colleagues:

This is to advise that City Council, at a meeting held on August 26, 2019, passed the following resolution regarding single-use disposable wipes:

“WHEREAS in 2018 the City of Kitchener implemented a sustainable funding model Water Infrastructure Project (WIP) for the city’s water, sanitary and stormwater infrastructure to ensure the safe delivery of these valued utilities; and,

WHEREAS in 2018 a multi-year initiative approved through the WIP has already improved several key measures of water quality, and proactive maintenance has reduced the risk of flooding in high-risk areas; and,

WHEREAS in 2018 the City has already seen a number of impacts due to the implementation of the WIP including: 48% decrease in complaints related to discoloured water; Storm main repairs increased by 27 per cent; 300 metric tonnes of sediment removed from catch basins; and, 2,200 properties protected against backflow and cross-connection contamination; and,

WHEREAS Single-use wipes are a \$6-billion industry and growing, and are now being advertised as the clean alternative to toilet paper and are safe to flush; and,

WHEREAS there is no one standard for what the word “flushable” means; and,

WHEREAS Single-use wipes are in fact not safe to flush as they are buoyant; are not biodegradable; and, are unable to break down into small pieces quickly; and,

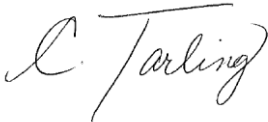
WHEREAS Single-use wipes accumulate in the sewer system and eventually clog the sanitary sewer system costing municipalities hundreds of millions of dollars in additional repairs and maintenance costs each year to municipal sewer systems across the country; and,

WHEREAS there is a lack of public awareness of the impact caused by non-flushable wipes being flushed down toilets and consumer education and outreach could play a large part in reducing the impact;

THEREFORE BE IT RESOLVED that the City of Kitchener lobby the Federal Government, to review regulations related to consumer packaging on single-use wipes to remove the word flushable; and,

BE IT FINALLY RESOLVED that this resolution be forwarded to the Right Honourable Prime Minister of Canada; the Honourable Premier of Ontario; the Minister of the Environment, Conservation and Parks; the Minister of Municipal Affairs and Housing; the Association of Municipalities of Ontario; the Local Members of Provincial Parliament; the Region of Waterloo; and, all Municipalities within the Province of Ontario.”

Yours truly,

A handwritten signature in cursive script, appearing to read "C. Tarling".

C. Tarling
Director of Legislated Services
& City Clerk



OFFICE OF THE MAYOR
CITY OF HAMILTON

September 30, 2019

The Right Honourable Justin Trudeau
Prime Minister of Canada
House of Commons
Ottawa, ON K1A 0A6

Dear Prime Minister,

Re: Correspondence from the City of Kitchener requesting support for their resolution respecting the lobbying of the Federal Government to review the regulations related to consumer packaging on single-use wipes to remove the word flushable.

At the meeting of September 25, 2019, Hamilton City Council endorsed the City of Kitchener's resolution respecting the above matter as follows:

“WHEREAS in 2018 the City of Kitchener implemented a sustainable funding model Water Infrastructure Project (WIP) for the city's water, sanitary and stormwater infrastructure to ensure the safe delivery of these valued utilities;

WHEREAS in 2018 a multi-year initiative approved through the WIP has already improved several key measures of water quality, and proactive maintenance has reduced the risk of flooding in high-risk areas;

WHEREAS in 2018 the City has already seen a number of impacts due to the implementation of the WIP including: 48% decrease in complaints related to discoloured water; Storm main repairs increased by 27 per cent; 300 metric tonnes of sediment removed from catch basins; and, 2,200 properties protected against backflow and cross-connection contamination;

WHEREAS Single-use wipes are a \$6-billion industry and growing, and are now being advertised as the clean alternative to toilet paper and are safe to flush;

WHEREAS there is no one standard for what the word “flushable” means;

WHEREAS Single-use wipes are in fact not safe to flush as they are buoyant; are not biodegradable; and, are unable to break down into small pieces quickly;

.../2

WHEREAS Single-use wipes accumulate in the sewer system and eventually clog the sanitary sewer system costing municipalities hundreds of millions of dollars in additional repairs and maintenance costs each year to municipal sewer systems across the country; and

WHEREAS there is a lack of public awareness of the impact caused by non-flushable wipes being flushed down toilets and consumer education and outreach could play a large part in reducing the impact;

THEREFORE BE IT RESOLVED; That the City of Kitchener lobby the Federal Government, to review regulations related to consumer packaging on single-use wipes to remove the word flushable; and

BE IT FINALLY RESOLVED that this resolution be forwarded to the Right Honourable Prime Minister of Canada; the Honourable Premier of Ontario; the Minister of the Environment, Conservation and Parks; the Minister of Municipal Affairs and Housing; the Association of Municipalities of Ontario; the Local Members of Provincial Parliament; the Region of Waterloo; and, all Municipalities within the Province of Ontario."

Sincerely,

A handwritten signature in black ink, appearing to read 'Fred Eisenberger', with a large, stylized flourish extending from the end of the signature.

Fred Eisenberger
Mayor

Cc:

Minister Jeff Yurek, Minister of the Environment, Conservation and Parks
Minister Steve Clark, Minister of Municipal Affairs and Housing
The Association of Municipalities of Ontario
Andrea Horwath, MPP
Paul Miller, MPP
Sandy Shaw, MPP
Donna Skelly, MPP
Monique Taylor, MPP
The Region of Waterloo
All Municipalities within the Province of Ontario

File C19-016
(5.1)



Office of the Chair
Halton Region
1151 Bronte Road
Oakville ON L6M 3L1

August 29, 2019

The Honourable Steve Clark
Minister of Municipal Affairs and Housing
College Park, 17th Floor
777 Bay St, Toronto, ON
M5G 2E5

Dear Minister Clark:

RE: Local Planning Appeal Tribunal (LPAT)

On behalf of Regional Council, I would like to bring an important issue to your attention. At our meeting of July 10th, Council discussed *Bill 108: More Homes, More Choice Act, 2019* which will have a significant impact on how Halton Region delivers its services. Regional Council discussed their concerns with the Local Planning Appeal Tribunal (LPAT) having the authority to make final planning decisions based on a subjective best planning outcome approach rather than compliance with municipal and provincially approved plans and policies. The LPAT adds cost and delays to the delivery of affordable housing by expensive, time consuming hearings, contrary to the intent of the *More Homes, More Choice Act, 2019*.

In the short-term, we hope you will consider restoring the amendments to the *Planning Act* and in the long-term, consider eliminating the LPAT entirely. Ontario is the only Province to have such a tribunal, and it is the position of Regional Council that it is an antiquated body that has outlived its purpose and does not contribute to the Provincial Government's goal of increasing housing supply.

In this regard, at its meeting on July 10th, 2019, Regional Council unanimously endorsed the following resolution regarding the LPAT:

WHEREAS The Government of Ontario, on June 6, 2019, passed the *More Homes, More Choice Act, 2019*, (Bill 108); and

WHEREAS the changes to the Local Planning Appeal Tribunal (LPAT), contained in Bill 108 will give LPAT the authority to make final planning decisions based on a subjective "best planning outcome" approach rather than compliance with municipal and provincially approved official plans and consistency with provincial plans and policy; and

WHEREAS Bill 108 restricts third party appeals of plans of subdivision only to the applicant, municipality, Minister, public body or prescribed list of persons; and

WHEREAS Bill 108 takes local planning decision-making out of the hands of democratically elected municipal councils and puts it into the hands of a non-elected, unaccountable tribunal; and

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WHEREAS the LPAT adds cost and delays delivery of affordable housing by expensive, time consuming hearings, contrary to the intent of the *More Homes, More Choice Act, 2019*; and

WHEREAS Regional and City Councils have spent millions defending provincially approved plans at the OMB/LPAT, including more than \$5 million over the last three years;

WHEREAS the reverting back to *de novo* hearings adds delays and costs to the housing delivery, as planning decisions start from scratch requiring lawyers, experts and witnesses, repeating the planning analysis already done by local councils;

WHEREAS Ontario is the only province in Canada that empowers a separate adjudicative tribunal to review and overrule local decisions applying provincially approved plans;

NOW THEREFORE BE IT RESOLVED:

THAT in the short term, the Minister of Municipal Affairs and Housing immediately restore the amendments to the *Planning Act* that mandated the evaluation of appeals on a consistency and conformity with Provincial policies and plans basis;

THAT in the long-term the Government of Ontario eliminate the LPAT entirely, as an antiquated body that slows delivery and adds costs to housing supply via expensive and drawn out tribunal hearings;

AND THAT this resolution be forwarded to the Premier, the Minister of Municipal Affairs and Housing, Halton's Members of Provincial Parliament, Leaders of the New Democratic, Liberal and Green parties; the Association of Municipalities of Ontario, the Large Urban Mayors' Caucus of Ontario, Mayors and Regional Chairs of Ontario and Halton's local municipalities.

Thank you for your attention to this matter, I look forward to your reply.

Sincerely,



Gary Carr
Regional Chair

cc: The Honourable Doug Ford, Premier of Ontario
Andrea Horwath, Leader of the New Democratic Party
John Fraser, Interim Leader of the Liberal Party
Mike Schreiner, Leader of the Green Party

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cc.

Ted Arnott, MPP Wellington-Halton Hills
Stephen Crawford, MPP Oakville
Parm Gill, MPP Milton
Jane McKenna, MPP Burlington
Effie Triantafilopoulos, MPP Oakville North-Burlington
Jamie McGarvey, President, the Association of Municipalities of Ontario (AMO)
Cam Guthrie, Mayor, City of Guelph, Chair, the Large Urban Mayors' Caucus of Ontario (LUMCO)
Rick Bonnette, Mayor, Town of Halton Hills
Rob Burton, Mayor, Town of Oakville
Gordon Krantz, Mayor, Town of Milton
Marianne Meed Ward, Mayor, City of Burlington
All Mayors of Ontario
All Regional Chairs of Ontario

THE CORPORATION OF THE TOWNSHIP OF MAPLETON
BY-LAW NUMBER _____
Being a By-law to amend By-law 2010-080, being a
Zoning By-law for the Township of Mapleton
ZBA 2019-06

WHEREAS the Council of the Corporation of the Township of Mapleton deems it desirable to amend said By-law Number 2010-080, as amended pursuant to Section 34 of The Planning Act, R.S.O. 1990, as amended.

NOW THEREFORE the Council of the Corporation of the Township of Mapleton enacts as follows:

1. THAT Section 5, Definitions, is amended by including the following new definitions in alphabetical order:

“AIR CONDITIONERS AND HEAT PUMPS, means equipment designed to heat or cool the interior of buildings and structures and which are normally located outside or on a roof.

PARKING SPACE ANGLED, means the orientation of a parking space in such a manner that the side of a motor vehicle, when parked, is at an angle other than parallel to the drive aisle, driveway, lane, or street which gives direct access to such parking space.

PARKING SPACE, BARRIER FREE ACCESSIBLE, means a parking space provided for the use of persons with disabilities pursuant to the Accessibility for Ontarians with Disabilities Act.

PARKING SPACE, PARALLEL, means the orientation of a parking space in such a manner that the side of a motor vehicle, when parked, is parallel to the drive aisle, driveway, lane, or street which gives direct access to such parking space.

PARKING SPACE, TANDEM, means the arrangement of two parking spaces such that it is necessary to traverse one parking space to gain access to the other from a lane, drive aisle, driveway, or street.

PARKING SPACE, VISITOR, means a parking space for the exclusive use of visitors to a premises.

STACKING LANE, means a continuous on-site queuing lane that includes stacking spaces for motor vehicles which is separated from other vehicular traffic and pedestrian circulation by barriers, markings, or signs.

STACKING SPACE, means a rectangular space that may be provided in succession and is designed to be used for the temporary queuing of a motor vehicle in a stacking lane.”

2. THAT Section 5.32, Definitions – Building, is amended by adding the words **“and shall include a tarped/coverall structure”** after the word *chattels*.
3. THAT Section 5.73, Definitions – Day Nursery, is amended by deleting the words **“The Day Nurseries Act”** and replacing it with the words **“Child Care and Early Years Act”**.
4. THAT Section 5.80, Definitions – Existing, is amended by deleting the words **“except as provided for in Section 6.36 Wellhead Protection”** after the words *By-law*.

5. THAT Section 5.96, Definitions – Floor Area, is amended by deleting the words “**private**” after the words *excluding any* and replacing it with the word “**attached**”; and further amending the second paragraph by deleting it in its entirety and replacing it with the following wording:
“Notwithstanding the above section, in the case of a home industry and/or accessory structure, the basement or cellar shall be included in the total floor area.”
6. THAT Section 5.133, Definitions – Livestock, is amended by deleting the words the definition in its entirety and replacing it with the following: “**means dairy, beef, swine, poultry, horses, goat, sheep, ratites, furbearing animals, deer and elk, game animals and birds.**”
7. THAT Section 5.138.3, Definitions – Lot Coverage, is amended by adding the following words to the end of the definition “**The area of an outdoor swimming pool, open and unenclosed porches, uncovered decks, balconies and steps shall not be calculated in determining lot coverage.**”
8. THAT Section 5.215.1, Definitions – Attic, is amended by deleting the words “**2.3 m (7.5 ft)**” and replacing them with “**2 m (6.56 ft)**”; and further adding the words to the end of the definition, “**Note: in the case of an accessory structure the dwarf wall measurement is less than 2 m (6.56 ft) at its highest point**”.
9. THAT Section 5.215.5, Definitions – First Storey or Ground Floor, is amended by deleting the definition in its entirety and replacing it with the following:

“5.215.5 FIRST STOREY or GROUND FLOOR, means the storey having its floor level closest to the finished grade and its ceiling more than 1.8 metres above grade.”
10. THAT Section 5.216, Definitions – Street, is amended by adding the words “**year round**” after the word *maintained*.
11. THAT Section 5, Definitions is amended by removing numbers 5.1 thru to 5.238.
12. THAT Section 6.1.3 (b), Height, is amended by deleting the words “**and shall not exceed one storey**” after the word *(22 ft)*.
13. THAT Section 6.1.4 (b), Lot Coverage, is amended by deleting the words/numbers “**92.9 m² (1000.0 ft²) ground floor area**” and replacing it with “**185.8 m² (2000.0 ft²) total floor area**”
14. THAT Section 6.1.5, Establishment of an Accessory Building or Use, is amended by removing c) in its entirety and replacing it with:

“c) A tarped/coverall structure when used as an accessory structure, shall be required to comply to section 6.1 accessory uses.”
15. THAT Section 6.1, Accessory Uses, is amended by adding a new subsection **6.1.7** as follows:

“6.1.7 AIR CONDITIONERS, HEAT PUMPS, POOL PUMPS, FILTERS AND HEATERS
Air conditioners, heat pumps, filters and heaters are permitted in conjunction with a permitted use provided:

 - a) **They are not located in the front yard.**
 - b) **They are located a minimum of 1m from the interior side lot line and no closer than the required exterior side yard for the main building, and,**

c) **They are located no closer to a Residential Zone boundary than the minimum setback required for main buildings in Non-Residential Zones from Residential Zone boundaries.**

16. THAT Section 6.6 a), Common Amenity Area, is amended by deleting the word **“outdoor”** after the word *common*.
17. THAT Section 6.7 a), Day Lighting (Sight) Triangle, is amended by deleting the words **“9.0 m (29.5 ft)”** after the words *measuring* and replacing with the words **“7.5 m (24.6 ft)”**.
18. THAT Section 6.7 c), Day Lighting (Sight) Triangle, is amended by adding the words **“or lanes”** at the end of the sentence.
19. THAT Section 6.10, Frontage on a Public Street, is amended by deleting the word **“PUBLIC”** from the title and replacing it with the word **“A”**.
20. THAT Section 6.14 b), Home Industry, is amended by adding the words **“a contractors yard”** after the word *gas*.
21. THAT Section 6.24, One Building Per Lot, is amended by adding a new subsection 6.24 d), as follows:
“d) Model homes at a ratio of two model homes/hectare to a maximum of 4. A model home agreement will be required.”
22. THAT Section 6.27.1, Size of Parking Spaces, is amended by deleting the paragraph in its entirety and replacing it with the following table:

Parking Space Type	Minimum Dimensions	
	Width	Length
Angled	2.9 m (9.5 ft)	5.5 m (18 ft)
Parallel	2.7 m (8.8 ft)	6.5 m (21.3ft)
Private Garage - interior	3 m (9.8 ft)	6 m (19.6 ft)

23. THAT Section 6.27.2, Access to Parking Spaces, is amended by adding the following paragraphs after the first sentence:

“All driveways and parking aisles shall have a minimum unobstructed width of 6 m (19.6 ft.) where two-way traffic is permitted and 3 m (9.8 ft.) where one-way direction of traffic flow is permitted, which is clearly indicated by signs, pavement markings or both.

Notwithstanding the above the minimum width required for any driveway accessory to a single detached, semi-detached or street townhouse dwelling shall be 2.5 metres.”

24. THAT Section 6.27.4 d), Location of Parking Area and Spaces, is amended by adding the word **“also”** after the words *institutional zone may*.
25. THAT Section 6.27.5, Barrier Free Parking, is amended by deleting the entire section and replacing it with the following new criteria:

“Barrier Free/Accessible Parking

- a) Each space shall be hard surfaced.
- b) Each space shall be appropriately identified by a sign which is clearly posted and visible at all times and which contains the International Symbol of Accessibility. Such sign shall be posted in a visible location other than on the parking surface.
- c) Each space is to have a minimum 1.5 m wide access aisle, extending the full length of the parking space that allows persons with disabilities to get in and out of their vehicles adjacent to the parking space. The access aisle may be shared by two accessible spaces by locating the access aisle between the spaces. All access aisle shall be marked with high tonal contrast diagonal lines, which discourages parking in them, where the surface is asphalt, concrete or some other hard surface that can be painted.
- d) Each space shall be either Type A or Type B as described below:
 - Type A Parking Space: minimum width of 3.4 m and minimum length of 5.5 m and signage that identifies the space as “van accessible”
 - Type B Parking Space: minimum width of 2.4 m and a minimum length of 5.5 m
 - Where an even number of parking spaces for the use of persons with Table 2 – Total Required Accessible Parking Spaces
 - disabilities are required, an equal number of parking spaces that meet the requirements of a Type A parking space and a Type B parking space must be provided.
 - Where an odd number of parking spaces for the use of persons with disabilities are required, the number of parking spaces must be divided equally between parking spaces that meet the requirements of a Type A parking space and a Type B parking space, but the additional parking space, the odd-numbered space, may be a Type B parking space.
- e) The number of accessible spaces shall be determined in accordance with Table 2 below.

TABLE 2 – Total Required Barrier Free/Accessible Parking Spaces

Total Required Parking Spaces	Number of Accessible Parking Space
0-12	1 space - Must be Type A Parking Space
13 – 100	Four per cent of the total number of parking spaces.
101 – 200	One parking space plus an additional three per cent of parking spaces.
201 – 1000	Two parking spaces plus an additional two per cent of parking spaces.
Greater than 1000	Eleven parking spaces plus an additional one per cent of parking spaces.

26. THAT Section 6.27.8, Calculation of Parking Regulations, is amended by replacing the minimum number of parking spaces for Accessory Dwellings and Townhouse/Cluster as follows:

- Accessory Dwellings (**converted dwelling**) – 1/unit (**tandem parking may be permitted**)
- Townhouse/Cluster – **1 space per dwelling unit; plus 1 space for each 2 dwelling units for visitors only (also see section 6.27.9 – tandem parking)**

27. THAT Section 6.27, Parking Regulations, is amended by adding a new subsection **6.27.10** as follows:

“6.27.10 Tandem Parking

Notwithstanding section 6.27.2, every four tandem parking spaces located in a cluster townhouse development in R3 zone shall be deemed to equal one visitor parking space required by this by-law, provided that there must be a minimum of 1 visitor parking space for each 4 dwelling units and such spaces shall be identified as being reserved for the exclusive use of such visitors.”

28. THAT Section 6.28 ii), Parking/Storage of Commercial and Recreational Vehicles in a Residential zone, is amended by adding the words **“or exterior side yard”** after the words *front yard*.
29. THAT Section 6.29, Residential Conversions, is amended by removing the words **“(legally existing on the day of the passing of this By-law)”** after the word *dwelling* and adding the words **“or constructed”** after the word *converted*.
30. THAT Section 6.31.2 a) & b), Street Setback Standards and Exceptions, is amended by renumbering and relocating to section 6.22, as follows:

- **6.31.3 a) becomes 6.22 d)**

AND further that 6.31 **“AND EXCEPTIONS”** is removed from title.

AND further that 6.31.3 **“EXCEPTIONS”** heading is removed.

31. THAT Section 6.32, Temporary uses, Buildings and Structures, is amended by adding a new subsection 6.32 c) as follows:

- “c) A temporary building or trailer for conducting sales of new dwelling units is permitted in any Zone provided the sales building or trailer is located within a development site. The sales building or trailer shall be setback 30 metres from the lot line of any existing residential use abutting the development site and parking areas associated with the sales building or trailer shall be setback 6m from any existing residential use abutting the development site. Note a sales trailer agreement will be required.”**

32. THAT Section 6.35.2, Uses Restricted in all Zones, is amended by deleting the following statement under bullet 3:

- Keeping of livestock in any urban area unless specifically permitted by a by-law of this municipality;

And replacing it with:

- **“No person shall, in any residential zone, keep or raise any livestock, bird, reptile, or wild animal including any tamed or domesticated wild animal. This provision shall not prevent the keeping of 3 dogs as per Township of Mapleton keeping of dogs by-law, on one lot.”**

33. THAT Section 6.36, Wellhead Protection, is amended by deleting the words **“or activity”** after the words *any use*.

34. THAT Section 6.36.1 a), b) c) and d), Existing, is deleted in its entirety.

35. THAT Section 8.1, Permitted Uses, is amended by removing **“Hobby Barn”**.

36. THAT Section 8.5, Reduced Lot Regulations, is amended by numbering the first paragraph **a)** and removing the words **“or a lot created by a consent, pursuant to the provisions of the Planning Act, and”** after the words *vacant lot*.

AND further that Section 8.5, is amended by adding a new section **b)** as follows:

- “b) A new lot created by consent or new parcels created by lot line adjustment pursuant to the provisions of the Planning Act, and which parcel (severed and/or retained lands) lacks either the required frontage or area, or both, and is 10 ha (25 ac) or less, shall be**

deemed to comply with the lot frontage and lot area regulations of Section 8.5.1 and 8.5.2.

37. THAT Section 8.5.1, Permitted Uses, is amended by adding the following new uses to Section 8.5.1 under the permitted accessory uses section:
- **Bed and Breakfast in accordance with Section 6.2.**
 - **Farming excluding new buildings and structures.**
 - **Conversion of a single detached residential dwelling for one additional residential dwelling unit in accordance with Section 6.29.**
38. THAT Section 10.2.1, R1B Zone, LOT AREA, Minimum is amended by deleting the numbers/words **“650.3 m² (7000.0 ft²)”** and replacing with **“465.0 m² (5005.4 ft²)”**.
39. THAT Section 10.2.2, R1B Zone, LOT FRONTAGE, Minimum is amended by deleting the numbers/words **“20.1 m (66 ft.)”** and replacing with **“15 m (49.2 ft.)”**.
40. THAT Section 10.2.4, R1B Zone, Interior Side Yard, is amended by deleting 10.2.4 in its entirety and replacing with the following:
“10.2.4 INTERIOR SIDE YARD, Minimum 1.2 m (3.9 ft)”
41. THAT Section 11.2.1, R1C Zone, LOT AREA, Minimum is amended by deleting the numbers/words **“465.0 m² (5005.4 ft²)”** and replacing with **“371.6 m² (4000 ft²)”**.
42. THAT Section 11.2.2, R1C Zone, LOT FRONTAGE, Minimum is amended by deleting the numbers/words **“15 m (49 ft.)”** and replacing with **“12 m (39.3 ft.)”**.
43. THAT Section 11.2.4, R1C Zone, Interior Side Yard, is amended by deleting 11.2.4 in its entirety and replacing with the following:
“11.2.4 INTERIOR SIDE YARD, Minimum 1.2 m (3.9 ft)”
44. THAT Section 12, R2 Residential - Permitted uses, is amended by adding the words **“three or”** at the beginning of Four Unit Street Townhouse.
45. THAT Section 12.2.1.1, R2 Zone, LOT AREA, Minimum is amended by deleting the numbers/words **“465.0 m² (5005.4 ft²)”** and replacing with **“371.6 m² (4000 ft²)”**.
46. THAT Section 12.2.1.2, R2 Zone, LOT FRONTAGE, Minimum is amended by deleting the numbers/words **“15 m (49 ft.)”** and replacing with **“12 m (39.3 ft.)”**.
47. THAT Section 12.2.1.4, R2 Zone, Interior Side Yard, is amended by deleting 12.2.1.4 in its entirety and replacing with the following:
“12.2.1.4 Interior Side Yard, Minimum 1.2 m (3.9 ft)”
48. THAT Section 12.2.2.2, R2 Zone, Lot Frontage, Minimum per dwelling, is amended by deleting the numbers/words **“18.3 m (60 ft.)”** and replacing with **“18 m (59 ft.)”**.
49. THAT Section 12.2.2.6, R2 Zone, Interior Side Yard, is amended by deleting 12.2.2.6 in its entirety and replacing with the following:
“12.2.2.6 Interior Side Yard, Minimum 1.2 m (3.9 ft)”

50. THAT Section 12.2.3.4, R2 Zone, Interior Side Yard, is amended by deleting 12.2.3.4 in its entirety and replacing with the following:
“12.2.3.4 Interior Side Yard, Minimum 1.2 m (3.9 ft)”
51. THAT Section 12.2.4.4, R2 Zone, Interior Side Yard, is amended by deleting 12.2.4.4 in its entirety and replacing with the following:
“12.2.4.4 Interior Side Yard, Minimum 1.2 m (3.9 ft)”
52. THAT Section 12.2.5.4, R2 Zone, Interior Side Yard, is amended by deleting 12.2.5.4 in its entirety and replacing with the following:
“12.2.5.4 Interior Side Yard, Minimum 1.2 m (3.9 ft)”
53. THAT Section 12.2.6.5, R2 Zone, Interior Side Yard, is amended by deleting 12.2.6.5 in its entirety and replacing with the following:
“12.2.6.6 Interior Side Yard, Minimum 1.2 m (3.9 ft)”
54. THAT Section 13.2.1.4, R3 Zone, Interior Side Yard, is amended by deleting 13.2.1.4 in its entirety and replacing with the following:
“13.2.1.4 Interior Side Yard, Minimum 1.2 m (3.9 ft)”
55. THAT Section 13.2.2.10, Distances Between Cluster Townhouses, is amended as follows:
a) deleting the numbers/words **“18.3m (60.0 ft)”** and replacing with **“12 m (39.3 ft)”**.
b) deleting the numbers/words **“12.2m (40.0 ft)”** and replacing with **“6 m (19.7 ft)”**.
c) deleting the numbers/words **“9.1 m (30.0 ft)”** and replacing with **“3 m (9.8 ft)”**.
56. THAT Section 13.2.3.10, Distances Between Apartment Buildings, is amended by changing subsection **“i), ii) and iii)”** to **“a), b) and c)”**.
57. THAT Section 13.2.3.10, Distances Between Apartment Buildings, is further amended as follows:
a) deleting the numbers/words **“18.3m (60.0 ft)”** and replacing with **“12 m (39.3 ft)”**.
b) deleting the numbers/words **“12.2m (40.0 ft)”** and replacing with **“6 m (19.7 ft)”**.
c) deleting the numbers/words **“9.1 m (30.0 ft)”** and replacing with **“3 m (9.8 ft)”**.
58. THAT Section 15.2.7, C1 Zone, Building Height Maximum, is amended by deleting 15.2.7 in its entirety and replacing with the following:
“6.2.7 Building Height, Minimum 6 m (19.7 ft)”.
59. THAT Section 20.5, Industrial Zone Landscaping Requirements, is amended by adding the words **“including exterior side yard,”** after the word *frontage*.
60. THAT Section 26.2, Conestoga Lake Zone Regulations, is amended by numbering the first two paragraphs as **a) and b)**;
- AND further that the following new section **c)** is added:
“c) Accessory structures are required to comply with section 6.1 and are to be considered under the R1A residential provisions.”
61. THAT Section 27.1, Future Development Zone, Permitted Uses, is deleted in its entirety and replaced with the following:
- **“Uses, building and structures lawfully existing on the date of passing of this by-law.”**

62. THAT Section 27.2, 27.3 and 27.4, Future Development Regulations, is deleted in its entirety and replaced with the following:
 “27.2 Regulations – As existing on the date of passing of this by-law.”
63. THAT Section 28.3, Natural Environment Zone, is amended by adding the following new sub section d):
 “d) Section 6.20.1 is applicable as it applies to setbacks to the NE zone.”
64. THAT Site Specific Exception 31.23 be amended by adding the following permitted use:
 “iv) one additional residential unit is permitted in the basement.
65. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as Part Lot 3, Concession 13, Reference Plan 61R21495, parts 2 & 3 as shown on Schedule “A” attached to and forming part of this By-law from **Agricultural (A) to Natural Environment (NE)**.
66. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as Part Lot 19, Concession 11, Reference Plan 61R20731, parts 1 as shown on Schedule “B” attached to and forming part of this By-law from **Agricultural Exception (A-31.44) to Future Development (FD)**.
67. THAT Schedule ‘A-4’ – Alma - is amended by changing the zoning on the lands described as Plan 134 Lot 164, Part Lots 163, 180 and 181, Reference Plan 61R11958, parts 2 and 3 as shown on Schedule “C” attached to and forming part of this By-law from **Commercial (C1) to Residential (R1A)**.
68. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as East Part Lot 16, Concession 17 (M), Reference Plan 61R20731, parts 1 as shown on Schedule “D” attached to and forming part of this By-law from **Extractive Industrial Exception (31.176) to Extractive Industrial Exception (31.289)**.
69. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as Part Lot 17, Concession 1, Reference Plan 61R20731, parts 1 as shown on Schedule “E” attached to and forming part of this By-law from **Agricultural Exception (A-31.125) to Agricultural Exception (A-31.148)**.
70. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as Part Lot 10 and 11, Concession 10, as shown on Schedule “F” attached to and forming part of this By-law from **Agricultural Exception (A-31.79) to Agricultural**.
71. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as Part Lot 15, Concession 9, as shown on Schedule “G” attached to and forming part of this By-law from **Agricultural Exception (A-31.182) to Agricultural**.
72. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as Part Lot 17, Concession 4, as shown on Schedule “H” attached to and forming part of this By-law from **Agricultural Exception (A-31.141) to Agricultural**.
73. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as Part Lot 15, Concession 6, as shown on Schedule “I” attached to and forming part of this By-law from **Agricultural Exception (A-31.188) to Agricultural**.

74. THAT Schedule 'A-1' is amended by changing the zoning on the lands described as Part Lot 22, Concession 16, as shown on Schedule "J" attached to and forming part of this By-law from **Agricultural Exception (A-31.186) to Agricultural**.
75. THAT Schedule 'A-1' is amended by changing the zoning on the lands described as Part Lot 7, Concession 9, as shown on Schedule "K" attached to and forming part of this By-law from **Agricultural Exception (A-31.116) to Agricultural**.
76. THAT Schedule 'A-1' is amended by changing the zoning on the lands described as Part Lot 4, Concession 12, as shown on Schedule "L" attached to and forming part of this By-law from **Agricultural Exception (A-31.209) to Agricultural**.
77. THAT Schedule 'A-1' is amended by changing the zoning on the lands described as Part Lot 19, Concession 1, as shown on Schedule "M" attached to and forming part of this By-law from **Agricultural Exception (A-31.241) to Agricultural**.
78. THAT Schedule 'A-1' is amended by changing the zoning on the lands described as Part Lot 17, Concession 15, as shown on Schedule "N" attached to and forming part of this By-law from **Agricultural Exception (A-31.127) to Agricultural**.
79. THAT Schedule 'A-1' is amended by changing the zoning on the lands described as Part Lot 2, Concession 13, as shown on Schedule "O" attached to and forming part of this By-law from **Agricultural Exception (A-31.107) to Agricultural**.
80. THAT Section 31 Exception Zone, be amended by deleting the text of site specific **31.7** in its entirety and replacing it with the following:

31.7 Surplus Farm Dwelling properties	Notwithstanding any other section of this by-law to the contrary, a residential dwelling shall be prohibited in this zone. Other agricultural uses, that are not accessory to a dwelling, are permitted. This restriction is a result of the subject lands obtaining a surplus farm dwelling severance to remove the existing dwelling from the overall farm parcel. It is intended to ensure that the lands are only used for agricultural purposes.
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81. THAT Schedule "A" Map 1 - Mapleton By-law 66-01 is amended by changing the zoning on lands described in the chart below and as further identified on the corresponding Schedules forming part of this By-law to **A-31.7 and A:**

Property Description/Location	Zoning Change	Schedule attached to and forming part of the By-law
Pt Lots 18 & 19 Conc. 9	Rezone from A-31.51 to A-31.7	aa
Pt Lots 18 & 19, Conc. 17	Rezone from A-31.219 to A-31.7	bb
Pt Lots 2 & 3, Conc. 17	Rezone from A-31.230 to A-31.7	cc
Pt Lot 4, Conc. 18 & 19	Rezone from A-31.231 to A-31.7	dd
West Pt Lot 15, Conc. 14	Rezone from A-31.238 to A-31.7 Rezone from A-31.239 to A	ee
Pt Lot 15, Conc. 14	Rezone from A-31.238 to A-31.7	ff
Pt Lot 10, Conc 7	Rezone from A-31.247 to A-31.7	gg
Pt Lot 19, Conc. 14	Rezone from A-31.254 to A-31.7	hh

	Rezoned from A-31.255 to A	
Pt Lots 18 & 19, Con 15	Rezoned from A-31.257 to A-31.7 Rezoned from A-31.258 to A	ii
Pt Lot 10, Con A	Rezoned from A-31.263 to A-31.7 Rezoned from A-31.262 to A	jj
Pt Lot 2, Con A	Rezoned from A-31.266 to A-31.7	kk
Pt Lot 12, Con 8	Rezoned from A-31.268 to A-31.7	ll
Pt Lot 10, Con 14	Rezoned from A-31.278 to A-31.7 Rezoned from A-31.279 to A	mm
Pt Lots 4 & 5, Con 13	Rezoned from A-31.287 to A-31.7	nn
Pt Lots 12 & 13, Con A	Rezoned from A-31.292 to A-31.7	oo
Pt Lot 5, Con 11	Rezoned from A-31.299 to A-31.7	pp
Pt Lot 11, Con 10	Rezoned from A-31.312 to A-31.7	qq
Pt Lot 1, Con 8	Rezoned from A-31.320 to A-31.7 Rezoned from A-31.321 to A	rr

82. THAT Section 31 Exception Zone, be amended by deleting the following site specific Zones in their entirety:

31.79	31.241	31.238
31.182	31.127	31.239
3.141	31.107	31.247
31.188	31.51	31.254
31.186	31.219	31.255
31.116	31.230	31.257
31.209	31.231	31.258
31.262	31.263	31.266
31.268	31.278	31.279
31.287	31.292	31.299
31.312	31.320	31.321

83. THAT except as amended by this By-law, the land as shown on the attached Schedules shall be subject to all applicable regulations of the Township of Mapleton Zoning By-law 2010-080, as amended.

84. THAT upon enactment of this Township Comprehensive Zoning Bylaw Housekeeping Amendment by Council, site specific Zoning By-law Amendment and Minor Variance applications will continue to be received, processed and considered by Council and the Committee of Adjustment.

85. THAT this By-law Amendment shall come into effect upon the final passing thereof pursuant to Section 34(21) and Section 34(22) of The Planning Act, R.S.O., 1990, as amended, or where applicable, pursuant to Sections 34(30) and (31) of the Planning Act, R.S.O., 1990, as amended.

READ a first, second and third time and passed this day of , 2019.

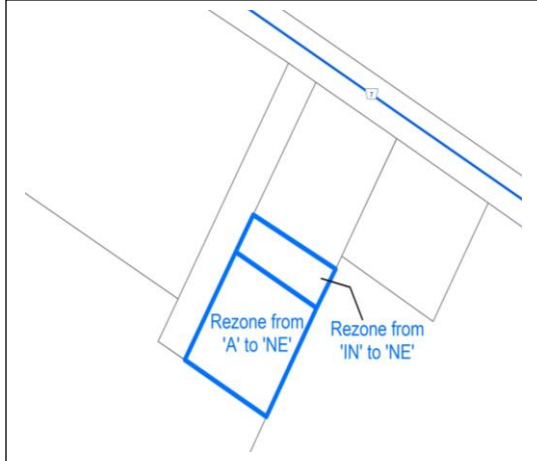
Mayor Gregg Davidson

Clerk Barb Schellenberger

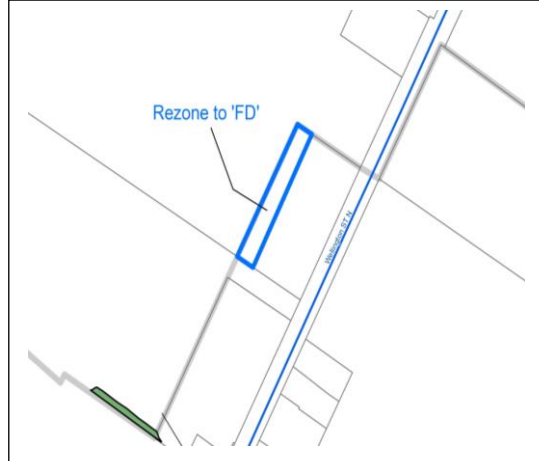
THE TOWNSHIP OF MAPLETON

BY-LAW NO _____.

Schedule "A"



Schedule "B"



Schedule "C"



Schedule "D"



Passed this ___ day of _____ 2019.

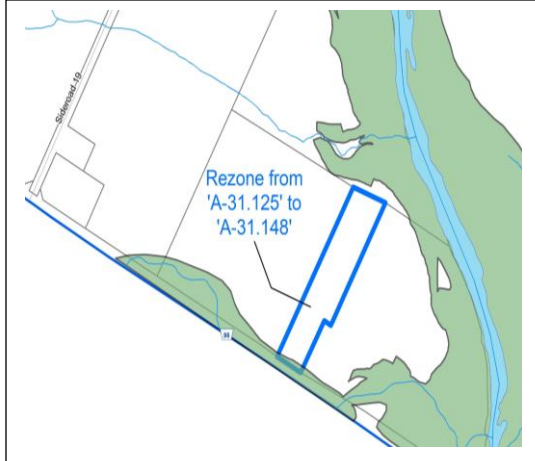
Mayor Gregg Davidson

Clerk Barb Schellenberger

THE TOWNSHIP OF MAPLETON

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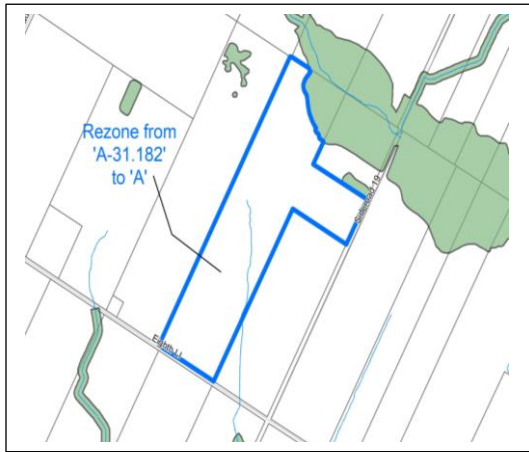
Schedule "E"



Schedule "F"



Schedule "G"



Schedule "H"



Passed this ___ day of _____ 2019.

Mayor Gregg Davidson

Clerk Barb Schellenberger

THE TOWNSHIP OF MAPLETON

BY-LAW NO _____.

Schedule "I"



Schedule "J"



Schedule "K"



Schedule "L"



Passed this ___ day of _____ 2019.

Mayor Gregg Davidson

Clerk Barb Schellenberger

THE TOWNSHIP OF MAPLETON

BY-LAW NO _____.

Schedule "M"



Schedule "N"



Schedule "O"



Schedule "aa"



Passed this ___ day of _____ 2019.

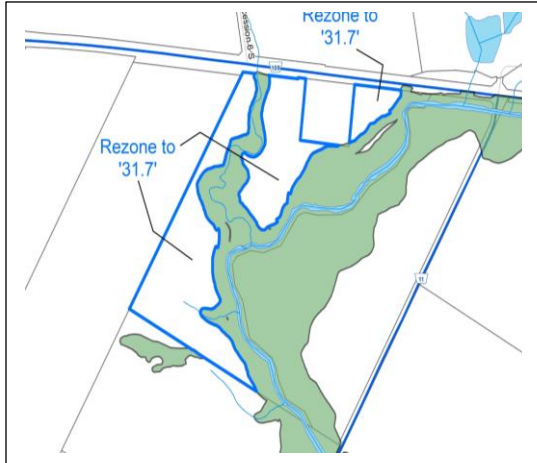
Mayor Gregg Davidson

Clerk Barb Schellenberger

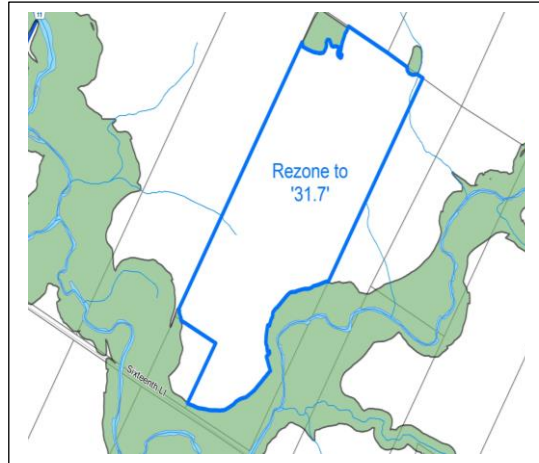
THE TOWNSHIP OF MAPLETON

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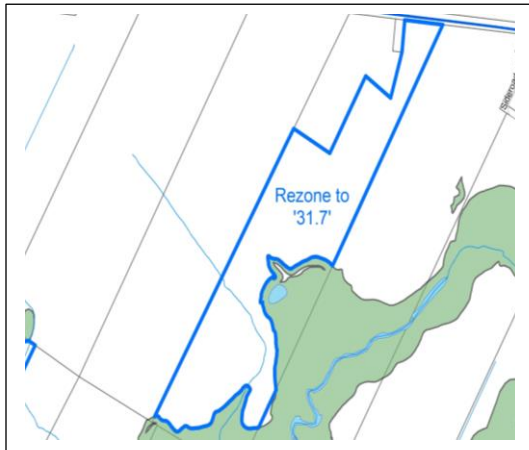
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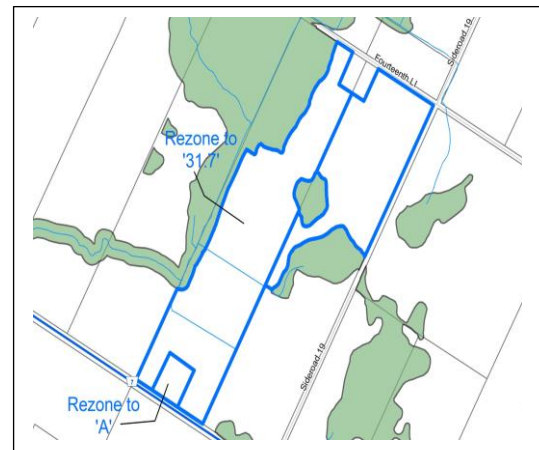
Schedule "cc"



Schedule "dd"



Schedule "ee"



Passed this ___ day of _____ 2019.

Mayor Gregg Davidson

Clerk Barb Schellenberger

THE TOWNSHIP OF MAPLETON

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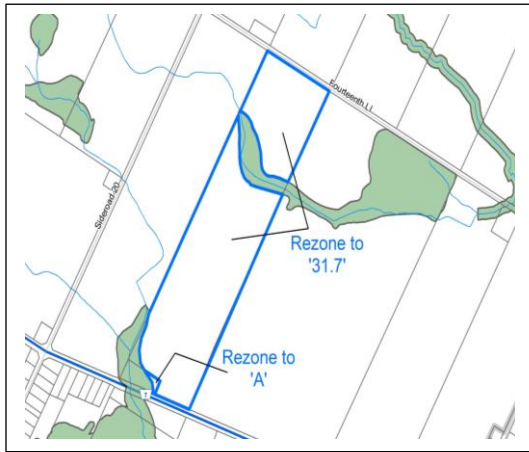
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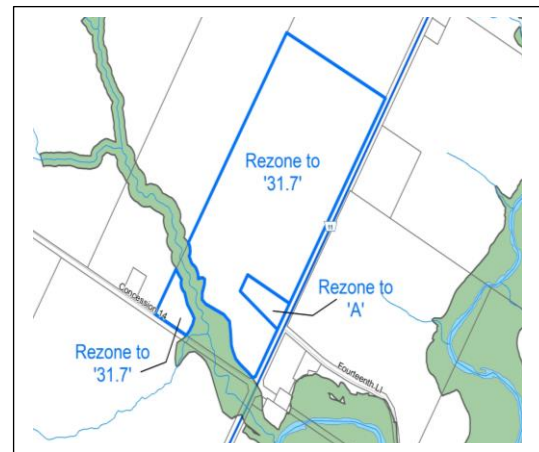
Schedule "gg"



Schedule "hh"



Schedule "ii"



Passed this ___ day of _____ 2019.

Mayor Gregg Davidson

Clerk Barb Schellenberger

THE TOWNSHIP OF MAPLETON

BY-LAW NO _____.

Schedule "jj"



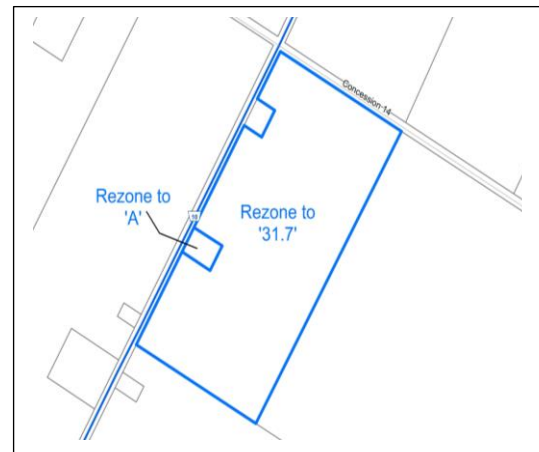
Schedule "kk"



Schedule "ll"



Schedule "mm"



Passed this ___ day of _____ 2019.

Mayor Gregg Davidson

Clerk Barb Schellenberger

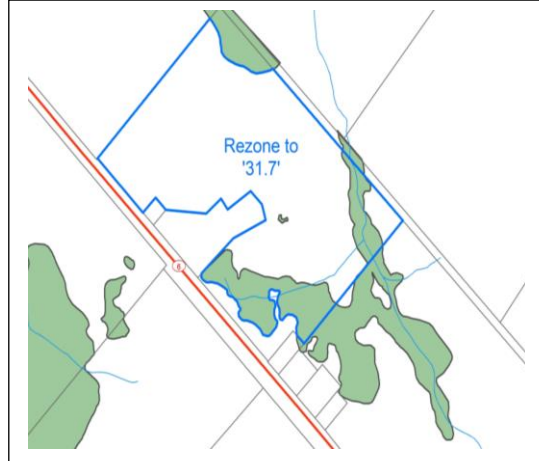
THE TOWNSHIP OF MAPLETON

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Schedule "nn"



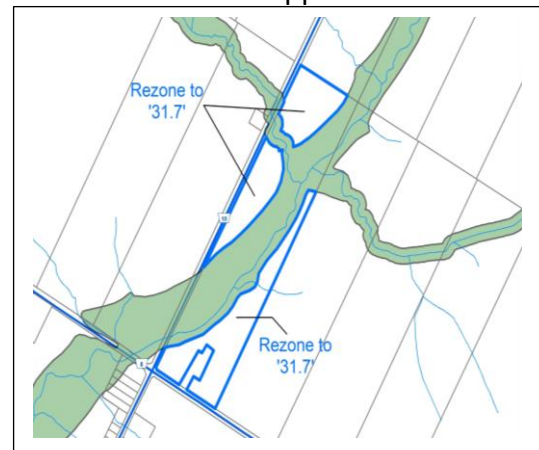
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Schedule "pp"



Schedule "qq"



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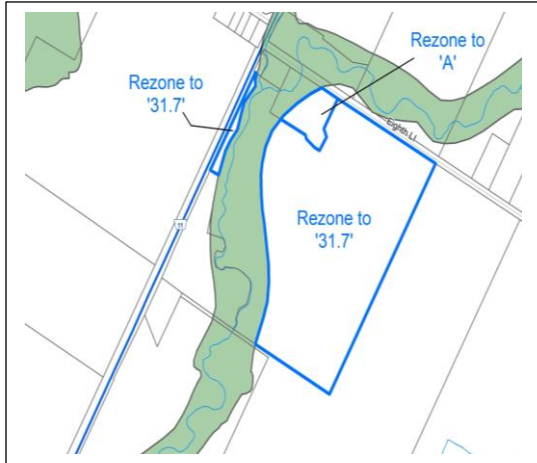
Mayor Gregg Davidson

Clerk Barb Schellenberger

THE TOWNSHIP OF MAPLETON

BY-LAW NO _____.

Schedule "rr"



Passed this ____ day of _____ 2019.

Mayor Gregg Davidson

Clerk Barb Schellenberger

EXPLANATORY NOTE

BY-LAW NUMBER 2010-080

THE PURPOSE AND EFFECT OF THE ZONING BY-LAW AMENDMENT is to provide for “housekeeping” changes to the Comprehensive Zoning By-law as itemized below:

- i) General typographical and mapping corrections.
- ii) Add and update definitions, including clarifying the definition of street, building and swimming pool.
- iii) Clarification of text for regulations such as air conditioner units, tarped/coverall structures, Outdoor display, temporary sales trailer, NE zone setbacks.
- iv) Amend provisions for accessory structures, including increasing the size and height.
- v) Include new provisions for lots created as surplus farm dwelling to recognize lot size.
- vi) Include new provisions to permit an accessory dwelling unit on a rural lot.
- vii) Modify parking requirements for aisle, access width and barrier free and add criteria for parallel and angled parking requirements.
- viii) Modify barrier free/accessibility parking.
- ix) Amend minimum front yard, interior and exterior side yard setbacks in residential zones.
- x) Amend minimum lot area and frontage in residential zones.
- xi) Remove and/or amend site specific exemptions for expired garden suites, redundant restrictions and general adjustments.
- xii) Amend minimum distances between townhouses and apartments.
- xiii) Amend permitted uses within the Future Development zone to existing uses only.

2019

Mapleton Master Fire Plan



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Executive Summary

In the Spring of 2019, Mapleton Council approved a recommendation from the Fire Department to engage Minto Fire personnel to assist in writing a Master Fire Plan document. The document would be completed in house using the expertise and coordinated by the Minto personnel. The plan would be completed for minimal cost and outline the direction of Mapleton Fire and Rescue for the next 3-5 years.

A committee consisting of the Fire Chief, two Deputy Fire Chiefs, two firefighters from each station, and two members of the community was formed to provide input into the planning process and construct the plan. The process started with a survey completed with all of the Firefighters and Officers in a face to face meeting. A survey was also sent out to the general public to solicit information outside of the department. All of this information was correlated with the assistance of personnel from outside of the department and presented to the committee.

The information was presented to the committee using the SWOT principle, analyzing the information using the strengths, weaknesses, opportunities and threats of each area surveyed. The group was able to take the information back to the Firefighters in each Station and discuss the findings in order to gather further information on each subject. A great deal of information was obtained and gave the committee a good perspective of the opinions of the department.

Next the core components of the plan were determined by the Master Fire Plan Committee. The committee utilized the data gathered above to establish the core components of the plan. The core components consist of the following:

- Administration
- Communications
- Information Technology
- Public Education
- Fire Prevention
- Apparatus & Equipment
- Training
- Fire Suppression and Emergency Response
- Health & Wellness
- Organizational Culture

Master Plan Committee Members

Mapleton Deputy Fire Chiefs

- Tom Wood
- Daryl Brodhaecker

Mapleton Fire Chief

- Rick Richardson

Mapleton Firefighters – Drayton Station

- Amy Page
- Mike Craig

Mapleton Firefighters – Moorefield Station

- John Hahn
- Jeff Rooyakkers

Mapleton Community Members

- Jennifer Goertzen
- Glenn Babin

Introduction

Mapleton Fire Rescue has two stations located in the Township of Mapleton. The two stations are located in two of the urban areas of Mapleton, Drayton and Moorefield. Mapleton Fire Rescue provides fire protection to most of the municipality. Other areas of the municipality are covered under fire protection agreements with neighbouring Fire Departments including Woolwich, Wellesley, Centre Wellington and Wellington North. The department also operates under the Wellington County Mutual Aid Plan which governs how mutual aid services are shared amongst all departments in Wellington County.

The Township of Mapleton Strategic Plan does not reference the Fire Department in its latest update. Perhaps in the next cycle of updates, this Master Plan can be referenced, and certain recommendations added regarding the Fire Department. Fire Department staff would be able to construct some recommendations from this document that would correlate with the corporate overall strategic direction.

Mapleton Fire Rescue operates under the corporate structure and reports directly to the CAO. The Fire Chief is a Department Head and is part of the senior management team of the Township of Mapleton. The Fire Chief is also part of other committees under the current structure including the budget committee and emergency management team. The total net budget for the department is \$705,212. Included in the budget are wages for a part time administrative assistant and a part time fire prevention officer/public education position.

Mapleton Fire Rescue operates under the Fire Protection and Prevention Act (FPPA). The mandatory services the municipality must perform under the Act include a smoke alarm program, an inspection program, a public education program and a completed risk assessment. Under a new Regulation added to the FPPA, community risk assessments have been enhanced to provide further information on completion of this document.

Mandatory use

1. Every municipality, and every fire department in a territory without municipal organization, must,
 - (a) complete and review a community risk assessment as provided by this Regulation; and
 - (b) use its community risk assessment to inform decisions about the provision of fire protection services. (Ontario E-Laws, 2019)

The risk assessment involves taking a look at unique characteristics of the municipality, the building stock present, incident response statistics, and the demographics of the people living in the community. The risk assessment assesses the outcomes of the comparisons and itemizes the top risks the municipality faces with regards to fire. The municipality utilizes the risk assessment information to set the level of service provided to their citizens. Levels of services are set utilizing the municipality's establishing and regulating by-Law which should be updated following the master fire plan process.

Contained within the Fire Protection and Prevention Act is a regulation giving authority to the Office of the Fire Marshal and Emergency Management (OFMEM) to oversee the Ontario fire service. The Office makes recommendations through various means to assist in regulating the Ontario fire service. On a yearly basis, statistics are submitted including total and types of incidents, fire inspections performed and number of individuals receiving public education. The OFMEM has an advice and assistance branch that is willing to come and speak with Council to assist in making decisions if need be.

Department Analysis

Administration

About

The Administrative team consists of one full time Chief, one part time Administrative Assistant, one part time Fire Prevention/Public Education Officer and 2 Volunteer Deputy Chiefs. The two Volunteer Deputy Chiefs are the senior Officers in the Drayton and Moorefield stations.

Some of the duties performed by the Administration team are;

- Records Management:
 - Continual maintenance of training, incident, equipment and apparatus records.
 - Payroll, Attendance and Medical records for all firefighters
- Recruitment & Retention of firefighters
- Investigation of burn permits & complaints
- Reports to Council and all other duties involved with being a Municipal Department Head
- Oversees the implementation & development of the department budget
- Established and reviews all standard operating guidelines and policies
- Conducts Officer and other applicable internal meetings

➤ THAT a change in organization structure be explored as demands change in the fire service

➤ THAT Mapleton Fire Rescue reviews & updates all Standard Operating Guides yearly to ensure SOGs are current

➤ THAT all internal meetings include a structured agenda & records process

The rest of the department consists of 40 firefighters and 4 auxiliary firefighters staffing two stations. An organization chart can be found in the appendices. Firefighters are compensated on a point system basis. For each call that they attend, they receive 3 points. Points are also earned for other various duties completed in the station. These include weekly truck checks, public education events, inspections, training sessions, meetings or any other fire department functions attended. At the end of the year, the total points are divided into the total wage budget and a per point cost is determined. The total points earned by each Firefighter is calculated and a total wage for the year is established. Firefighters are paid once a year, usually the first week of December. Officers are given a yearly stipend on top of their wage to recognize the increased responsibility of their officer position.

Other areas of the department are paid differently. Any courses or meetings that firefighters attend are paid a per diem rate the municipality sets for nights meetings, half days and full days. Mileage is the same as municipal rates. A concern was brought forward of mechanisms needed to be followed to ensure all personnel were completing the work assigned to them. This can be completed by reviewing the appropriate guidelines and following through with their intent.

➤ THAT an SOG is either updated or a new one created to include more severe repercussions for firefighters that are consistently absent for truck checks or training sessions

Town Council acts as the Fire and Emergency Services Committee. Policy and budgeting decisions are presented to Council by the Fire Chief and other Senior Department Staff. A yearly report is brought to Council in the first quarter of each year to inform Council on the previous year's incident statistics.

Feedback received from the Firefighters during the survey portion and the one-on-one interviews was pretty consistent from both Stations. Firefighters requested more communication flowing from within the department, especially from the senior management down. They also would like to see more organized meeting structures including prepared agendas for meetings and follow up with meeting minutes being distributed. This is partially being done now, but can be enhanced to find more efficient ways of distributing the information in a timely fashion.

- THAT Mapleton Fire Rescue investigate opportunities to improve communications in a timely and convenient manner between firefighters and officers
- THAT the minutes of the officer meetings be distributed to firefighters post meeting (excluding personnel matters) to increase internal communication

Through the information gathering process, it was discussed how each of the standard operating guidelines need to be reviewed and, if necessary, updated. Also included are any personnel policies which should be reviewed and updated

- THAT a Uniform SOG be created and followed for all staff

accordingly. Firefighters were consistent in saying that they would also like to ensure the policies are being followed and they themselves should be held accountable for following all written policies. One policy in particular they mentioned was a uniform policy for all firefighters to be followed so they can understand when they would be receiving a dress uniform.

The Firefighters were very open to communicate with the surveyors and were consistent with their responses. The answers were similar at both Stations. An example of this was the discussions held about branding of the fire department and the usage of social media. Almost all Firefighters surveyed agreed a rebranding exercise and corresponding launch of various social media platforms would be an asset to the department. They then spoke about a clothing option that followed the branding procedures to allow Firefighters to purchase clothing that was similar in nature for all firefighters and families to wear to increase the awareness of the newly created brand.

- THAT Mapleton Fire Rescue goes through a rebranding process to ensure their identity better reflects the values of the department
- THAT a policy is created to promote firefighters volunteering for non-suppression events and possibly involve the spouses/partners of each member
- THAT Mapleton Fire Rescue investigate casual clothing options for firefighters and ecommerce distribution platforms

SWOT ANALYSIS

Strengths

95% of Staff feel valued as a Firefighter

- 82% of Staff feel prepared & properly trained to do their job as a Firefighter
- 76% of the firefighters rated the department at a satisfaction rate of 80% or higher
- 100% of respondents felt passionate about & dedicated to the fire department
- 89% of community respondents felt the FD has strong support from the community

Weaknesses

Information Processes aren't clearly defined, more communication from top down

- Organizational Structure relies too heavily on captain function
- Management team roles need to be more clearly defined

Opportunities

Increase community & business engagement

- Increase collaboration between neighbouring services
- Strengthen fire department brand & online presence
- Restructure organization to increase firefighter engagement

Threats

Lack of firefighters for daytime response

- Retention of firefighters
- Increased training demands on the fire service
- Increased documentation & reporting standards



Communications

Although communications were not a priority identified by the Committee, it is still important to understand the system and the shortfalls currently experienced by Mapleton Fire Rescue.

The County of Wellington under an agreement with Bell provides and operates 9-1-1 Public Emergency Reporting Service (PERS). The County is responsible for providing and operating a 24/7 Public Safety Answering Point (PSAP) for 911 calls placed in Wellington County. To fulfill this obligation, the County of Wellington contracts the OPP to operate the PSAP. The majority of 911 calls in Wellington County are answered by North Bay OPP, some wireless calls may be answered by adjacent PSAPs such as Guelph Police. Call takers at the PSAP will request from the caller the emergency response required – police, fire or ambulance. The calls are then transferred on to the appropriate Police, Fire and Ambulance dispatch center. In our case, this is the Guelph Fire Department.

911 calls can be received from a landline, wireless or VoIP telephone service. However, only landline and Fixed VOIP calls will display with the telephone subscribers name, municipal civic address and telephone number. Wireless calls display the name of the wireless phone subscriber, the telephone number and the X and Y coordinates of where the call originated. Nomadic VoIP does not display information. For landline, fixed VoIP and wireless calls the Dispatch Centre will receive information as to the responding police, fire and ambulance service. For Fire Departments in Wellington County, the information displayed includes the first responding municipal Fire Department. Nomadic VoIP calls are a concern with 911 call takers. Receiving text message 911 calls for the hearing impaired are now being piloted in Ontario.

On the horizon for many municipal emergency answering services is next generation 911. This is an upgrade to the 911 system which will allow PSAP's to answer text messages and other social media outlets that are able to send messages to dispatch centers. It would not only include text messages, but also pictures and videos being sent to each center. The process of upgrading each PSAP is very expensive and will be an issue in the next few years first responders and their municipalities will have to deal with. The cost of the upgrading will most likely be shared by all municipalities who deliver emergency services, including Police, Paramedics and Fire Departments.

Dispatch Center

All fire departments in Wellington County utilize the Guelph Fire Department for dispatching of incidents. They are responsible for answering the calls and dispatching fire department(s) to the incidents. There are two dispatchers working 24/7 in the dispatch control center located at Guelph Fire Department Headquarters. A recently installed system is capable of offering full dispatch services to all County fire services. Presently, Center Wellington, Minto, Guelph Eramosa, Erin and Puslinch all receive full dispatching services. Currently, a Firefighter/Dispatcher records the benchmark times after the page has been acknowledged. Guelph Dispatch presently is only responsible to page us out to the incident until we acknowledge we have received the call and are responding.

Full dispatch services would perform this function for Mapleton Fire Rescue, as well as keeping a consistent record of times and benchmarking. The price for dispatching services would increase. The upgrade will be included in the 2020 operating budget. The ability to utilize full dispatching services will ensure each Officer in charge of each incident has a dispatcher able to respond to his/her requests for additional services and resources. It is extremely important because of the fluctuation in personnel able to respond at any given time, a permanent dispatcher is available at all times.

Moving to full dispatch services will not only allow for the consistent recording of all times and responses, but new recording software will allow Guelph Fire Dispatch to record all radio transmissions, eliminating the need for in house recording equipment. With the move to the County radio system a few years back, and the installation of a new repeater system at the Drayton Arena, we are able to communicate with Guelph dispatch clearly on 2 two different channels. There are still some areas with limited radio capabilities, but this is normal with any system implemented. Mapleton Fire Rescue will need to ensure preplanning is completed for these areas and all Firefighters are aware of the protocol to implement when this situation arises.

Paging

All fire fighters wear personal pagers supplied by the Municipality which are used to alert them to incidents. The paging system in the county, including multiple tower sites and repeater equipment, is owned and operated by the County of Wellington. They maintain and finance the infrastructure involving the paging system. The pagers themselves are maintained and financed by the fire department. The pagers consist of both Motorola and Swissphone pagers. At this time, pagers are a mandatory part of notifying firefighters. There are very few alternatives on the market. Cell phone notification is currently being explored as a backup option but is not an option in the near future of moving to as a primary notification system.

A paging repeater is located on a tower outside of Moorefield, which provides good coverage for Moorefield Station and some coverage to the Drayton Station. There are other sites outside of Arthur and Palmerston which give the Firefighters good overall coverage. It is recommended the paging quality is monitored and if it becomes an issue, another tower site is explored in the future. As well, in the future, generator back up should be explored for paging equipment to ensure proper usage during power outages.

Mobile Communications

Communications via radio is a fire department requirement. Presently, each station talks to Guelph dispatch via a radio located in each Station utilizing the County radio system. Municipal and County public works staff are also on this system allowing each agency to talk with each other during an emergency event. There were some issues with the Drayton Station getting good communications with Guelph Dispatch. This was rectified with the installation of a repeater system at the Drayton Arena in 2019. Communications have drastically improved and are working well now.

However, at this time the fire department radios have no ability to talk directly with the OPP or the Ambulance. Both are on different systems and will not allow fire department access to the system to communicate with them. The issue is out of the scope of this plan, but should be discussed with the emergency service partners if ever given the opportunity.

As mentioned, communications amongst fire fighters and base is accomplished utilizing the Wellington County radio system. MFR has 2 channels on this system, both of which are used for operations. All of the County Fire Departments are on the system (with the exception of Wellington North), as well as previously mentioned all of the County Public Works crews. This allows MFR to be interoperable with all departments and public works. All of these communication platforms operate on a UHF system digitally using the 400 MHz frequency.

One downfall Mapleton Fire Rescue has is interoperability with Mutual Aid partners outside of our County. All of the departments are not on the same frequencies, so our radios will not talk to them directly. MFR is investigating methods to patch the 2 systems together through Guelph Dispatch, but it is a longer term solution that may be unattainable. In the meantime, Mapleton Fire Rescue has issued portable radios to Wellesley and Woolwich Fire to utilize when they are assisting MFR at scenes. When MFR attends a scene to assist the above departments, the host department will issue a portable radio to the arriving crew to work off of. This solution is not ideal and a search for a more permanent solution is desirable. As Guelph Fire Dispatch's system evolves, the concept of patching through to neighbouring fire department's system may be an option. Senior administration will monitor and keep discussions with Guelph open.

The identified areas of improvement for the communications division in the future are:

- Continue the movement to full dispatch through Guelph Fire. This will assist in improving record keeping processes and enable all radio transmissions to be recorded and accessed if required
- Investigate potential solutions for backup power to radio and paging repeater sites
- Track any radio/pager issues that are consistently occurring

Overall, the communications division has improved drastically the past few years. The move to the digital County system has improved communications in the Mapleton area.

Information Technology & Processes

Mapleton Fire Rescue currently has one computer per station. The main software program for the department is Firepro. Firepro is used to record all personnel records, incidents, training, inspection and occupancy data. The department also owns tablets to be used for documentation on scene.

It appears that the computers in both stations could use some maintenance. It could also be beneficial to create a plan to replace IT equipment on a regular basis.

- THAT the IT Budget is reviewed to ensure sufficient funds are allocated to ensure equipment is

MFR uses an application called Sinirji to alert firefighters via mobile devices about fire incidents. This app also allows senior staff to gauge how many firefighters are attending the incident. If the attendance is below average, it allows for Mapleton to quickly call on its sister station. Mapleton Fire is also looking at purchasing a different records management software, this software is a cloud based software. It can be accessible by tablet so long as the tablet has the correct operating system. The tablets may need a data plan to be able

- THAT a comprehensive IT plan is developed to ensure ongoing support and maintenance of equipment

to operate the software. There will be many different considerations as the fire service continues to move towards new technology and it will be imperative that Mapleton Fire Rescue has a plan in place to be able to properly implement these new technologies. It is recommended that MFR develop a comprehensive IT plan to ensure that there will be ongoing maintenance and proper implementation of any new technology brought into the department.

In the municipal world, records management has emerged as an Important topic in the last few years. With Freedom of Information requests on the rise, proper records management is becoming very important for many municipalities. The Ontario Municipal Records Management System is widely used as the standard for record storage in the province.

Areas of weakness for MFR include proper maintenance of records, and proper documentation of internal operations. There are always opportunities for improvement in information technology as it changes at a rapid pace; however, MFR could look into software programs that help to automate record keeping practices or at least put policy in place to ensure consistency across the department. Software may come at a significant cost; so a benefit analysis must be completed before any decision making occurs.

- THAT Mapleton Fire Rescue review the current records management program to ensure it is current with municipal and fire service trends

However; MFR should consider reviewing their records management processes to ensure they comply with municipal and fire service regulations.

Public Education

The Office of the Fire Marshal has identified three “lines of defense” in terms of the overall fire protection for a community:

- Public fire safety education
- Fire prevention inspections and code enforcement
- Emergency response

The modern philosophy in regard to the fire service is to pay equal attention to all three lines of defense. Traditionally, fire departments focused solely on the last line of defense. However, many departments are realizing that it is more cost effective to prevent fires before they happen. Fire departments can focus on prevention (ensuring buildings are fire safe) and education (educating residents about fire safety). While the general public views the fire service as primarily providing emergency response services, the premise of the “three lines of defense” is that the system has failed each time an emergency fire response is required. As mentioned in the introduction, the Fire Protection and Prevention Act mandates municipalities provide specified core services as related to fire prevention-code enforcement and public fire safety education. The mandatory provisions include:

- A recognized residential smoke alarm program
- Fire inspections and code enforcement upon complaint or request and other inspection services as determined by the needs and circumstances of the community
- A public fire safety education program
- Completion of a Simplified Risk Assessment

Feedback from MFR is that firefighters seem to undervalue public education, and it would be beneficial to increase firefighter buy-in throughout the department by implementing a public education activity into practices once a year. It was also recommended that MFR communicate to its firefighters about the public education plan for the year so that they have the opportunity to make any revisions or additions to the plan.

One of the other themes that were mentioned from the firefighters was the use of social media for Mapleton Fire Rescue. MFR is missing a big opportunity to communicate to its residents for very low cost. Social media is not only a valuable tool for public

- THAT Mapleton Fire Rescue incorporates a public education activity into one practice per calendar year.
- THAT the Mapleton Fire Rescue create a yearly calendar of public education events, training, meetings, etc., to increase information sharing among divisions and use technology to communicate it.
- THAT a five-year Public Education plan is created & presented to the firefighters to increase firefighter buy-in.

- THAT Mapleton Fire Rescue creates a social media presence, a website and use any other modern technological means to communicate more effectively within the department and to the public.

education purposes; but can become a trusted source of timely information for residents during emergency situations. It is recommended that MFR develop a social media presence and social media plan to ensure that they are used in an effective way. It is also a recommendation to tie the social media to the website and update website content regularly to stay relevant.

It appears MFR would like to increase their public education initiatives; but are hampered by costs associated with various events, as well as, manpower to host such initiatives. MFR would like to investigate the possibility of a partnership with the municipality that would allow use of municipal facilities for free or at a lower cost than public rentals.

MFR would also like to investigate the possibility of forming a public education committee in order to be able to expand their scope of

- THAT Mapleton Fire Rescue investigates ways to improve fire safety education within the community with business owners or other community groups.
- THAT Mapleton Fire Rescue investigates the possibility of creating a Public Education Committee to increase the awareness and capacity of the public education division. (committee can include both firefighters, community members or firefighter spouses)

public education. This would allow for the community to have a voice in public education which will increase the effectiveness of public education campaigns if there are more ties to residents. The committee could consist of firefighters, firefighter spouses, and community members. This committee could then work with other community groups and businesses to host more campaigns or events with a purpose of fire safety education. This committee should be responsible for developing a five-year public education plan in order to keep the public education initiatives invigorated.

Fire Prevention

Throughout the past few years, a Firefighter now employed by the Municipality has taken the necessary courses through the Ontario Fire College to become certified in order to complete fire inspections in the municipality. A previous Mapleton Council agreed to hire this individual on 1 day per week to complete the necessary inspections and stay current with any follow-ups that may arise.

In Mapleton, there is currently one

Care Facility as defined in the Ontario Fire Code regulations. However, there are also many other facilities the Department has identified as requiring yearly inspections due to their occupancies or the functions they serve. Examples of this include, the Public Schools, the Drayton Theater, and the municipal owned facilities.

The duties of the fire department in terms of fire prevention/code enforcement include:

- Enforcement of the Fire Protection and Prevention Act. Inspections and code enforcement as related to the Ontario Fire Code (a regulation under the F.P.P.A.) including inspections due to complaint or request
- Yearly inspections of any vulnerable occupancy as classified under the regulation in the FPPA
- Business registry inspections
- Liquor license application inspections
- Provincial ministry license inspections (day care etc.)

- THAT Mapleton Fire Rescue investigates the possibility of a partnership with the Municipality which would allow for an in-kind donation of municipal facilities for public education purposes

- THAT Mapleton Fire Rescue explores partnerships with Mapleton businesses to increase fire prevention within the downtown cores
- THAT Mapleton Fire Rescue incorporates pre-planning into training on a more regular basis
- THAT Mapleton Fire Rescue review & update their community risk assessment

- Commenting, as requested by the Building Department, on Ontario Building Code issues as related to buildings in the municipality
- Fire cause determination and investigation
- Commenting on site plan issues as requested by the Planning/Clerk's Department
- Data compilation and record keeping duties

Request inspections are becoming more frequent. Many real estate transactions require that an inspection has to be completed before closing. These are usually requested less than a week before the closing date, so time is a factor. A follow-up must also be completed on the inspection after it has been performed. The entire process takes a considerable amount of staff time to complete.



A risk assessment must also be completed on the municipality, as mandated in the recently released Regulation under the FPPA. Mapleton Fire Rescue has a completed risk assessment document, but it is need of an update. The Office of the Fire Marshal and Emergency Management will be releasing a new template for municipalities to assist in the completion of the risk assessment document. The document once completed will aid MFR in the creation of their inspection program and public education programming. Both of these disciplines can be used to deal with the identified risks in the assessment.

The use of Public Education and Fire Inspections is a mandatory regulation in the FPPA. Mapleton Fire Rescue has to provide these resources in order to comply with its annual report to the OFMEM. Neighbouring departments have to also comply by offering these services, so it makes sense for Mapleton to explore partnerships with any adjacent fire departments. As mentioned earlier, completing some joint public education campaigns could lead to a more efficient delivery of services.

Apparatus & Equipment

Apparatus

The apparatus used by Mapleton Fire Rescue has been well maintained throughout the years. New apparatus has been purchased and the needs for the department appeared to have been met. Firefighter's complete regular checks of the apparatus and issues get dealt with on a regular basis. A documented maintenance program would be beneficial to the department and to the municipality.

Another area to explore is the modification of a formal multi-year truck replacement plan. The department should explore truck uses now and attempt to predict the future needs to incorporate into a twenty to twenty-five-year replacement plan. Apparatus would be scheduled to be replaced and a corresponding reserve contribution could be calculated to assist with the payment of future purchases. The ultimate goal would be to have the reserve account fully fund the purchase of apparatus utilizing the twenty-five-year truck plan. As well, realistic truck replacement figures used to anticipate the continuing rising cost of apparatus.

The Drayton Station has the following trucks:

- Pumper #70
- Rescue #75
- Tanker #77
- Pick Up Truck Unit #1

The Moorefield Station has the following trucks:

- Pumper #80
- Rescue Truck #85
- Tanker #87
- Tanker #88

- THAT Mapleton Fire Rescue review annually with its firefighters its truck plan & equipment replacement plans to ensure they are reflective of current needs and legal requirements
- THAT a portion of the budget is allocated to each station to use annually for updating/ acquiring equipment. (In collaboration with station members)

* All Tankers are single axle trucks with 1500-2000 water tanks.

An analysis of needs could be completed of the current apparatus deployment and investigate any efficiencies that could be realized by subtracting any apparatus or making other vehicles multi-purpose. As well, the analysis would look into what other specialty vehicles could be added to the fleet including a vehicle to enhance the water rescue's team ability to respond or other off road necessities. MFR senior management would be responsible for completing the analysis using input and information from all sources within the department and comparisons to industry standards.

All apparatus is repaired locally at Brouwers Garage in Moorefield. Each truck is safety inspected each year as per the Ministry of Transportation standards. There is no service contract signed with an individual service center.

Each of the front line Pumpers is equipped with a tablet to be used as a mapping tool and possibly down the road as an Incident Command tool. The tablets are used for basic functions, but could be expanded with more technology and software to make them more diverse. Presently, the tablets are stored in the radio room window for Officers to retrieve before departing for an incident. A mechanism for mounting them in the apparatus may be explored in the future. As well, discussions with Guelph Dispatch could be had to expand the tablets abilities to connect with their dispatch software and provide the ability to have real time updates sent by Guelph Dispatchers.

Equipment

Mapleton Fire Rescue has made it a priority to ensure all equipment is current and meets the needs of all of the Firefighters. There is not an abundance of extra equipment at each of the Stations. All of the equipment for the most part is maintained and tested regularly when required. Some planning has been completed on replacement plans for each piece of equipment, however this could be enhanced. Firefighters would appreciate the opportunity to give input on types of equipment purchased. As well, a thorough replacement and financing plan could be enhanced to prepare the department for the future purchases.

A policy on servicing of various pieces of equipment should be reviewed and ensured it is current with the fire service standards. It includes testing of SCBA units, pump testing each truck equipped with a pump, and servicing and testing ladders every 5 years. As well, following the NFPA 1851 Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting which includes replacement of bunker gear every 10 years and certifying each set yearly by a qualified practitioner. When a bunker gear replacement plan has been established, it would be a good time to bring the process of standardizing the colour of gear worn by Firefighters from both Stations. Firefighters discussed the issue and are in agreement to the concept of standardization. This would allow used gear to be managed back and forth easily when gear is sent to be repaired or cleaned.

Decontamination of equipment is becoming a large issue in the fire service. Departments are required to establish policies on cleaning of equipment immediately after incidents in a safe manner. This policy must include the removal of bunker gear at scenes and the immediate cleaning of the gear so as not to contaminate the firefighters, apparatus or station. Mapleton Fire Rescue should review their policies and ensure their decontamination techniques are current. Presently, they share a washing machine with Minto Fire and use it whenever needed after an incident. Investigation into a proper gear dryer would be an asset to the department.

- THAT Mapleton Fire Rescue discontinue having separate colours for each station. (all one colour bunker gear for all members)
- THAT Mapleton Fire Rescue investigate the viability of purchasing off road utility vehicles to enhance the fleet (motor boat, utv, etc)

- THAT the maintenance program is reviewed annually with all members and better defined to focus on preventative and proactive approaches
- THAT the idea of an equipment maintenance committee is explored to oversee the maintenance programs
- THAT Mapleton Fire Rescue includes in an orientation program for new recruits to learn about equipment maintenance (including truck checks) & inventory on all apparatus

Training

The training division can be a demanding division. The division is responsible for all of the practices held by the department, as well as organizing courses both in house and provided by outside agencies. The training division requires a great deal of record keeping which puts higher demands on the Training Officers and Administration staff. The training division is led by the Fire Chief and consists of a Captain who also acts as the Training Officer in each station. There are 2 Training Officers/Captains in each Station who oversee the training, with the assistance of the Fire Chief. Record keeping is completed but could be enhanced by the administration by keeping more thorough records of each

- THAT Mapleton Fire Rescue creates a firefighter career guide that includes firefighter & officer expectations, as well as, training requirements in order to encourage firefighters to take courses.

individuals training history. It should be investigated by the department to split the training officer and captain into two separate roles to keep it manageable for each position. Job descriptions for each could then be modified to give each position a better understanding of what their role is.

In 2011, the County of Wellington, through the Wellington County Fire Chiefs Association, hired a full time Training Officer. This position was created to assist all fire departments in the County with reporting requirements and the creation of lesson plans. The position has evolved and is now also responsible for coordinating the County recruit training. Each recruit hired by departments in the County goes through a recruit training program run by the County Training Officer. It involves attending sessions for 6-8 weekends throughout the Spring and early Summer. It also involves doing all of the didactical work before-hand on-line through Resource 1. The system works very well but puts a lot of demands on a new hire. New recruits have found the training to be very worthwhile. When they complete the training, they are fully certified and ready to be a firefighter immediately, which is a huge benefit to MFR.

- THAT practices outside the station or guaranteed to run late aren't hosted on the same nights as the meetings
- THAT the practices are relevant to actual potential and likely circumstances
- THAT the trainers list expands to include those with specialized knowledge on various subjects and utilize the knowledge within the department
- THAT Mapleton Fire Rescue investigate the possibility of providing continuing education courses for firefighters

The recruit process should be reviewed and ensure any new hire is fully aware of the process to be certified as a Firefighter. As well, it is a good opportunity to discuss with the new recruit the expectations of the department on activities that are not suppression related. A total on-boarding process could be completed and utilized for each new recruit. This would ensure no information is missed and the new recruits have all of the information necessary to begin their role with Mapleton Fire Rescue.

Both stations practice twice a month, Drayton on the first and third Tuesday of each month and Moorefield on the second and fourth Tuesday of each month. The different nights are beneficial because it allows firefighters who miss a practice at their home station to attend the other station to stay current with training. It also allows MFR to offer courses on these nights and give all firefighters a variety of options nights to attend. On the occasions where there are five Tuesdays in a month, the Department conducts a practice involving both stations.

All practices have been scheduled for the year. A yearly calendar put out by the Training Officers/Captains has each practice scheduled with a topic listed in order to provide firefighters ample time to plan accordingly.

All full time and volunteer firefighters now train to the National Fire Protection Association (NFPA) standards for the fire service. The standard includes a Firefighter 1 certification and a Firefighter 2 certification. When new recruits finish the training program, they complete the exam for Firefighter 1. After a few months of experience on the Department, they return and complete the exam for Firefighter 2. This fully certifies each of them to full Firefighter status and allows them to take further courses in the NFPA curriculum. Existing Firefighters were grandfathered to the Firefighter 2 level when the transition took place in 2015. This enables them to take further courses like Fire Officer and Fire Instructor

- THAT Mapleton Fire Rescue investigates the viability of separating the Training Officer & Captain positions to be separate roles
- THAT Mapleton Fire Rescue investigate the viability of incorporating 2-3 training subjects per practice to increase engagement at practices
- THAT all senior staff of the Mapleton Fire Rescue keep up to date on courses in order to maintain senior status

courses.

Recently, the Ontario Fire College began offering learning contracts with individual departments to enable them to offer certain NFPA certification courses in their own departments. Mapleton has been partnering with Minto Fire to bring these courses locally to better suit Firefighter schedules. The courses can be offered on weeknights and weekends, so Firefighters no longer have to take vacation time to attend. So far, there has been two Fire Officer courses which have successfully run. Next year, Pumper Operations will be completed with Incident Safety Officer and Fire Instructor courses on the horizon.

Attendance at training sessions is an issue that MFR senior management deals with from time to time. It is a very difficult

issue to manage in a volunteer department. Family issues, job related absences, volunteering on other community initiatives are just a few of the things Firefighters face in order to ensure their attendance at training sessions is sufficient. For management, creating a policy to enforce attendance issues can be equally as difficult. There has to be consequences for continued training absences, but it must be fair and evenly applied across the department. Senior Management should look at other departments and how they enforce this issue. They should then work with the Firefighters to create a policy that is agreed upon and ensure it is enforced evenly across the department.

- THAT the number of two station practices increases, and potentially include more mock emergency situations
- THAT Mapleton Fire Rescue consider increasing specialized training from alternate providers during practice nights

Succession Planning & Leadership Development

In various conversations with the firefighters, a common theme in training was leadership development. The younger members of the department are keen on getting some additional training and progressing through the ranks of the department. This should be embraced and management look at various options for bringing leadership training in different forms to the department. This could include in house seminars, on line training and various courses offered by private enterprises. It is recommended that Mapleton Fire Rescue evaluate its current training programs and develop a strategy to incorporate leadership training into current programming.

- THAT a leadership program is created to encourage firefighter advancement up the ranks

- THAT an orientation package for auxiliary firefighters is renewed to improve understanding of departments expectations
- THAT Mapleton Fire Rescue continues to proactively recruit new auxiliaries to prepare the department for future staff changes

Fire Suppression & Emergency Response

Mapleton Fire Rescue offers a variety of services. MFR completes both interior and exterior fire attack and are proficient in urban and rural water supply. Certification was achieved in the Superior Tanker Shuttle Accreditation process. It was recently recertified and enables residents in the rural areas within an eight kilometer radius of any fire hall savings on their fire insurance rates. It is made possible by the cooperation of neighbouring departments offering tanker support. Agreements for mutual aid tankers should be reviewed and ensured they are appropriately complete for water shuttle arrangements.

Another response that is offered is medical first response. All of the fire fighters are trained to a First Responder first aid level with some enhancements. MFR members are also certified in CPR and defibrillation operations. Both stations carry defibrillators and have used them at various times. All of the tiered response agreements have been updated to be consistent throughout the County of Wellington. The consistency allows every department in the County to respond on a similar basis, giving all of the residents

a consistent response level. The department is also part of the simultaneous notification system throughout Wellington County. Simultaneous notification means being dispatched at the same time as ambulance is, there is no delay relaying the call between services. It has been working extremely well, but with the upcoming changes to the Ambulance Communications Centers, the fear is this service may no longer be available. Senior management should stay on top of the issue and ensure the appropriate agencies understand the importance of the service.

Mapleton Fire Rescue also offers full motor vehicle collisions (MVC) response. This includes full extrication services, air bags capabilities and any other requests as necessary. MFR also assists with traffic control at the request of OPP and any investigative needs they require. Other rescue calls are numerous and are serviced the same by both stations. The fire department similar to other departments is the catchall for any type of incident the residents may incur and don't know who to contact.

There are many other miscellaneous services offered including carbon monoxide investigations, natural gas leak investigations, illegal burning complaints and other items too numerous to mention.

Mapleton Fire Rescue has implemented a Confined Space team and a Water Rescue team. Both teams are fully trained and ready to respond to various emergencies. Recently, Mapleton has entered into an agreement with Minto Fire to co-respond to incidents involving confined space or water rescues. Minto has teams in each discipline as well, but like Mapleton has the potential to not have enough personnel trained in each discipline able to respond. With both departments automatically responding to each of these types of incidents, it gives another mechanism to ensure enough rescuers are responding to perform a rescue when needed. These two services are highly technical and both departments are unable to have all of their personnel trained. The partnership created with the two departments also allows them to train together and put together better training evolutions because of the increased number of personnel.

An item for further research and discussion with Mapleton Fire Rescue is the further enhancement of their water rescue team. At present, MFR is limited to shore based operations with some capabilities to go out into the water with a RIT craft, which is more or less an inflatable boat with no motor. Any rescues involving traveling further on Conestoga Lake are not in the currently in the scope of the department. The purchase and subsequent training of a motorized boat would enhance the team's ability. A needs versus cost analysis should be completed. Also, exploring different partnerships available within the community may be a viable option to offset the costs of the enhancement.

- THAT response capabilities are enhanced for certain time periods based on research completed by Administration Staff
- THAT Mapleton Fire Rescue improves training in IMS protocols including utilizing different commanders at scenes
- THAT all agreements are reviewed to ensure the best situation for Mapleton residents while keeping costs to a

Services not offered by Mapleton Fire Rescue include ice rescue, trench rescue, and hazardous materials operations or cleanup. All firefighters are trained to the awareness level in all of these areas, but not the operations level. Most services are offered through county mutual aid agreement with other departments. If a call involving one of these rescues occurs, a call would be made to the department specified in the mutual aid agreement. This is done on a fee for service basis. The department responding would be paid a specified fee. Hazardous materials response is provided through a private company. The fee for the response and clean up is paid for by the person at fault or the company responsible for the spill. A review of the agreements in place for services not offered would be prudent to ensure all aspects are covered for the municipality.

Mapleton Fire Rescue uses a two station response guideline for any reported structure fire. If there is a reported structure fire, both MFR stations respond with a full compliment. Guelph Fire Dispatch pages out both stations at the same time resulting in a simultaneous response. Utilizing this method of response ensures there are adequate personnel on the scene to complete initial operations and enough apparatus to utilize during operations. The Wellington County Fire Chiefs are currently working with Guelph Fire Dispatch to modernize the method of dispatching. It will include alarm levels for calling in additional resources. As well, it may automatically dispatch resources to high risk buildings that require a larger response. Finally, there may be the capability to automatically dispatch neighbouring departments to calls during certain time periods throughout the day where MFR is traditionally short staffed. This new ability through Guelph Dispatch could alleviate some of the identified response shortcomings.

Currently, MFR has a software program in place to assist with alerting firefighters of incidents on their personal cell phones. For the most part, it alerts on most of our responses, but it is not 100 percent reliable. The new Guelph Dispatch system is Sinirji. Sinirji is an app that is tied in with the current software utilized by Guelph Fire Dispatch. The app will automatically generate a message to be sent to all firefighters of an incident in progress. In turn, the firefighters can choose to send a message back to indicate they are able to respond to the incident and are on their way to the Station. The idea is to assist Fire Officers with a general idea of how many responders are available to attend and whether a call for additional resources needs to be made. The ability to see this information on the tablets currently in possession is available, but would need some further enhancements to make it accessible. The app is slowly being accepted by the Firefighters, but further training and information would be beneficial to the process.

An area of improvement identified in the process for the fire suppression division is preplanning of buildings. Many businesses and industrial buildings are being made of lightweight construction. These buildings, as well as all other buildings in the municipality need to be preplanned. Preplanning involves planning out how firefighters would initiate an attack on a fire involving the building. This includes where water supplies are located, fire suppression systems in the building, shut offs of services, and positioning of fire trucks. The information when packaged properly could be shared with all Firefighters and become a valuable tool to have accessible if a response to a higher risk building is initiated. Over time, this area of response could be enhanced and aid significantly in the response capabilities of MFR.

The preplanning right now performed is mostly verbal or not completed in a form that is readily accessible to responding Officers. The time it takes to gather and prepare this information is significant and definitely a stumbling block. Building

- THAT Mapleton Fire Rescue investigates the possibility of creating a preplan task force to ensure proper preplan completion for all identified buildings in Mapleton & coordinate walk-throughs of buildings requiring more than one station response from neighbouring departments
- THAT Mapleton Fire Rescue incorporates table top preplanning exercises into officer meetings to increase awareness of buildings in Mapleton

tours are set up for firefighters and gather information but the processing of the information is time consuming. It would take a minimum of 6-10 hours to process the information for a small building and present it in a format for all to use at the fire stations. Utilizing the risk assessment document once it is updated would assist in the department knowing which buildings should take precedence. By establishing a committee of Firefighters and Officers to assist, the process could be sped up and more personnel would have the chance to get involved.

Agreements

Currently, Mapleton has Fire Protection Agreements with Wellesley, Woolwich, and Wellington North. The agreement with Centre Wellington is an automatic aid agreement and is paid on a per call basis. All of these agreements involve the municipalities mentioned above providing services to Mapleton. There are presently no agreements requiring Mapleton to provide services to another municipality. All agreements have been recently updated and cost Mapleton \$ 84,649 in 2018 to purchase services. The agreements should be regularly reviewed and different options explored when they become available. All agreements when completed need to ensure the closest fire department responds to incidents for the protection of residents no matter which municipality they live in. Mapleton should continue to be proactive and find innovative ways to have the closest department respond but keep costs to as much a minimum as possible.

Health & Wellness

Decontamination

Firefighters, in the course of their duties, may be exposed to contaminants during training exercises or emergencies. As per the general duty clause 25(2) (h) of the Occupational Health & Safety Act (OHSA), employers are required to take every precaution reasonable in the circumstances to protect workers. There are various areas that should be improved in order to properly decontaminate equipment after training or incidents. As mentioned earlier in the equipment section, Mapleton has purchased a washing machine in partnership with Minto. It is to be used after being exposed to contaminated environments to properly clean the bunker gear ensemble. If the gear is too heavily soiled for the machine, it must be sent to a third party for further cleaning and assessment. Mapleton Fire Rescue should review its existing policies on decontamination and ensure all aspects are covered to ensure the safety of all Firefighters is being met.

Occupational Stress Injuries & Mental Health

In Spring 2016, the province passed the Supporting Ontario's First Responder Act, which is legislation that creates a presumption that post-traumatic stress disorder (PTSD) diagnosed in first responders is work-related. The act is part of the province's strategy to prevent or mitigate the risk of PTSD and provide first responders with faster access to treatment and the information they need to stay healthy.

Employers of workers covered under the PTSD presumption were directed to provide the Minister of Labour with information on their workplace post-traumatic stress disorder prevention plans April 23, 2017. MFR submitted their plan, and is now in the implementation stage.

➤ THAT Mapleton Fire look at ways to increase awareness and accessibility of EAP program.

During firefighter interviews about 23% of the department weren't aware of an EAP program for first responders, 28% of the department knew there was an EAP program but could not name the program or how to access it. It is recommended that MFR implement strategies to increase the awareness of EAP program components and how to access the program.

It has come apparent in first responder mental health; especially in the volunteer service; that spouses play an important role in being able to recognize signs and symptoms of mental illness in firefighters. Many first response organizations provide support and training to spouses or primary support persons of first responders. MFR has completed one training session with the spouses of MFR; however, it would be beneficial to schedule more sessions for spouses on a regular basis.

➤ THAT Mapleton Fire create programs for spouses and kids to increase understanding of the job

Physical fitness of members should be a priority for MFR; as the job is physical in nature. MFR has partnered with MyFit in the past to offer discounted memberships to first responders. However; historically it was underutilized. The best solution for MFR would be to incorporate and encourage fitness in the fire hall. It is well known how beneficial workplace wellness programs are to employee productivity. Workplace wellness creates avenues to decrease stress, fosters an environment of teamwork, and encourages better work performance.

➤ THAT Mapleton Fire Rescue investigates implementing health & wellness programming into regular department activities (fitness classes, mental wellness, etc)

Organizational Culture

Many firefighters are proud to be part of Mapleton Fire Rescue and a volunteer firefighter as a whole. Many volunteer departments rely on the concept of the “fire family” to strengthen relationships both on the fire scene and at the hall. Volunteer fire departments rely on these relationships to sustain their organization. MFR should look at ways to strengthen those relationships through the development of a social committee and social activities. An example of an event that this committee could be responsible for is a yearly awards night that recognizes both the organizational achievements and long term service awards. Having a solid organization culture and staff who feel appreciated has been proven to increase recruitment and retention of employees.

- THAT a social committee, consisting of the association presidents, firefighter spouses & firefighters, is formed to meet on an as needed basis to plan events for firefighters and their families.

Upcoming Matters

Recently, the Provincial Government repealed regulations making certification to certain NFPA standards mandatory. These standards included Firefighters, Fire Officers, Pumper Operators and Fire Inspectors. All had to be certified to their respective level in order to perform the duties associated with the position. There is no word on whether this will come forward again or be modified in the future. It is recommended that Mapleton Fire Rescue continue to work towards certifying their members in various roles and training to the NFPA standards. This will allow the department to be in a good position if new regulations do come in. As well, it gives the Firefighters some accomplishments to work towards.

One of the regulations that remained is the necessity to have a risk assessment document for the municipality completed. The Office of the Fire Marshal and Emergency Management is designing a template for each department to use to assist with the completion of their risk assessment. Mapleton has completed an assessment in the past, but it appears to be outdated with some of its information. The completion of a new document will help aid the department in budgeting for resources in the future and assist with the direction the department should take in their response abilities.

Decontamination has been mentioned in the plan a couple of times. It is a large issue which will continue to grow. As mentioned, decontamination at scenes is important. Cleaning of equipment, personal protective equipment and trucks are at the forefront of many programs. Completing as much of it at scene is important, so as not to bring as much contaminants into the fire station. However, decontamination of Firefighters is also extremely important. It has been proven many of the cancers related to firefighting activities could be lessened with a strong decontamination program. Mapleton Fire Rescue should review all of its existing policies on decontamination and what resources it has at each of the stations to assist with the procedures. Facilities should be reviewed and proper showers and cleaning areas established. If renovations need to be completed, then planning should be commenced and budget figures established.

Shared services with neighbouring departments was a key topic of discussion during the planning process. The shared services covered all aspects of the department including specialty rescue services, training, response capabilities, and management services. Both Stations supported the idea of working with other departments, especially if it would benefit the capability of their department to respond. The idea of the water rescue team and the confined space team working together with Minto Fire to enhance the training abilities and the response aspect was well received. Both departments should work at finalizing the response agreement and begin the process of establishing training sessions to become more familiar with each other's operational capabilities.

- THAT Mapleton Fire Rescue & Minto Fire investigate the feasibility of offering joint specialty rescue practices together
- THAT Mapleton Fire Rescue look at ways to increase inter-agency practices between neighbouring departments
- THAT Mapleton Fire Rescue investigate the use of subject matter experts from neighbouring departments
- THAT Mapleton Fire Rescue consider collaborating with other training officers from other departments to pool resources

There were some discussions on shared management services, but was beyond the scope of the Firefighters surveys. It is a concept that could be explored further by Council and Senior Management if desired. It has been deployed in other municipalities in Ontario successfully and could be used as a model across the County for others to follow.

Finally, mental health programs will need to be reviewed and ensure they are effective. Like decontamination, mental health is a key topic in the health and safety of firefighters. It is up to each municipality to ensure the programs they have established are effective and accessible to each Firefighter. A yearly review of the program should take place and constant communications with the Firefighters about the program should be established. As well, continuous training should be scheduled and promoted with the firefighters and extended to their families.

Summary of Recommendations

Mapleton Master Fire Plan – DRAFT 08.13.2019

RECOMMENDATIONS	Importance	Implementation
	1 – high 2 – medium 3 – low	1 – Year 1- 2 years 2 – 3-4 years 3 – 5+ years
Administration & Communication		
Year 1-2		
1. THAT Mapleton Fire Rescue reviews & updates all Standard Operating Guides yearly to ensure SOGs are current	1	1
2. THAT all internal meetings include a structured agenda & records process	1	1
3. THAT Mapleton Fire Rescue investigate opportunities to improve communications in a timely and convenient manner between firefighters and officers	1	1
4. THAT a SOG is either updated or a new one created to include more severe repercussions for those firefighters that do not do truck checks or attend enough training	1	1
5. THAT Mapleton Fire Rescue goes through a rebranding process to ensure their identity better reflects the values of the department	1	1
6. THAT a policy is created to promote firefighters volunteering for non-suppression events and possibly involve the spouses/partners of each member	1	1
7. THAT a Uniform SOG be created and followed for all staff	1	1
8. THAT Mapleton Fire Rescue creates a firefighter career guide that includes firefighter & officer expectations, as well as, training requirements in order to encourage firefighters to take courses.	2	1
9. THAT a change in organization structure be explored as demands change in the fire service	2	1
Year 3-4		
10. THAT an orientation package for auxiliary firefighters is renewed to improve understanding of departments expectations	1	2
11. THAT the minutes of the Officer meetings be distributed to firefighters post meeting (excluding personnel matters) to increase internal communication	2	2
12. THAT Mapleton Fire Rescue continues to proactively recruit new auxiliaries to prepare the department for future staff changes	2	2
13. THAT a leadership program is created to encourage firefighter advancement up the ranks	2	2
14. THAT Mapleton Fire Rescue investigate casual clothing options for firefighters and ecommerce distribution platforms.	2	2
Public Education		
Year 1-2		

15. THAT the Mapleton Fire Rescue create a yearly calendar of public education events, training, meetings, etc., to increase information sharing among divisions and use technology to communicate it.	1	1
16. THAT Mapleton Fire Rescue creates a social media presence, a website and use any other modern technological means to communicate more effectively within the department and to the public.	1	1
17. THAT Mapleton Fire Rescue investigates the possibility of a partnership with the Municipality which would allow for an in-kind donation of municipal facilities for public education purposes	1	1
Year 3-4		
18. THAT Mapleton Fire Rescue investigates ways to improve fire safety education within the community with business owners or other community groups.	2	2
19. THAT Mapleton Fire Rescue investigates the possibility of creating a Public Education Committee to increase the awareness and capacity of the public education division. (committee can include both firefighters, community members or firefighter spouses)	2	2
20. THAT a five-year Public Education plan is created & presented to the firefighters to increase firefighter buy-in.	2	2
21. THAT Mapleton Fire Rescue incorporates a public education activity into one practice per calendar year.	2	2
Fire Prevention		
Year 1-2		
22. THAT Mapleton Fire Rescue explores partnerships with Mapleton businesses to increase fire prevention within the downtown cores	1	1
23. THAT Mapleton Fire Rescue incorporates pre-planning into training on a more regular basis	1	1
24. THAT Mapleton Fire Rescue review & update their community risk assessment	2	1
Year 3-4		
25. THAT Mapleton Fire Rescue investigates the possibility of creating a preplan task force to ensure proper preplan completion for all identified buildings in Mapleton & coordinate walk throughs of buildings requiring more than one station response from neighbouring departments	2	2
26. THAT Mapleton Fire Rescue incorporates table top preplanning exercises into Officer Meetings to increase awareness of buildings in Mapleton	2	2
Apparatus & Equipment		
Year 3-4		
27. THAT Mapleton Fire Rescue review annually with it's firefighters it's 25-year truck plan & equipment replacement plans to ensure they are reflective of current needs and legal requirements	2	2
28. THAT a portion of the budget is allocated to each station to use annually for updating/ acquiring equipment. (Administered by station members)	2	2
29. THAT the maintenance program is reviewed annually with all members and better defined to focus on preventative and proactive approaches	2	2
30. THAT the idea of an equipment maintenance committee is explored to oversee the maintenance programs	2	2

31. THAT Mapleton Fire Rescue creates an orientation program for new recruits to learn about equipment maintenance (including truck checks) & inventory on all apparatus	2	2
Year 5+		
32. THAT Mapleton Fire Rescue discontinue having separate colours for each station. (All one colour bunker gear for all members)	2	3
33. THAT Mapleton Fire Rescue investigate the viability of purchasing off road utility vehicles to enhance the fleet (motor boat, utv, etc)	2	3
Training		
Year 1-2		
34. THAT practices outside the station or guaranteed to run late aren't hosted on the same nights as the meetings	1	1
35. THAT the practices are relevant to actual potential and likely circumstances	1	1
36. THAT the trainers list expands to include those with specialized knowledge on various subjects	1	1
37. THAT Mapleton Fire Rescue investigate the possibility of providing continuing education courses for firefighters	1	1
Year 3-4		
38. THAT Mapleton Fire Rescue diversify training instructors to better utilize knowledge within the department	1	2
39. THAT Mapleton Fire Rescue investigates the viability of separating the Training Officer & Captain positions to be separate roles.	1	2
40. THAT Mapleton Fire Rescue investigate the viability of incorporating 2-3 training subjects per practice to increase engagement at practices.	1	2
41. THAT all Senior Staff of the Mapleton Fire Rescue keep up to date on courses in order to maintain senior status.	2	2
42. THAT the number of two station practices increases, and potentially include more mock emergency situations	2	2
43. THAT Mapleton Fire Rescue consider increasing specialized training from alternate providers during practice nights	2	2
Fire Suppression		
Year 3-4		
44. THAT response capabilities are enhanced for certain time periods based on research completed by Administration Staff	1	2
45. THAT Mapleton Fire Rescue improves training in IMS protocols including utilizing different commanders at scenes	1	2
46. THAT all agreements are possibly renegotiated if there is a benefit to Mapleton	2	2
Health & Wellness		
Year 1-2		
47. THAT Mapleton Fire look at ways to increase awareness and accessibility of EAP program.	1	1
48. THAT Mapleton Fire create programs for spouses and kids to increase understanding of the job	1	1
49. THAT Mapleton implement a smoking policy for on scene, and a no-smoking in apparatus policy.	2	1
Year 3-4		

50. THAT a social committee, consisting of the association presidents & firefighters, is formed to meet on an as needed basis to increase engagement at firefighter events throughout the department	1	2
51. THAT the newly formed social committee works together to develop family activities for fire departments to build upon the family culture	1	2
52. THAT initiatives for spousal and child engagement be increased	1	2
53. THAT Mapleton Fire Rescue investigates implementing health & wellness programming into regular department activities (fitness classes, mental wellness, etc)	1	2
Shared Services		
Year 1-2		
54. THAT Mapleton Fire Rescue & Minto Fire investigate the feasibility of offering joint specialty rescue practices together	1	1
55. THAT Mapleton Fire Rescue look at ways to increase inter-agency practices between neighbouring departments	1	1
56. THAT Mapleton Fire Rescue investigate the use of subject matter experts from neighbouring departments	1	1
57. THAT Mapleton Fire Rescue consider collaborating with other training officers from other departments to pool resources	1	1
IT & Infrastructure		
Year 1-2		
58. THAT the IT Budget is reviewed to ensure sufficient funds are allocated to ensure equipment is current.	1	1
Year 3-4		
59. THAT a comprehensive IT plan is developed to ensure ongoing support and maintenance of equipment	1	2
60. THAT Mapleton Fire Rescue review the current records management program to ensure it is current with municipal and fire service trends	1	2

TOTAL:

Year 1-2: 27 recommendations

Year 3-4: 30 recommendations

Year 5+: 02 recommendations

Appendices

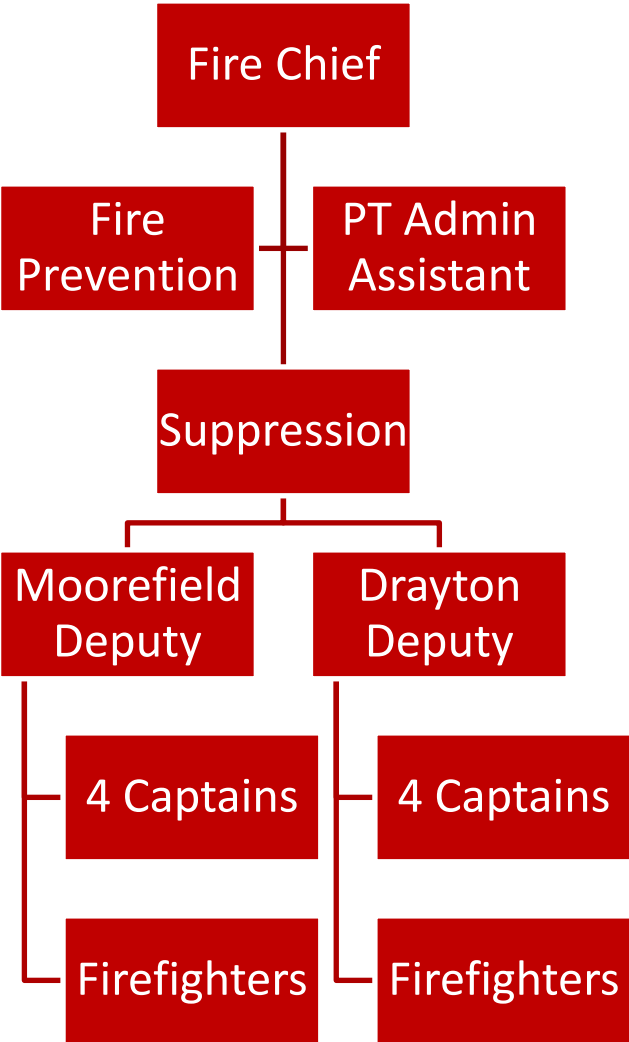
Mapleton Fire Rescue Apparatus Replacement Program

September 2018					
<u>Vehicle</u>	<u>Year</u>	<u>Station</u>	<u>Project ed Replac ement</u>	<u>2017 Replacement Value</u>	
Rescue 75	1998	Drayton	2019	\$345,000	
Replacement Rescue 75 ordered in 2018, Delivery in May 2019					
Tanker 88	1992	Moorefield	2022	\$295,000	
Tanker replaced in 2022 with 2000 gallon tanker with pump, to serve 3 years as Mainline pump until Pumper 80 due					
Pumper 80	2002	Moorefield	2025	\$365,000	
Pumper replaced due to 20+ year service					
Pumper 70	2007	Drayton	2027	\$365,000	
Pumper could be delayed until 2028 with current tanker serving as mainline pumper for 1 year					
Tanker 87	1997	Moorefield	2022	\$265,000	
Tanker taken out of service when maintenance expenses become an issue					
Rescue 85	2009	Moorefield	2030	\$325,000	
Unit 1	2011	Both	2021	\$40,000	
Tanker 77	2016	Drayton	2036	\$265,000	
Unit 2	Proposed Addition		???		
ATV	Proposed Addition		???		
<u>Vehicle Replacement Plan</u>					
<p>Mainline pumper (70 + 80) need to be a maximum life expectancy of 20 years, due to the complexity of the vehicle and the pump servicing required of each. The vehicle has it's annual service and MTO inspection.</p>					
<p>Rescue trucks (75 + 85) respond to all fires, collisions, medical calls and emergencies that require more personnel than a pumper can hold. They have to respond safely, quickly and reliably, carrying 6-8 firefighters when required. As long as they pass the yearly service and safety inspection, and have the ability to carry the required equipment, there is no life term put on this type of vehicle.</p>					

Water Tankers (77,87 + 88) are needed to carry 2-3 firefighters and transport large quantities of water from the station to the scene and to a water source for refilling. They typically only respond to large fires and serve as buffer trucks for motor vehicle collisions. Water tankers do not accumulate large numbers of kilometers and require the annual service and safety as well.

Utility and Command vehicles (Unit 1) are needed to carry the incident command to access the scene before fire crews arrive. This vehicle also carries soiled equipment back to the station for cleaning. Also used to carry out inspections and transporter of staff taking external training.

Organization Structure



THE END.



COUNTY OF WELLINGTON

COMMITTEE REPORT

To: Chair and Members of the Planning Committee
From: Sarah Wilhelm, Manager of Policy Planning
Date: Thursday, September 12, 2019
Subject: **2019 Provincial Policy Statement Review**

1.0 Background

To further support its Housing Supply Action Plan and other priorities, the Ministry of Municipal Affairs and Housing is consulting on proposed changes to the Provincial Policy Statement (PPS). Comments are requested prior to October 20, 2019 (EBR Registry Number #019-0279).

The current PPS, which came into effect April 30, 2014, provides overall policy direction on matters of provincial interest related to land use planning and development across Ontario. Where provincial plans are in effect (such as the Growth Plan for the Greater Golden Horseshoe and the Greenbelt Plan in Wellington), such plans:

- provide additional, and in some cases, more specific land use planning policies
- take precedence over the policies of the PPS in the event of a conflict

Where policies in the PPS do not overlap with policies in provincial plans, the policies of the PPS must be independently satisfied.

This report provides an overview of the key policy changes and responds briefly to questions posed by the province in the consultation documents.

2.0 Key Changes to the Provincial Policy Statement

Many of the proposed changes appear to have little impact on the County as they:

1. harmonize the PPS with the 2019 Growth Plan for the Greater Golden Horseshoe (“Growth Plan”) which already applies to Wellington; or
2. the Growth Plan policies are more specific/restrictive than the draft PPS.

In other respects, staff have identified the following key areas with the greatest impact on land use planning in Wellington County.

Agriculture

Current PPS policies allow for planning authorities to permit non-agricultural uses in prime agricultural areas subject to meeting specific criteria. Some examples of non-agricultural uses include manufacturing, automobile sales, golf courses, and campgrounds. The draft policies remove the criterion that the proposed use “complies with the minimum distance separation formulae” (MDS). Instead, impacts on surrounding agricultural operations and lands are to be “informed by provincial guidelines”. This is more permissive when compared to language used elsewhere in the PPS, such as “in accordance with provincial guidelines”. While the wording would allow for consideration of guidelines in addition to MDS, such as the “Guidelines on Permitted Uses in

Ontario's Prime Agricultural Areas" we have questions about what these changes mean for MDS implementation.

Mineral Aggregates

Changes to subsection 2.5.2.4 include additional policy direction that depth of extraction be addressed through processes under the Aggregate Resources Act. The intent of the new wording is unclear and we are concerned that it may be meant to remove the ability of municipalities to continue to use vertical zoning to regulate extraction below the water table.

For gravel pits outside of the Greenbelt area and subject to satisfactory long-term rehabilitation, draft policies allow consideration of extraction in provincially significant wetlands (applies to areas outside of the County), woodlands, valleylands, wildlife habitat, areas of natural and scientific interest; fish habitat; and habitat of endangered species and threatened species. The Growth Plan is more restrictive for some features, but overall, the more permissive draft policies would appear to allow interim negative impacts to features and areas in favour of potential long-term environmental benefits through rehabilitation.

Indigenous Consultation

New requirement for planning authorities to:

- engage with Indigenous communities and coordinate on land use planning matters; and
- engage with Indigenous communities and consider their interests when identifying, protecting and managing cultural heritage and archaeological resources.

Extension of Planning Horizon

The planning horizon is extended from 20 to 25 years. We do not know whether the province intends to address this change in the Growth Plan for the Greater Golden Horseshoe, which provides a growth forecast to 2041.

Housing

The province has changed housing policies and related terms in an effort to encourage a greater mix and supply of housing. For example, a new term "housing options" provides more specific policy direction about housing types. The draft policies increase the required supply of land for residential growth from ten years to twelve years. Municipalities are also given the option to maintain land with servicing capacity to provide a five-year supply of residential units (up from three). Overall, these changes appear to be positive, but we will continue to assess as more information becomes available.

Servicing Hierarchy and Private Communal Services

The draft PPS clarifies that the servicing hierarchy supports protecting the environment, human health and safety. With that in mind, upper-tier municipalities are required to work with lower-tier municipalities to assess long-term impacts of individual services on environmental health and character of rural settlement areas and the feasibility of full municipal services or private communal services. Policies specify that communal services are preferred for development of multiple residential units/lots where municipal services are not available, planned or feasible.

Land Use Compatibility

Stronger protection is provided for existing or planned major facilities (including industries, manufacturing uses, other facilities and infrastructure) from proposed sensitive lands uses (such as residences, day care centres, etc.).

3.0 Comments

Questions from Ministry	Response
<p>1. Do the proposed policies effectively support goals related to increasing housing supply, creating and maintaining jobs, and red tape reduction while continuing to protect the environment, farmland, and public health and safety?</p>	<p>The PPS has become much less relevant to Wellington because of the more specific, more restrictive, same or similar policies of the Growth Plan for the Greater Golden Horseshoe.</p> <p>The Province should consider fully implementing the PPS in the Greater Golden Horseshoe through one policy document - the provincial Growth Plan. This would reduce red tape by eliminating policy duplication and streamline the review of development applications.</p>
<p>2. Do the proposed policies strike the right balance? Why or why not?</p>	<p>The policy changes for mineral aggregate resources do not effectively balance the need:</p> <ul style="list-style-type: none"> • for local Council input regarding depth of extraction as below water table extraction is a permanent change to the landscape • to protect the environment by allowing extraction to be considered within natural heritage features and areas <p>We do not support these permissive aggregate policies in the draft PPS, particularly in areas of the County where there is a high concentration of gravel pits.</p>
<p>3. How do these policies take into consideration the views of Ontario communities?</p>	<p>See response to question 1.</p>
<p>4. Are there any other policy changes that are needed to support key priorities for housing, job creation, and streamlining of development approvals?</p>	<p>See response to question 1.</p>
<p>5. Are there other tools that are needed to help implement the proposed policies?</p>	<p>The province should support municipalities and housing developers by researching and sharing best practices to facilitate a greater mix of housing options and increase the supply of affordable rental accommodations.</p>

We have reported on the PPS review at this time to ensure that County Council may consider these comments prior to the October 20, 2019 deadline. We will be attending an information session with the province September 9 and the Association of Municipalities of Ontario (AMO) is working on a response. Planning staff may augment this report if we become aware of new information of relevance to Wellington.

Recommendation

That the report “2019 Provincial Policy Statement Review” be forwarded to the Ministry of Municipal Affairs and Housing and be circulated to member municipalities in Wellington County.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Sarah Wilhelm', with a long horizontal flourish extending to the right.

Sarah Wilhelm, BES, MCIP, RPP
Manager of Policy Planning



COUNTY OF WELLINGTON

COMMITTEE REPORT

To: Chair and Members of the Planning Committee
From: Sarah Wilhelm, Manager of Policy Planning
Date: Thursday, September 12, 2019
Subject: County Official Plan Review - Process and Key Phases

1.0 Purpose

The purpose of this report is to:

1. introduce County and local Councils to the process for the County Official Plan Review, which will address the requirements for a municipal comprehensive review (“MCR”) and a five-year review; and
2. provide an outline of key work plan phases.

2.0 Background

Since amalgamation in 1999, the County Official Plan has been the core-planning document that guides decision-making on long-term growth and development for the County and our member municipalities. The County Official Plan provides policies to ensure that:

- existing and future residents have an adequate supply and variety of jobs, homes, shopping, services, leisure activities, educational opportunities and cultural facilities; and
- people of the County enjoy clean air, clean water, healthy communities, natural heritage, cultural heritage, public health and public safety.

The Plan establishes the County’s goals and directions for land use planning and development based on a broad structure of urban, rural and greenlands systems. The urban system is the focus for growth, the rural system is the focus for resource activities, and the greenlands system is the focus for protection of the natural environment.

2.1 Keeping the Official Plan Current

The basic framework of the Official Plan has been in place for 20 years and Council has revised the Plan regularly to respond to changing needs and policy directions. Figure 1 identifies the three key ways for the County to review and amend the Official Plan to incorporate policy updates.

Figure 1 Approaches for County-Initiated Policy Updates



The Planning Act requires municipalities to keep their official plans up to date every five years to ensure that the Plan:

- conforms, or does not conflict with provincial plans (the Growth Plan for the Greater Golden Horseshoe and Greenbelt Plan in Wellington);
- has regard to the matters of provincial interest listed in section 2 of the Act; and
- is consistent with the provincial policy statement.

The County completed the last 5-year review in 2014.

The Province has also defined a process for bringing an official plan into conformity with aspects of the Growth Plan termed a “municipal comprehensive review” (“MCR”). This is unique to the Growth Plan and is associated with its own deadline.

It is also possible for the County to update official plans to address specific policy matters through a 5-year review or as standalone official plan amendments. Some recent examples of standalone amendments in Wellington include updated policies for Community Improvement Areas, Source Protection Plans and second units.

The top priority for the County is to move forward with the MCR, however, the Plan is also out of date with the 2014 PPS, 2017 Greenbelt Plan and other amendments to the Planning Act. Under subsection 26(2) of the Act, Council has discretion to complete the MCR as a separate exercise, or combine it with a 5-year review.

2.2 Municipal Comprehensive Review

Staff reported to Planning Committee in June about the new Growth Plan for the Greater Golden Horseshoe (“Growth Plan”) released by the Province. The 2019 Growth Plan carried over the requirement to complete a municipal comprehensive review by mid-2022 to bring Official Plans into conformity with the Growth Plan. The Growth Plan defines a municipal comprehensive review as:

“A new official plan, or an official plan amendment, initiated by an upper- or single-tier municipality under section 26 of the Planning Act that comprehensively applies the policies and schedules of this Plan.”

County Staff will approach the MCR in a collaborative manner with municipal input.

The County Official Plan is currently up to date with June 2013 amendments made by the Province to its growth forecasts and to extend the forecasts to 2041 in the Growth Plan. To do so, the County retained Watson & Associates to extend the County forecasts to 2036 and 2041, and allocate the updated Growth Plan forecast to local municipalities and then to urban centres for residential growth. In May 2015, County Council received the growth forecast update report from Watson & Associates, and directed staff to circulate the amendment to local municipalities for comment. Staff revised the draft Official Plan Amendment to reflect a number of comments received.

In 2016, County Council adopted the current County Official Plan forecasts and they came into effect in 2017 (by Ontario Municipal Board settlement). This Official Plan Amendment (OPA 99) brought the Plan into conformity with and allocated the forecasts in the Growth Plan. By 2041, the County is forecast to accommodate a population of 140,000 residents and 61,000 jobs. This represents an almost 50% increase of the County’s 2016 population of 95,805 and a 50% increase of the County’s 40,070 jobs. Since the approval of OPA 99, Statistics Canada released

the 2016 Census, and the Province released an updated Growth Plan in 2017 and a series of guidance documents for implementation (Figure 2). These documents present information, technical criteria and approaches.

Figure 2 Current Status of Provincial Guidance Documents

Final Documents	Draft Documents
Land Needs Assessment methodology	Municipal Comprehensive Review process
Agricultural System implementation	Application of the Intensification and Density Targets
Natural Heritage System implementation	Agricultural Impact Assessment

It is our understanding that the Province intends to update some of the guidance documents to align with the 2019 Growth Plan and staff will monitor the status of these documents as we move forward with the MCR.

The Growth Plan also requires municipalities to complete various background studies and analysis through the MCR process in order to demonstrate conformity with provincial policies, including (but not limited to) the following:

- A hierarchy of settlement areas and of strategic growth areas within them, across the County
- Servicing
- Land needs assessment
- Strategies to address intensification, employment, housing, excess lands, climate change, Indigenous consultation, etc.
- Transportation
- Agricultural System and Natural Heritage System mapping and policy direction

We have been told by Ministry of Municipal Affairs and Housing staff that the growth allocations made through OPA 99 will be subject to further review through the MCR (as they were not subject to the standardized land needs assessment methodology at that time). The Planning and Development Department maintains employment and residential land inventories in a geographic information system. As these inventories are an important input to land needs assessment, planning staff started work to update the inventories in June 2019.

The MCR will be a complex undertaking and staff anticipates the process will take at least two years to complete.

2.3 5-Year Review

There have been a number of significant provincial policy initiatives and other matters that will directly affect the 5-year review exercise, including:

- Greenbelt Plan, 2017
- Provincial Policy Statement, 2014 (currently under review)
- Significant amendments to the Planning Act through:
 - Bill 73, the Smart Growth for Our Communities Act, 2015
 - Bill 139, the Building Better Communities and Conserving Watersheds Act, 2017
 - Bill 34, Green Energy Repeal Act, 2018
 - Bill 108, the More Homes, More Choice Act, 2019
- Updates to Source Water Protection Plans

There are also County initiatives that will help inform the 5-year review, including the following:

- Active Transportation Plan (2012)
- A Place to Call Home: 10 Year Housing and Homelessness Plan for Guelph Wellington (5-year update awaiting provincial approval)
- Climate Mitigation Strategy (in process)
- Economic Development Strategic Plan (2012)
- Energy Management Plan (2014)
- Strategic Action Plan (2019)
- Transportation Master Plan (pending)

The 5-year review process will seek to incorporate the relevant policies and directions from these and other documents from the standpoint of land use planning and development policy.

2.4 Approval Process

The MCR and 5-year review will lead to the preparation of an Official Plan Amendment in accordance with section 26 of the Planning Act.

Once a final draft of the County Official Plan Amendment is completed, the Province requires it to be forwarded to them not less than 90 days prior to notice being given for the statutory public meeting. Once County Council adopts the Amendment, the Province will have 210 days to render its decision.

The MCR and 5-year review have two important differences from other amendments to the Official Plan as they both require the following:

- provincial approval; and
- an open house/special meeting of Council.

The decision of the Province is non-appealable.

3.0 Work Plan

The County will:

- manage the overall project in-house
- hire consultants to undertake specific components of the review
- work in consultation with local municipalities, Indigenous communities, members of the public, agencies and other key stakeholders
- prepare an overall communications and engagement plan including a dedicated page on the County's website and provide required updates to the content
- follow the required Planning Act process of consultation after the MCR and 5-year review has concluded

County planning staff will report to County Council periodically and seek direction at key decision-making points to scope further work. The timeline below identifies the broad phases and components of the MCR and 5-year review process (Figure 3).

Figure 3 County Official Plan Review Phasing
 Joint MCR and 5-year Review

Consultation Throughout 	PHASE 1	Setting the Stage Fall 2019 – Spring 2020	<ul style="list-style-type: none"> ▪ Background review* ▪ Initiate key MCR background studies ▪ Prepare communications and engagement plan ▪ Official project launch ▪ Develop key themes
	PHASE 2	Technical Analysis, Issues and Opportunities 2020	<ul style="list-style-type: none"> ▪ Continue work on MCR background studies ▪ Provincial Policy Statement review ▪ Greenbelt Plan Review ▪ Identify other county and/or local policy priorities
	PHASE 3	Options 2020 - 2021	<ul style="list-style-type: none"> ▪ Prepare policy option discussion papers on key theme areas based on MCR background studies, community engagement and Council input ▪ Report on Provincial Policy Statement consistency, Greenbelt Plan conformity and other policy priorities ▪ Prepare Draft Official Plan Amendment
	PHASE 4	Final Draft Official Plan Review 2021 – early 2022	<ul style="list-style-type: none"> ▪ Prepare final Draft Official Plan Amendment ▪ Follow Planning Act requirements for Official Plan Amendment

*NOTE: County staff has commenced work to update employment and residential land inventory updates

Staff are considering a combined MCR and 5-year Review process to complete the Official Plan Review. The Planning Act also allows municipalities to implement new policies through standalone amendments. The main advantage of the combined process is to engage the public, Council and other stakeholders more efficiently and effectively. We will monitor our approach (phasing) in light of any shifting provincial, County and local priorities and make changes as necessary.

Recommendations

That the report “County Official Plan Review – Process and Key Phases” be received for information and forwarded to member municipalities.

That the Director of Planning and Development be authorized to proceed with the County Official Plan Review.

Respectfully submitted,



Sarah Wilhelm, BES, MCIP, RPP
 Manager of Policy Planning

THE CORPORATION OF THE TOWNSHIP OF MAPLETON
EMERGENCY MANAGEMENT REPORT EM2019-01

TO: Mayor Davidson and Members of Council

FROM: Linda Dickson, Emergency Manager/CEMC

RE: Report on the Status of the Township's Emergency Management Programme

DATE: October 22, 2019

RECOMMENDATION:

THAT the Township of Mapleton Council receives Emergency Management Report EM2019-01 dated October 22, 2019 regarding the status of the Township's Emergency Management Programme for 2019.

AND FURTHER THAT Council of the Township of Mapleton accepts the annual status report of the Township's Emergency Management Programme for 2019.

BACKGROUND:

The following report outlines the municipal requirements set out in the Emergency Management and Civil Protection Act and how the municipality has fulfilled these requirements for 2019.

PREVIOUS PERTINENT REPORTS:

None

DISCUSSION:

Program Committee

The Township has an Emergency Management Programme Committee (Committee). The Committee met on March 27, 2019 to review the Township's Emergency Management Programme including its Hazard Identification and Risk Assessment, Emergency Response Plan, training needs, proposed annual exercise and Public Education. The minutes from the Committee meeting are attached.

Emergency Response Plan:

There are no changes proposed to the Emergency Response Plan for 2019. A review and update of the plan is currently underway. The revised plan will be brought forward to Council for consideration and adoption in 2020.

Training:

For 2018 and 2019, the Office of the Fire Marshall and Emergency Management (OFMEM) set out certain prescribed training requirements for CEMCs and Municipal Emergency Control Group (Control Group) members. The CEMC has completed all of the training requirements prescribed.

OFMEM prescribes training to ensure Municipal Emergency Control Group (MECG) members have an adequate level of training and knowledge of their emergency management programmes, their roles and responsibilities as set out in the Emergency Response Plan and knowledge of the capabilities of their Municipal Emergency Operation Centres.

Control Group Training for the Township was held March 27, August 29 and October 1.

The following is additional training provided for control group members and support staff.

- i) **September 24, 201** – Scribe Training
- ii) **October 1, 2019** – Crisis Communication Workshop

Annual Emergency Management Exercise:

MECG members must participate in an annual exercise, which evaluates the Municipality's Plan and procedures. On June 6, 2019, the Township held its annual emergency management exercise. The purpose of the exercise was two-fold:

- i) To provide information to the Township's Municipal Emergency Control Group regarding the flood risk, and to discuss current prevention, mitigation, preparedness, response and recovery practices in place. Floods are a priority risk for the Township. The exercise provided information, facilitated control group discussion and provided an opportunity to view site operations.
- ii) The GRCA municipalities downstream of the Conestogo Dam are preparing for a multi-jurisdictional flood exercise. This discussion exercise will provide information needed for the Control Group to participate effectively in this future exercise.

A copy of the Exercise After Action Report is attached.

Public Education

Emergency Management staff attended the Wellington County Farm Safety Pancake breakfast on February 23 at the Alma Community Centre.

During Emergency Preparedness Week - May 5 to 11 - information was available at the Wellington County Libraries and Municipal Office, and draws for 72-hour emergency preparedness kits were held.

Winter Weather material was available at the Wellington County Libraries throughout the winter months. Winter Driving Safety information is available at Car/Tire businesses throughout Wellington County.

The County page in the Wellington Advertiser and the County's social media accounts regularly contain emergency public information.

The Television screens in the County Libraries display preparedness information. Preparedness advertisements were played on The Grand radio station that reaches part of Mapleton, and flood preparedness messaging was available for Mapleton residents during the month of March.

All preparedness messages displayed in the Libraries, posted on the County Page or on social media, and radio advertisements focused on the following key messages for each month of the year:

January – Make a Plan
February - 211
March – Floods
April – Sheltering
May – Emergency Preparedness Week`
June – Tornadoes
July – 72 Hour Kit
August – Business Continuity
September – Be Informed
October – Power Outages
November – Winter Weather
December – Unique Family Needs

Critical Infrastructure

During the summer, the Common Operating Picture mapping which includes information on the Critical Infrastructure throughout the County was reviewed and updated with the assistance of County and member municipal staff.

CONSULTATION: Township of Mapleton Emergency Management Programme Committee.

FINANCIAL IMPLICATIONS:

None

SUMMARY:

The Township has satisfied the requirements of the Emergency Management and Civil Protection Act, and Ontario Regulation 380/04 for 2019.

COMMUNICATION:

Compliance documentation for the Township's 2019 program will be provided to the Province (OFMEM) through their online compliance process.

Prepared By:



Linda Dickson
Emergency Manager/CEMC

Reviewed By:

Manny Baron
CAO

Attachments:

1. Mapleton Emergency Management Program Committee Minutes – March 27, 2019
2. Emergency Management Exercise After Action Report



**Mapleton Municipal Office – Council Chambers
7275 Sideroad 16, Mapleton Township,
March 27, 2019; 1300 hrs. (1:00 pm)**

Present:

Manny Baron, CAO
Barb Schellenberger, Clerk
Dave George, Wellington Dufferin Guelph Public Health
Donna Manser, Wellington Dufferin Guelph Public Health
John Morrison, Director of Finance
Gregg Davidson, Mayor
Stephen Dewar, Chief of Guelph Wellington Paramedic Services
Heather Lawson, Emergency Management Programme Coordinator
Linda Dickson, Emergency Manager/CEMC
Alex Post, Emergency Management Assistant
Scott Lawson, Inspector of Wellington OPP

1. Adoption of Minutes

Motion that the minutes from April 25, 2018 be approved as circulated.

Moved by: Barb Schellenberger

Seconded by: Donna Manser

Carried.

2. Delegations:

Small Emergency Response

Emergency Manager/CEMC provided an overview of the Red Cross Agreement signed in September of 2018 between the County of Wellington and Canadian Red Cross. This agreement covers support needs from the Red Cross during large municipal emergencies and particularly those requiring the opening of shelters. Process is for Red Cross to support for the first 48 hours and then Social Services will support beyond the 48 hours if there is insufficient insurance coverage. Important for Social Services to be contacted early to be able to support affected persons. A small emergency is considered to be an incident affecting approximately 50 individuals or less.

Public Health

Vaccination Clinics

Public Health is seeking contacts should they need to find a location to provide vaccinations during a Public Health Emergency.



Vulnerable Populations

Public Health inquired about a list for Vulnerable Populations. No universal list exists due to confidentiality and the need for those members to self identify. Some are identified by local utilities providers, on Fire Department Lists, or on the Common Operating Picture.

3. Business Arising from Minutes

National Disaster Mitigation Program

GRCA will be undertaking LIDAR photographing for parts of the watershed including Northern Wellington municipalities. Once completed the GRCA will have a better understanding of flood impacts to share with municipalities which can then be used to conduct mitigation options.

Alert Ready Spring Test

The County may issue an alert through the Alert Ready system by contacting the Provincial Emergency Operation Centre (PEOC). Alert Ready procedures are in the EOC Procedures. The next Provincial test is May 8, 2019 at 2:55pm. Weather-related alerts are issued through the Alert Ready system by Environment Canada. Additional Information about the system can be found on www.emergencymanagementontario.ca or www.AlertReady.ca

Dashboard

CEMC review the current list of items in the Municipal Dashboard.

ACTION ITEM: Public Health requested to be notified of Scribe training details. EM Programme Coordinator to follow up.

4. 2019 Work Plans

The work plans were reviewed with the Committee. No changes were noted.

5. HIRA review and approval

The committee reviewed the Township's Hazard Identification and Risk Assessment (HIRA).

The committee discussed Feed Mills outside of Moorefield in the Municipality including the Wallenstein and new Hensall Mill.

ACTION ITEM: The committee recommended that the CEMC review all potential risks with the Fire Chief.

Motion that the Committee approves the Municipal HIRA as included in the agenda package based on review of the mills.



Moved by: Manny Baron
Seconded by: Gregg Davidson

Carried.

6. Emergency Response Plan Review Update

A review and update of the ERP is schedule for 2019/20. The Emergency Information Section and Evacuation Section of the Plan will be update and debris management policies will be included. No other areas in the plan were noted by the Committee as in need of updating.

7. Exercises

2018 Exercise After Action Report

The majority of the recommendations were related to IMS. Training has been done and is ongoing related to covering concerns relating to IMS.

As noted through the recommendations, the number of IMS Forms have been reduced and revised. These include the Incident Briefing, Status Summary and Incident Action Plan.

2019 Exercise

CEMC provided the option of taking the 2016 Exercise Flood Watch and updating as the exercise for this year.

The committee suggested timing of the exercise could be ASAP and have it completed as soon as possible.

The committee suggested the 2020 exercise be based on a breach of the Conestoga Dam. CEMC to follow up with the GRCA.

8. Public Education Plan for 2019

Continue to promote the message of being 72 hours prepared.

Emergency preparedness messages will go in the Wellington Advertiser throughout 2019 as well as the County's social media pages.

Emergency preparedness week is May 5-11, 2019. There will be a display at the all County libraries and Municipal Offices during this week with a draw to win an Emergency Kit. EM will also be attending a variety of events in each municipality. EM staff to attend Mapleton Safety Day on May 16 at the Drayton Arena.

There will be a focus on one message each month this year; however, if there is something occurring in the County additional messages will be put out.

Monthly Messages:



January – Making a Plan
February – 211
March – Flooding
April – Sheltering
May – Emergency Preparedness Week
June – Tornadoes/ Severe Summer weather
July – 72-hour kit
August – Business Continuity
September – Be Informed
October – Power Outages
November – Winter Weather
December – Unique Family Needs

9. Training Plan for 2019

Required Control Group training for 2019 is using the five key on competencies as set out by OFMEM in 2018. CEMC conducted a training overview of the material used in the 2018 training with the Committee and Control Group members in attendance.

Committee requested where to find information regarding Roles & Responsibilities.

Emergency Response Plan is available on Wellington County website:

https://www.wellington.ca/en/resident-services/resources/Emergency_Management/Emergency-Response-Plan--2017-Revised.pdf

Enhanced Training for 2019 includes the following:

BEM—May 7-8 at Museum

IMS 200—Oct 8-9

Elected Officials—April 30

Scribe Training — TBD, contact Heather Lawson

Crisis Communication—TBD, contact CEMC if interested

GRCA Training –April 30, 2019 (In preparation for 2020 exercise)

10. Critical Infrastructure

The Committee received a presentation on how to access the COP and Municipal 511 as well as the capabilities of each site. Municipal 511 is available for use. The County has included the cost of the service in the 2019 budget. Process is to have staff become familiar with the system and then begin promoting it to the public later in 2019.

11. Emergency Operation Centres

The Mapleton EOCs were updated on March 12 and are in good standing.

12. New Business



CEMC provided information to the Committee about an emergency notification tool from Voyent alert that can also be used as a daily municipal notification tool. The cost for the service is very reasonable. Emergency Manager can arrange a demo if the Committee/Township is interested in the service.

Fuel Plan Appendices

ACTION ITEM: EM staff to follow up with Jim Grose for information regarding generators.

Snow Storm Debrief/Spring Thaw

The committee discussed having all the Municipalities work together on an Inclement Weather Plan for closure of municipal buildings.

ACTION ITEM: CEMC to investigate and report back RE: Inclement Weather Plan.

13. Information and Correspondence

Emergency Management Strategy for Canada

Committee was advised of the new Federal strategy on Emergency Management

Office of the Fire Marshall and Emergency Management

Committee advised that Ross Nichols has retired as the Provincial Fire Marshall and John Pegg, Chief of Emergency Management appointed inter OFM.

14. Adjournment

The meeting was adjourned by the chair at 2:49pm.

**TOWNSHIP OF MAPLETON
ANNUAL EMERGENCY MANAGEMENT EXERCISE
JUNE 6, 2019
AFTER ACTION REPORT**



In accordance with the Emergency Management and Civil Protection Act, R.S.O., 1990, the Township of Mapleton Municipal Emergency Control Group conducted an exercise as required by Regulation 380/04 Section 12 (6) of the Emergency Management and Civil Protection Act. The following report summarizes the details of the exercise, outcomes and recommendations of the exercise.

1. DATE:

June 6, 2019

2. TIME:

1000 hrs to 1430 hrs

3. LOCATION:

Township of Mapleton Municipal Office, Conestogo River and Conestogo Dam

4. EXERCISE PARTICIPANTS

Gregg Davidson, Mayor

Michael Martin, Councillor

Manny Baron, CAO

Rick Richardson Fire Chief and Alternate CEMC

Barb Schellenberger, Deputy Clerk

Sam Mattina, Director of Public Works

Jim Grose, Manager of Public Works

John Morrison, Director of Finance

Trish Wake, Economic Development Coordinator and Township EIO

Heather Lawson, EM Programme Coordinator

Scott Robertson, Senior Water Resources Engineer, GRCA

Mark Anderson, Water Quality Engineer, GRCA

Dean McFadden, Superintendent Conestogo Lake, GRCA

Jan Laros, Assistant Superintendent Conestogo Lake, GRCA

Facilitators

Linda Dickson, Emergency Manager/CEMC

Dwight Boyd, Director of Engineering, GRCA

Naomi Moore, Water Resources Project Coordinator, GRCA

5. AIM:

- i) To provide information to the Township's Municipal Emergency Control Group regarding the flood risk, and to discuss current prevention, mitigation, preparedness, response and recovery practices in place. Floods are a priority risk for the Township. Many control group members are new to the Township, may not have not experienced a flood event in Mapleton first hand or been involved in past planning discussions with respect to the flood risk in the municipality. The exercise provided information, facilitated control group discussion and provided an opportunity to view site operations.
- ii) The GRCA municipalities downstream of the Conestogo Dam are preparing for a multi-jurisdictional flood exercise in 2020. This discussion exercise will provide information needed for the Control Group to participate effectively in the exercise.

The 2019 exercise discussion-based exercise will progress to a tabletop exercise in 2020.

6. TYPE OF EXERCISE – Discussion based exercise with Field Tours of the Conestogo River through Drayton and the Conestogo Dam.**7. SCENARIO:**

The Township of Mapleton and in particular Drayton has experienced flooding in June 2000, December 2008, June 2017 and Zone 1 (minor events) in February 2018 and 2019.

8. EXERCISE SUMMARY:

The following is a list of the items presented by Dwight Boyd and Linda Dickson. The Control Group and GRCA staff discussed the information during the presentations.

- Review of Flood Definitions
- Flood Risk for Mapleton and Drayton
- GRCA Flood Management processes
- Flood Mitigation Strategies – current and future
- Review of the roles and responsibilities in the Township's Flood Response Plan
- CN Railway Abutment Risk
- Flood events and responses including June 2017 Flood Event response and action items
- GRCA Bathymetric LIDAR project

- Conestogo Dam Emergency Response Plan and planning
- Site Visits – Conestogo River dyking and dredging projects; Conestogo Dam

9. EXERCISE RECOMMENDATIONS:

- i) Update the Flood Emergency Response Plan and include the urban area of Glen Allen for the exercise in 2020.
- ii) Print copies of the flood maps for the Emergency Operation Centre
- iii) Plan appropriate flood detour routes
- iv) Consider reviewing and updating Damage Risk Assessment Study
- v) Research possible financial opportunities to fund the Study. Maybe opportunities available through FCM.

THE CORPORATION OF THE TOWNSHIP OF MAPLETON
FIRE/RESCUE REPORT FR2019-07

TO: Mayor Gregg Davidson and Members of Council
FROM: Rick Richardson, Fire Chief
RE: Master Fire Plan Recommendations
DATE: October 22, 2019

RECOMMENDATION:

THAT Township of Mapleton Council receive Fire/Rescue Report FR2019-07 dated April 23, 2019 regarding Master Fire Plan Recommendations

AND FURTHER THAT the Township of Mapleton Council receive the Mapleton Master Fire Plan presentation and recommendations from the Committee formed for the Master Fire Plan.

BACKGROUND:

In February 2019, Fire Report FR2019-03 was received by the Township of Mapleton Council and passed to initiate a Master Fire plan using the Town of Minto and Township of Mapleton resources. A committee comprising of 2 Firefighters from each station, 2 members of the Community, both Deputy Chiefs and the Fire Chief was formed, with Assistant Chief Callise Loos from Minto acting as the facilitator. Aly Cripps from the Mapleton office also assisted with administrative support. Minto Fire Chief Chris Harrow also offered input into this initiative.

PREVIOUS PERTINENT REPORTS:

Fire/Rescue Report FR2019-03
Resolution 2019-06-19

DISCUSSION:

The Master Fire plan committee are presenting ____ recommendations for Mapleton Council consideration. These recommendations cover many aspects of the department including administration & communication, public education, fire prevention, apparatus & equipment, training, fire suppression, health and wellness, shared services and IT & infrastructure.

CONSULTATION:

Surveys were conducted with all firefighters and results brought back to the committee. The results of the survey were analyzed by the committee and today's recommendations were formed.

FINANCIAL IMPLICATIONS:

Financial Implications will be determined upon approval of the 5 year recommendations. Costs will be indicated in each years budget. The cost of facilitating and compiling this plan will be invoiced by Town of Minto. Per diems will be offered to members of the committee.

SUMMARY:

The Fire Chief recommends that Township of Mapleton Council endorse the Master Fire Plan and Mapleton Fire/Rescue proceed with implementing the approved recommendations.

COMMUNICATION: N/A**STRATEGIC PLAN:**

Municipal Infrastructure:N/A

The Local Economy:N/A

Recreation:N/A

Municipal Administration:N/A

Financial Responsibility: Responsible use of Municipal tax funds protecting the best interest of the citizens of Mapleton.

Prepared By:
Rick Richardson CMMII
Fire Chief

Reviewed By:
Manny Baron
CAO

Attachments:

Master Fire Plan and Recommendations (see Oct. 22/19 delegation)

THE CORPORATION OF THE TOWNSHIP OF MAPLETON

FIRE REPORT FR2019-08

TO: Mayor Davidson and Members of Council
FROM: Fire Chief Rick Richardson CMMII
RE: Sharing Resources
DATE: October 22, 2019

RECOMMENDATION:

THAT Township of Mapleton Council receive Fire Report FR2019-08 dated October 22, 2019 regarding Sharing Resources;

AND FURTHER THAT Township of Mapleton waive the Fees for Fire Department functions noted below.

BACKGROUND:

Mapleton Fire/Rescue have provided services to the Township to promote Public Education and Fire Prevention during 2 yearly events and would like to add one information night at the PMD arena to all the firefighters within the organization and neighboring stations, if requested.

These events would include the annual Pancake breakfast/Fire Prevention Day held on October 19th, 2019 at the Moorefield Community Center. This event yearly brings out 500-600 residents to hear about fire prevention education, tour our Smoke house and raise money for a worthwhile local cause.

The second event would be an information night held on December 17th 2019 at PMD Community Center with speakers informing our members on Hoarding, patients with Autism, and Enbridge gas to assist us with gas leak emergencies.

Lastly would be the SafeKids Day that was an annual event until last year when through communication oversights, did not transpire. This day brings all the Grades 1 & 4 elementary students from Mapleton schools, private and public, to the arena for information regarding Public Health, Farm Safety, Fire safety, OPP and EMS awareness, and Bus safety. Bussing and snacks have been provided in the past and will be reviewed if this program continues.

PREVIOUS PERTINENT REPORTS:

This is the first known request for sharing resources between departments.

DISCUSSION:

Waiving of these fees would ensure continuation of these programs.

CONSULTATION:

Discussions have been ongoing with the Mapleton Safe Communities group and scheduling of these event dates have been confirmed as available from the Public Works administration.

FINANCIAL IMPLICATIONS:

The total sum of the fees waived would be

- 1) Pancake Breakfast \$500 for daily Moorefield Community Center
- 2) The department information night would be \$300/3 hours weeknight rate.
- 3) The Safe Kids Day full facility weekday rate of \$995.

All of these events would require minimum setup, tear down and staff duties, as most of the volunteers are providing these services.

SUMMARY:

I would recommend that Township of Mapleton Council approve this recommendation to waive the Fees for Fire Department functions noted above, to open the use of these facilities for inter-department, community use.

COMMUNICATION:

Approval of this report would require internal communications with Public Works and arena staff.

STRATEGIC PLAN:

Municipal Infrastructure: N/A

The Local Economy: N/A

Recreation: N/A

Municipal Administration: N/A

Financial Responsibility: Providing Public Safety information for the Community and firefighters with no property tax implications.

Prepared By:
Rick Richardson, CMMII
Fire Chief

Reviewed By:
Manny Baron
CAO

THE CORPORATION OF THE TOWNSHIP OF MAPLETON
PUBLIC WORKS REPORT PW2019-29

TO: Mayor Davidson and Members of Council
FROM: Kyle Davis, Risk Management Official
RE: Township of Mapleton Source Protection Annual Reports
DATE: October 22, 2019

RECOMMENDATION:

THAT Township of Mapleton Council receive Source Water Protection Report PW2019-29 dated October 22, 2019 regarding Updates to the Wellington County Chapter of the Grand River Source Protection Plan;

AND THAT Township of Mapleton Council hereby provides a Municipal Resolution in support of the proposed revisions to the Wellington County Chapters of the Grand River Source Protection Plan and Assessment Report to the Grand River Source Protection Authority.

BACKGROUND:

The Township of Mapleton is subject to two Source Protection Plans, however, both of its drinking water systems for Drayton and Moorefield are wholly contained within the Lake Erie Source Protection Region and subject to the Grand River Source Protection Plan. The Grand River Source Protection Plan came into effect on July 1, 2016.

Following the Lake Erie Source Protection Committee meeting on October 3, 2019, the Grand River Source Protection Authority initiated pre-consultation with affected municipalities, provincial ministries and other implementing bodies on proposed changes to the Wellington County Chapters of the Grand River Source Protection Plan and Assessment Report. Attachment 1 provides the pre-consultation notice dated October 7, 2019 including draft, updated policy applicability maps for Wellington County and proposed policy changes. Attachment 2 provides the draft Assessment Report and draft Source Protection Plan chapters.

The proposed changes are a locally initiated amendment (initiated by the Source Protection Authority / Source Protection Committee and the municipalities) under Section 34 of the Clean Water Act. That Section of the Clean Water Act requires Council resolutions from affected municipalities prior to public consultation. A municipality may be considered “affected” if it is located within a geographic area related to the amendments, and / or the municipality is responsible for taking actions or otherwise implementing source protection policies related to the

amendments. Seven of the eight Wellington County municipalities are considered affected by the proposed changes including the Township of Mapleton and the County of Wellington. Council resolutions will be required from all seven affected municipalities.

Public consultation on this amendment is scheduled for January 6th until February 19, 2019 depending on the receipt of Council resolutions. The Source Protection Committee may also decide to proceed with public consultation in advance of all Council resolutions being received.

PREVIOUS PERTINENT REPORTS:

SWP2019-01 – March 26, 2019

DISCUSSION:

Updates to the Wellington Chapter of the Grand River Assessment Report

The proposed revisions include mapping and text changes within the Wellington County Chapter (Chapter 6). The only revisions that apply to the Township of Mapleton are:

- Updates to the methodology, terminology and typographical error updates or corrections for all municipalities.

The majority of the revisions apply to the Townships of Guelph / Eramosa and Centre Wellington.

Updates to the Wellington Chapter of the Grand River Source Protection Plan

The proposed revisions include mapping and text changes within the Wellington County Chapter (Chapter 7). The full text of the proposed policy changes are provided in Attachment 1 and 2. The proposed policy changes were completed by Wellington Source Water Protection and County staff, in consultation with municipal and GRCA staff.

There are a large number of policy changes contained in this update, however, the majority do not, currently, apply to the Township of Mapleton. This is because the majority of the policy changes are related to chloride or road salt and are due to the new Chloride Issue Contributing Areas in Centre Wellington and Puslinch. An issue contributing area is delineated for municipal wells when a water quality parameter, such as chloride, is increasing over time in the well or exceeds provincial standards or objectives. This situation is not occurring, currently, in the Township of Mapleton.

Although, the chloride policies do not apply, currently, within the Township of Mapleton, it is possible the policies may apply in the future through changes to the

Provincial thresholds related to road salt. Due to this possibility, the chloride policies are summarized below for Council's information. In addition to the policy changes related to road salt and the chloride ICAs, other policies were amended to address implementation challenges or changes to provincial guidance.

The policy revisions that currently apply to the Township include:

- Updates to policy text to align with policies from neighbouring Source Protection Regions to ensure consistency in implementation across the County. This includes edits to the Risk Management Official written direction policy that provides guidance on how planning and building applications are screened for review pursuant to the Clean Water Act. This policy WC-CW-1.3 is on page 4 of Attachment 1.
- Revisions to policies related to application and storage of manure, application and storage of fertilizer, livestock, and septic systems to remove reference to land being phased in under the Nutrient Management Act. This removes a policy gap and implementation challenge where the current policy only applied to portions of farms that were phased in. Note that agricultural policies only apply within vulnerability score 10 or within a Nitrate ICA. These policies start on page 7 of Attachment 1 with Policy WC-CW-4.2.
- Inclusion of a minimum 25 litre threshold to require risk management plans for Dense Non- Aqueous Phase Liquid (DNAPL) storage and handling (policies WC-CW-16.1 and 16.3). Currently, risk management plans are required for any quantity in industrial, institutional, commercial and agricultural land uses. This change was proposed to introduce consistency with other County Source Protection Plans (Maitland and Saugeen) and to allow some flexibility for agricultural properties where quantities stored are similar to residential properties. Currently, residential properties are managed through education policies and under this proposal, quantities under 25 litres, at the other referenced land uses, would also be managed through education policies. These policies start on page 12 of Attachment 1 with Policy WC-CW-16.1.

At the October 3, 2019 Lake Erie Source Protection Committee, some members commented that the 25 litre threshold seemed high for locations within 100 metres of municipal wells or in high vulnerability scoring. In response to these comments, Wellington Source Water Protection and County staff are considering retaining the requirement for any quantity of DNAPLs to require a risk management plan within 100 metres of municipal wells or within a vulnerability score of 10. It should be noted that there are no changes proposed to the current policy that prohibits future handling or storage of DNAPLs within 100 metres of a municipal well (WC-CW-16.2).

The remaining policy changes in this update do not currently apply to the Township. Since the policy changes, however, could apply to the Township in the future, a summary of the changes is provided below.

The proposed policies that currently don't apply to the Township include:

- Prohibitions for uncovered road salt storage in any quantity and covered road salt storage in quantities greater than 100 kilograms within 100 metres of municipal wells.
- Prohibition for large quantities of snow storage (typically greater than one hectare) within 100 metres of municipal wells.
- Requirement for risk management plans for road salt storage, road salt application and snow storage within the ICA. Properties must meet certain thresholds related to parking lot / hard surface area (greater than 200 square metres) and land use (residential use less than four units are exempt).
- Land use planning policies to encourage future development to be designed following best management practices for road salt storage, road salt application, snow storage and stormwater management to minimize sodium and chloride infiltration to groundwater.
- Inclusion of new definitions for stormwater management facility, salt application area, and salt.
- Addition of a new policy (WC-MC-3.8) to manage existing and new stormwater management facilities where chloride could leach into groundwater.
- Policies related to municipal road maintenance and design including updates to existing Salt Management Plans as required.
- Policies related to private well maintenance and decommissioning where poorly maintained wells may become a transport pathway for chloride to enter the groundwater.
- Education policies to encourage best management practices for road salt storage, road salt application and snow storage for all land uses including single family residential.
- Update to monitoring policy WC-MC-1.14 to include Well F1 in Fergus and Station Street Wells 1 and 2 in Guelph/Eramosa.

- Addition of a clarification in the current prohibition policy for new sewage treatment plants (policy WC-MC-3.4) to ensure existing plants are not affected.
- Update to contaminated sites policy WC-NB-1.18 to reduce the meeting frequency from six months to once every calendar year.
- Removal of Sodium and Chloride ICA from Education and Outreach policy for septic systems and holding tanks. This change is in response to changes to provincial requirements.
- Addition of Nitrate ICA to risk management plan or septic inspection policies related to application and storage of manure, application and storage of fertilizer, livestock, and septic systems to ensure consistency with Non-Agricultural Source Material (NASM) policies and policies in neighbouring source protection plans (CTC). Previously these activities were addressed through education and outreach policies.

If approved by the Province, the Assessment Report and Source Protection Plan changes would not be in legal effect until, at the earliest, Fall 2020. The Grand River Source Protection Plan outlines the timelines for meeting the new requirements (Policy WC-CW-1.1.2). The timelines vary, depending on the requirement, with most being multiple years from the effective date. Risk Management Plan implementation remains at the discretion of the Risk Management Official.

Next Steps

The purpose of this report is to provide Council the opportunity to review and consider the proposed changes to the Wellington County Chapters of the Grand River Source Protection Plan and Assessment Report and to provide comments. The proposed changes are based on common and best practice in other jurisdictions. In addition to comments received during the report's presentation, comments can be directed, through the Clerk, to the Township Risk Management Official, Kyle Davis. Although the pre-consultation notice indicates a date of November 12, 2019 for comments and November 29, 2019 for Council resolutions, GRCA staff have indicated that comments can be provided along with the Council resolutions. GRCA staff have also indicated that the November 29, 2019 date for Council resolutions is flexible and is only intended as a guide. The Lake Erie Source Protection Committee is scheduled to receive an update on these proposed changes on December 12, 2019 and to make a decision on whether to begin public consultation in January 2020. A resolution is attached to the report for Council's consideration.

CONSULTATION:

Director of Public Works
County Planning Department

FINANCIAL IMPLICATIONS:

Current staff and financial resources

It should be noted, if there are changes to the Provincial thresholds related to road salt in the future, implementation costs may increase at that time.

SUMMARY:

The purpose of this report is to provide Council the opportunity to review and consider the proposed changes to the Wellington County Chapters of the Grand River Source Protection Plan and Assessment Report and to provide comments. The proposed changes are based on common and best practice in other jurisdictions. The changes that currently affect the Township include proposed policy changes related to Risk Management Official review of planning and building applications, wording changes in a number of agricultural policies and the introduction of 25 litre threshold for regulating chemical storage and handling for a specific class of chemicals (dense non-aqueous phase liquids). A resolution is attached for Council's consideration.

COMMUNICATION:

Council Agenda Packages
Public Consultation Period (managed by the GRCA) - January 6th until February 19, 2019

Prepared By:
Kyle Davis
Risk Management Official

Reviewed By:
Manny Baron
CAO

Attachments:

Attachment 1 – October 7, 2019 Pre-consultation Notice – Draft Updated Grand River Source Protection Plan

Attachment 2 – Draft, Updated Wellington County Chapters of Grand River Source Protection Plan and Assessment Report



October 7, 2019

Notice of Pre-Consultation – Draft Updated Grand River Source Protection Plan

You are being provided this notice and information because your ministry/municipality may be affected by recent updates to water quality Wellhead Protection Areas (WHPA) and/or are responsible for the implementation of source protection plan policies.

The Ministry of the Environment, Conservation and Parks (MECP) approved the first iteration of the Grand River Assessment Report and Source Protection Plan on November 26, 2015. Since approval, additional technical studies have been completed in the Township of Centre Wellington and the Township of Guelph/Eramosa. These studies included WHPA updates for the Rockwood and Hamilton Drive municipal supply systems and a WHPA update and delineation of Issue Contributing Areas (ICAs) for the Centre Wellington municipal supply system.

New water quality policies have been developed and additional revisions have been made to existing policies (**Appendix A**) related to:

- The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage
- The application of road salt
- The handling and storage of road salt
- The storage of snow

The Grand River Source Protection Authority is the lead authority in the Lake Erie Source Protection Region and as such along with the Lake Erie Region Source Protection Committee initiated an update to the Grand River Source Protection Plan and Assessment Report under s.34 of the *Clean Water Act, 2006*.

The draft updated policy applicability maps for Wellington County are included in **Appendix B**.

Please review the source protection plan updates as they relate to your requirements for implementation and provide any comments by **November 12, 2019** to:

Martin Keller
Source Protection Program Manager
Lake Erie Source Protection Region
400 Clyde Rd., Box 729, Cambridge, ON N1R 5W6
519-620-7595
mkeller@grandriver.ca

The Grand River Source Protection Authority has been working on this update closely with Wellington Source Water Protection, a partnership of the Wellington County municipalities. Wellington Source Water Protection, County and local municipal staff have been involved in the drafting of the enclosed changes. For the Wellington County municipalities, Kyle Davis, Risk Management Official (RMO) will be in contact shortly to discuss staff reports and presentations to Council.

If you would like to discuss any of the material provided in this notice, please contact Martin Keller, Source Protection Program Manager, at the phone number or email listed above.



Municipal Endorsement and Public Consultation

As required by S.34(3) of the Clean Water Act, 2006, the Grand River Source Protection Authority must obtain municipal council resolutions from Wellington County, Township of Puslinch, Township of Guelph/Eramosa, Township of Centre Wellington, Township of Mapleton, Township of Wellington North and the Town of Erin prior to formal public consultation.

The Grand River Source Protection Authority is requesting resolutions from the Councils of Wellington County, Township of Puslinch, Township of Guelph/Eramosa, Township of Centre Wellington, Township of Mapleton, Township of Wellington North and the Town of Erin by November 29, 2019, if possible. The resolutions can be sent to Martin Keller at the address above.

The public consultation period on the Draft Updated Grand River Source Protection Plan is scheduled to start on Monday, January 6, 2020, and closes on Wednesday, February 19, 2020.

Following the public consultation period, the Lake Erie Region Source Protection Committee will consider any comments received at their meeting on March 12, 2020 and direct staff to revise the Draft Updated Grand River Source Protection Plan, as necessary. The revised Draft Updated Plan will then be released to the Grand River Source Protection Authority for submission to the MECP in the spring 2020.

Sincerely,

A handwritten signature in black ink, appearing to read "M. Keller".

Source Protection Program Manager
Lake Erie Source Protection Region

**Appendix A:
Draft updated policy amendments for Wellington County**

Policy Number	Source Protection Plan Policies within the County of Wellington
Transitional Policies and Implementation Timing	
WC-CW-1.1.1 <i>Implement. & Timing</i>	This source protection plan came into effect on July 1, 2016, the effective date specified in the Notice of Approval posted on the Environmental Registry of Ontario. Amendments to the Source Protection Plan are permitted in accordance with the <i>Clean Water Act, 2006</i> , and the General Regulations. The effective date for amended policies, only including but not limited to the addition of new drinking water threats and regulated areas and activities, is the date of posting of the Notice of Approval of the amendment provisions on the Environmental Registry of Ontario.
Uses and Areas Designated as Restricted Land Use	
WC-CW-1.3 <i>Part IV- RLU</i>	<p>In accordance with Section 59 of the <i>Clean Water Act, 2006</i>, all land uses, except solely residential uses, where significant drinking water threat activities have been designated for the purposes of Sections 57 and 58 of the <i>Clean Water Act, 2006</i> are hereby designated as Restricted Land Uses and a written notice from the Risk Management Official shall be required prior to approval of any Building Permit, <i>Planning Act</i> or <i>Condominium Act</i> application.</p> <p>Despite the above policy, a Risk Management Official may issue written direction specifying the situations under which a planning authority or Chief Building Official may be permitted to make the determination that a site specific land use is, or is not, designated for the purposes of section 59. Where such direction has been issued, a site specific land use that is the subject of an application for approval under the <i>Planning Act</i> or for a permit under the <i>Building Code Act</i> is not designated for the purposes of Section 59, provided that the planning authority or Chief Building Official, as applicable, is satisfied that:</p> <ol style="list-style-type: none"> a. The application complies with the written direction issued by the Risk Management Official; and b. The applicant has demonstrated that a significant drinking water threat activity designated for the purposes of section 57 or 58 will not be engaged in, or will not be affected by the application. <p>Where the Risk Management Official has provided written direction designating a land use for the purpose of section 59, a written Notice from the Risk Management Official shall be required prior to approval of any Building Permit under the <i>Building Code Act, 1992</i> as amended, in addition to <i>Planning Act</i> and <i>Condominium Act</i> applications in accordance with Section 59 of the <i>Clean Water Act, 2006</i>.</p>
Annual Reporting	
WC-CW-1.9 <i>Monitoring</i>	<p>The municipality and / or County shall provide a report to the Source Protection Authority, by February 1st of each year, summarizing the actions taken to implement the Source Protection Plan policies, where specifically required by the policies.</p> <p>Where the municipality and / or County is required to implement education and outreach programs as the primary means of managing the risk associated with significant drinking water threats, the report must indicate, at minimum additional details on how the significant drinking water threat was managed and/or ceased to be significant.</p>

Policy Number	Source Protection Plan Policies within the County of Wellington
WC-CW-1.14 <i>Monitoring</i>	The municipality shall provide a report to the Source Protection Authority, by February 1 st , of each year, for the wells within its jurisdiction. This report shall summarize the actions taken the previous year to assess the chloride concentrations related to Municipal Well E3 in Elora and Municipal Well F1 in Fergus and / or sodium and chloride concentrations related to Station Street Wells 1 and 2 in Rockwood, including recommendations for further study or monitoring, if required. The report shall include a conclusion on whether the chloride concentrations should be a described issue in accordance with the Clean Water Act and technical rules.
Conditions	
WC-NB-1.18 <i>Existing Specify Action Condition Sites Identified Monitoring</i>	To address conditions resulting from past activities that are significant drinking water threats the Ministry of Environment, Conservation and Parks and the County and/or municipality: <ol style="list-style-type: none"> Shall meet at a minimum frequency of once a calendar year for the purpose of mutually sharing information on Condition sites; Should mutually share information related, as appropriate, to technical investigations or remediation, technical data, actions taken by Ministry of Environment, Conservation and Parks or by the County and/or municipality, inspections, other relevant information; and Should develop an Information-Sharing Process document including requirements, if any, for meeting agendas, participants, the nature and format for the types of information to be mutually shared, and the Information-Sharing Process document should be developed within six months from the date the Source Protection Plan takes effect.

Policy Number	Policies Addressing Prescribed Drinking Water Threats within the County of Wellington
2. Establishment, Operation or Maintenance of a System That Collects, Stores, Transmits, Treats or Disposes of Sewage	
Sewage System or Sewage Works – Onsite Sewage Systems and Onsite Sewage System Holding Tank	
WC-CW-3.1 <i>Existing/Future Specify Action WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10; ICA (NIT)</i>	To ensure existing or new onsite sewage systems and onsite holding tanks with a design flow of less than or equal to 10,000 Litres per day and subject to approval under the Ontario Building Code Act or the Ontario Water Resources Act within a WHPA-A or WHPA-B with a vulnerability score equal to ten (10) or IPZ-1 or Nitrate ICA, cease to be or never become a significant drinking water threat the municipality shall implement an on-site sewage system maintenance inspection program. Inspections shall be prioritized based on the proximity to the drinking water supply.
WC-CW-3.2 <i>Existing/Future Education & Outreach WHPA-A-v.10;</i>	To ensure existing or new onsite sewage systems and onsite holding tanks with a design flow of less than or equal to 10,000 Litres per day and subject to approval under the Ontario Building Code Act or the Ontario Water Resources Act within a WHPA-A or B with a vulnerability score equal to ten (10), IPZ-1, or Nitrate ICA cease to be or never become a significant drinking water threat, the municipality

Policy Number	Policies Addressing Prescribed Drinking Water Threats within the County of Wellington
<p><i>WHPA-B-v.10; IPZ-1-v.10; ICA (NIT)</i></p>	<p>shall develop and implement an education initiative about small onsite sewage systems and holding tanks. The education program shall encourage the use of beneficial management practices that reduce the impact on groundwater.</p>
<p>Sewage System or Sewage Works – Sewage Works Storage - Treatment or Holding Tanks Sewage System or Sewage Works - Sewage Treatment Plant Effluent Discharges (Includes Lagoons) Sewage System or Sewage Works – Sewage Treatment Plant By-Pass Discharge to Surface Water</p>	
<p>WC-MC-3.4</p> <p><i>Future Prescribed Instr. WHPA-A-v.10; WHPA-B-v.10; WHPA-B-v.8; WHPA-C-v.8; IPZ-1_v.10; ICA(NIT/TCE/CHL)</i></p>	<p>To ensure the establishment of new sewage treatment plants with effluent and/or bypass discharge or new sewage treatment plants with sewage storage tanks never become a significant drinking water threat, where these activities would be a significant drinking water threat, the Ministry of the Environment, Conservation and Parks shall prohibit these activities within the Environmental Compliance Approvals process. This policy does not apply to the expansion, modification, optimization, re-rating, operation, maintenance or replacement of existing sewage treatment plants.</p>
<p>Sewage System or Sewage Works – Sanitary Sewers and Related Pipes</p>	
<p>WC-MC-3.5</p> <p><i>Existing/ Future Prescribed Instr. WHPA-A-v.10; WHPA-B-v.10; IPZ-1_v.10; ICA(NIT)</i></p>	<p>For any existing or new sanitary sewers and related pipes, industrial effluent discharge and /or existing sewage treatment plants, where these activities are, or would be, a significant drinking water threat, the Ministry of the Environment, Conservation and Parks shall review and, if necessary, amend Environmental Compliance Approvals to incorporate terms and conditions that, when implemented, will ensure that these activities cease to be or never become a significant drinking water threat.</p> <p>The terms and conditions may include requirements for regular maintenance, monitoring and inspections conducted by the proponent.</p>
<p>Sewage System or Sewage Works – Discharge from a Stormwater Management Facility</p>	
<p>WC-MC-3.7</p> <p><i>Existing/Future Prescribed Instr. WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10; ICA(NIT/CHL)</i></p>	<p>For any existing or new stormwater management facility that discharges stormwater, where this activity is, or would be, a significant drinking water threat, as prescribed by the <i>Clean Water Act, 2006</i>, the Ministry of the Environment, Conservation and Parks shall review and, if necessary, amend Environmental Compliance Approvals to incorporate terms and conditions that, when implemented, will ensure that this activity ceases to be or never becomes a significant drinking water threat.</p> <p>The terms and conditions may include requirements for regular maintenance, monitoring and inspections conducted by the proponent.</p>
<p>WC-CW-3.8</p> <p><i>Existing/Future Part IV – RMP ICA (CHL)</i></p>	<p>To ensure any existing or new stormwater management facility ceases to be or never becomes a significant drinking water, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i>, and a Risk Management Plan shall be required where the following applies:</p> <ul style="list-style-type: none"> a) where the activity is or would be a significant drinking water threat b) the stormwater management facility is located within a Chloride Issues Contributing Area; and

Policy Number	Policies Addressing Prescribed Drinking Water Threats within the County of Wellington
	<p>c) the stormwater management facility does not require an Environmental Compliance Approval.</p>
3. The Application of Agricultural Source Material to Land	
<p>WC-CW-4.2</p> <p><i>Existing/Future Part IV-RMP WHPA-B-v.10 ICA (NIT)</i></p>	<p>To ensure the existing or future application of agricultural source material to land within a WHPA-B with a vulnerability score equal to ten (10), or a Nitrate ICA outside of a WHPA-A, ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.</p> <p>The requirements of the Risk Management Plan will generally be based on the requirements of a Nutrient Management Plan and/or strategy under the <i>Nutrient Management Act</i>, but may also include any modifications or additional requirements deemed necessary or appropriate by the Risk Management Official.</p>
4. The Storage of Agricultural Source Material	
<p>WC-CW-5.2</p> <p><i>a) Existing Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10</i></p> <p><i>b) Future Part IV-RMP WHPA-B-v.10 ICA (NIT)</i></p>	<p>To ensure:</p> <p>a. any existing storage of agricultural source material on lands where this activity is a significant drinking water threat, within a WHPA-A or WHPA-B with a vulnerability score equal to ten (10) or IPZ-1 or a Nitrate ICA; or</p> <p>b. the future storage of agricultural source material on lands within a WHPA-B with a vulnerability score equal to ten (10) or a Nitrate ICA outside of a WHPA-A,</p> <p>ceases to be or never becomes a significant drinking water threat, this activity is designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan is required. The requirements of the Risk Management Plan will generally be based on the requirements of a nutrient management plan and/or strategy under the <i>Nutrient Management Act</i>, but may also include any modifications or additional requirements deemed necessary or appropriate by the Risk Management Official.</p>
8. The Application of Commercial Fertilizer to Land	
<p>WC-CW-8.3.</p> <p><i>Existing/Future Part IV-RMP WHPA-B-v.10 ICA (NIT)</i></p>	<p>To ensure the existing or future application of commercial fertilizer to non-agricultural lands (excluding an individual for personal or family use) or agricultural land within a WHPA-B with a vulnerability score equal to ten (10) or a Nitrate ICA outside of a WHPA-A ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.</p>
9. The Handling and Storage of Commercial Fertilizer	
<p>WC-CW-9.1</p> <p><i>a) Existing Part IV-RMP WHPA-A-v.10;</i></p>	<p>To ensure:</p> <p>a. any existing handling and storage of more than 2,500 kilograms of commercial fertilizer as defined in O. Reg. 267/03 within a WHPA-A or WHPA-B with a vulnerability score equal to ten (10), an IPZ-1, or a Nitrate</p>

Policy Number	Policies Addressing Prescribed Drinking Water Threats within the County of Wellington
<p>WHPA-B-v.10; IPZ-1-v.10; ICA (NIT)</p> <p>b) Future Part IV-RMP WHPA-B-v.10 ICA (NIT)</p>	<p>ICA or</p> <p>b. the future handling and storage of more than 2,500 kilograms of commercial fertilizer as defined in O. Reg. 267/03 within a WHPA-B with a vulnerability score equal to ten (10) a Nitrate ICA outside of a WHPA-A,</p> <p>ceases to be or never becomes a significant drinking water threat, this activity is designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan is required.</p>
<p>2. Establishment, Operation or Maintenance of a System That Collects, Stores, Transmits, Treats or Disposes of Sewage</p> <p>12. The Application of Road Salt</p> <p>13. The Handling and Storage of Road Salt</p> <p>14. The Storage of Snow</p>	
<p>WC-MC-12.01</p> <p>Future Land Use Planning ICA (CHL)</p>	<p>This policy applies to all land uses except residential consisting of four units or fewer and only where the salt application area is equal to or greater than 200 square metres or 8 parking spaces. The County of Wellington and Municipality shall generally require such future development to be designed and maintained using best management practices in snow storage, salt storage and application and storm water management, to ensure these activities never become a significant drinking water threat. Further, the County shall provide appropriate Official Plan policies and study requirements for complete applications for new developments within the Chloride ICA.</p> <p>To ensure the establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage, the application, handling or storage of road salt, and the storage of snow never become a significant drinking water threat,</p> <p>a) the County of Wellington and Municipality shall generally require future development to be designed and maintained using best management practices addressing these activities, and</p> <p>b) the County shall provide appropriate Official Plan policies and study requirements for complete applications for new developments within the Chloride ICA,</p> <p>if the following applies:</p> <p>i. where the activity would be a significant drinking water threat,</p> <p>ii. in an area with any land use except residential consisting of four units or fewer, and</p> <p>iii. where the salt application area is equal to or greater than 200 square metres or 8 parking spaces</p>
<p>12. The Application of Road Salt</p> <p>13. The Handling and Storage of Road Salt</p>	
<p>WC-CW-12.02</p>	<p>To ensure the application, handling and storage of road salt never becomes or</p>

Policy Number	Policies Addressing Prescribed Drinking Water Threats within the County of Wellington
<p>Existing/Future Specify Action WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10; ICA (CHL)</p>	<p>ceases to be a significant drinking water threat, where these activities are or would be significant drinking water threats, the municipality should review available training programs related to salt application and storage and ensure that adequate training opportunities are available to train municipal staff and private contractors on best management practices related to salt application and storage.</p>
12. The Application of Road Salt	
<p>WC-CW-12.1</p> <p>Existing/Future Specify Action ICA (CHL)</p>	<p>Where a Chloride ICA has been delineated, or where salt application is or would be a significant drinking water threat, the municipality and / or County of Wellington shall review and, if necessary, revise or issue new Salt Management Plans for the application of salt on roadways in all Wellhead Protection Areas.</p> <p>The Salt Management Plan shall include, as a minimum, measures to ensure application rate, timing and location reduce the potential for salt-related surface water run-off and groundwater infiltration and meet the objectives of Environment Canada's Code of Practice for Environmental Management of Road Salts including the salt vulnerable area mapping to include areas where significant threats can occur. Where an RMP applies to municipal salt application, the Salt Management Plan shall be incorporated into the RMP.</p>
<p>WC-CW-12.2</p> <p>Existing/Future Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10; ICA (CHL)</p>	<p>To ensure any existing or new application of road salt ceases to be or never becomes a significant drinking water, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i>, and a Risk Management Plan shall be required where the following applies:</p> <ol style="list-style-type: none"> a. the activity is or would be a significant drinking water threat; b. salt is or could be applied to the property; c. the salt application area is equal to or greater than 200 square metres or 8 parking spots; and d. the property is used for any land uses except residential consisting of four units or fewer. <p>Notwithstanding the above, a Risk Management Plan will also be required for any municipal properties where the activity is or would be a significant drinking water threat.</p>
<p>WC-CW/NB-12.3</p> <p>Existing/Future Specify Action WHPA-A-v.10; WHPA-B-v.10; ICA (CHL)</p>	<p>The County, municipalities and the Ministry of Transportation should enhance road design measures for modifying, widening or expanding existing roads and / or designing / developing new roads to minimize the impact from any application of salt on roadways related to the development of new roads in the following areas:</p> <ol style="list-style-type: none"> a. aIn WHPA- A and WHPA-B where the vulnerability is equal to ten (10); or b. bWhere a Chloride Issue has been identified. <p>The assessment should make recommendation for enhanced measures to protect drinking water sources to be carried through detailed design and construction of the road.</p>

Policy Number	Policies Addressing Prescribed Drinking Water Threats within the County of Wellington
<p>WC-NB-12.4</p> <p>Existing/Future Specify Action: WHPA-A-v.10; WHPA-B-v.10; ICA (CHL)</p>	<p>For existing or future transport pathways within a Chloride ICA, the Ministry of Environment, Conservation and Parks should prioritize inspections and abatement activities related to well maintenance and abandonment pursuant to Ontario Regulation 903, <i>Ontario Water Resources Act, 1990</i>.</p>
<p>WC-CW-12.5</p> <p>Existing/Future Specify Action: ICA (CHL)</p>	<p>For existing or future transport pathways within a Chloride ICA, the municipality shall review whether the transport pathways increase infiltration of chloride to the groundwater and what actions can be taken by the municipality to reduce the infiltration of chloride.</p> <p>Actions may include, but are not limited to, incorporating terms and conditions into Risk Management Plans, maintenance or removal of transport pathways, direction to other parties regarding maintenance or removal of transport pathways, reduction of salt application within the area of the transport pathway, and advocate with Ministry of Environment, Conservation and Parks or Ministry of Transportation for actions to reduce the infiltration of chloride or other measures as required.</p>
<p>WC-NB-12.6</p> <p>Existing/Future Specify Action: ICA (CHL)</p>	<p>Where a Chloride ICA has been delineated or where road salt application is or would be a significant drinking water threat, the Ministry of Transportation should review and, if necessary, revise or issue new Salt Management Plans for the application of salt on roadways in all Wellhead Protection Areas.</p> <p>The Salt Management Plan should include, as a minimum, measures to ensure application rate, timing and location reduce the potential for salt-related surface water run-off and groundwater infiltration and meet the objectives of Environment Canada's Code of Practice for Environmental Management of Road Salts including the salt vulnerable area mapping to include areas where significant threats can occur.</p>
<p>WC-CW-12.7</p> <p>Existing/Future Education & Outreach ICA (CHL)</p>	<p>To ensure any existing or new application of road salt ceases to be or never becomes a significant drinking water threat, where this activity is or would be a significant drinking water threat within a Chloride ICA, the municipality and / or the Public Health Unit shall develop and implement an education initiative addressing the application of road salt. The education program shall encourage the implementation of best management practices that form the core of the Smart About Salt or similar accreditation program to reduce the impact of winter de-icing activities.</p>
<p>13. The Handling and Storage of Road Salt</p>	
<p>WC-CW-13.1</p> <p>a) Existing Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10</p> <p>b) Future Part IV-RMP</p>	<p>To ensure:</p> <ol style="list-style-type: none"> any existing handling and storage of road salt outside of an ICA but within WHPA-A and WHPA-B with a vulnerability score of ten (10) or IPZ-1 with a vulnerability score of ten (10); or any new handling and storage of road salt within a WHPA-B with a vulnerability score equal to ten (10),

Policy Number	Policies Addressing Prescribed Drinking Water Threats within the County of Wellington
WHPA-B-v.10	ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.
WC-CW-13.2 Future Part IV-Prohibit WHPA-A-v.10; IPZ-1-v.10	To ensure any new handling and storage of road salt within a WHPA-A or IPZ-1 outside of an ICA, never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.
WC-CW-13.2.1 Existing/Future Part IV-Prohibit WHPA-A-v.10 within ICA (CHL)	<p>To ensure, within a WHPA-A and within a Chloride ICA that:</p> <ul style="list-style-type: none"> a. any existing or new handling and storage of road salt in any amount that is stored uncovered; or b. any new (future), handling and storage of road salt in covered storage in amounts greater than 100 kilograms, <p>ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.</p>
WC-CW-13.2.2 Existing/Future Part IV-RMP ICA (CHL) outside WHPA-A-v.10	<p>To ensure, within a Chloride ICA that:</p> <ul style="list-style-type: none"> a) any existing or new (future) handling and storage of road salt, outside of a WHPA-A, in any amount that is stored uncovered; or b) any existing or new (future) handling and storage of road salt, outside of a WHPA-A, in covered storage in amounts greater than 100 kilograms; or c) any existing or new (future) handling and storage of road salt, for a property that requires a salt application Risk Management Plan, in uncovered or covered storage of any amount; or d) any existing or new (future) handling and storage of road salt at a municipal property, in uncovered or covered storage of any amount; <p>ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.</p>
WC-CW-13.3 Existing/Future Education & Outreach ICA (CHL)	o ensure any existing or new handling and storage of road salt ceases to be or never becomes a significant drinking water threat, where this activity is a significant drinking water threat within a Chloride ICA, the municipality and / or the Public Health Unit shall develop and implement an education initiative about the handling and storage of road salt. The education program shall encourage the implementation of the best management practices that form the core of the Smart About Salt or similar accreditation program to reduce the impact of winter de-icing activities.
14. The Storage of Snow	
WC-CW-14.1	To ensure:

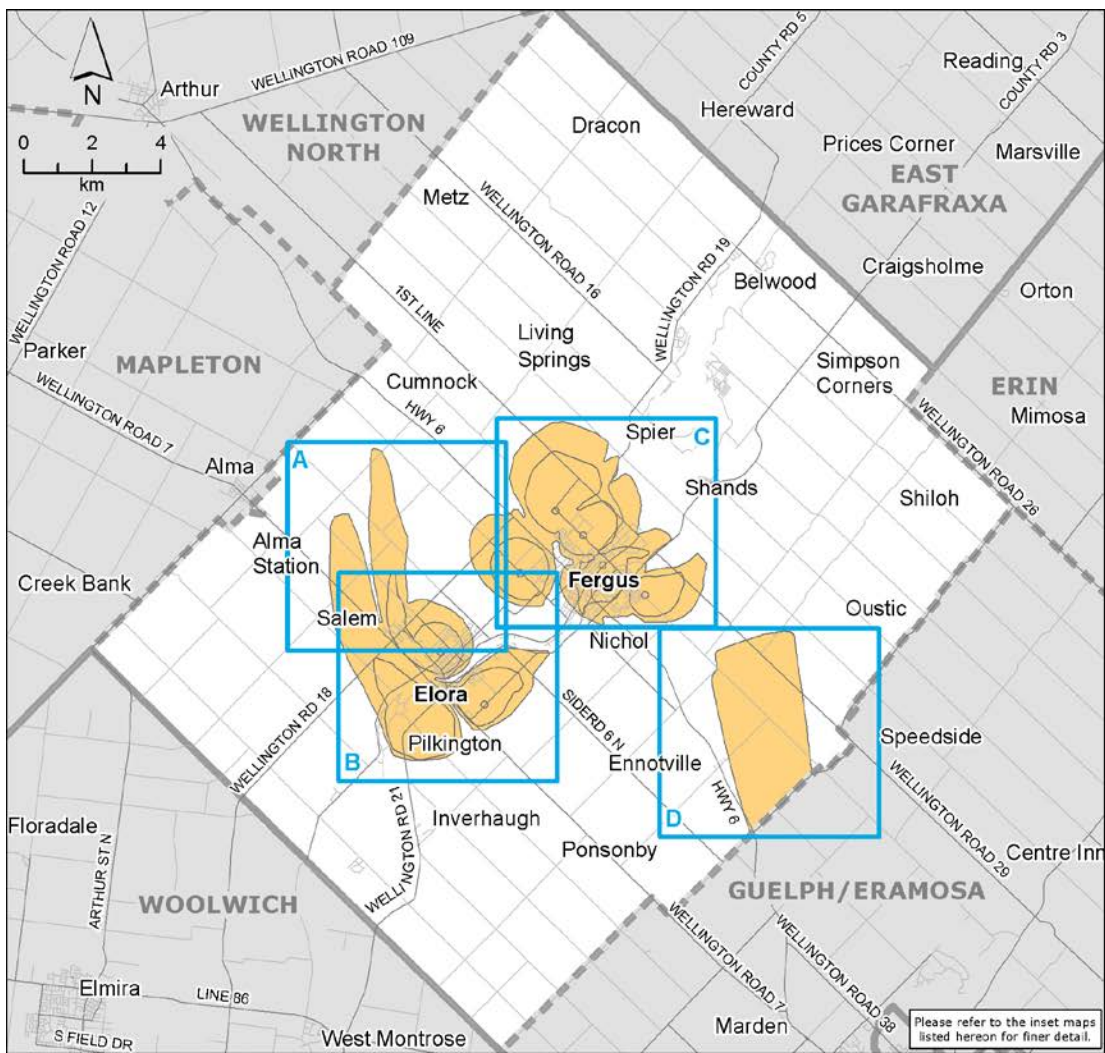
Policy Number	Policies Addressing Prescribed Drinking Water Threats within the County of Wellington
<p>Existing Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10 outside of ICA (CHL)</p> <p>Future Part IV-RMP WHPA-B-v.10 outside of ICA (CHL)</p>	<p>a. any existing snow storage outside of a Chloride ICA but within WHPA-A and WHPA-B with a vulnerability score of ten (10) or IPZ-1 with a vulnerability score of ten (10); or</p> <p>b. any new snow storage outside of a Chloride ICA but within a WHPA-B with a vulnerability score equal to ten (10),</p> <p>ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.</p>
<p>WC-CW-14.2</p> <p>Future Part IV-Prohibit WHPA-A-v.10; IPZ-1-v.10 outside of ICA (CHL)</p>	<p>To ensure any new snow storage within a WHPA-A or IPZ-1 outside of a Chloride ICA, never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.</p>
<p>WC-CW-14.3</p> <p>Existing/Future Education & Outreach WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10; ICA (NIT/CHL)</p>	<p>To ensure existing or new snow storage within a WHPA-A or B with a vulnerability score equal to ten (10), IPZ-1 with a vulnerability score equal to ten (10), or Nitrate or Chloride ICA cease to be or never become a significant drinking water threat, the municipality shall develop and implement an education initiative about snow storage. The education program shall encourage the use of best management practices that reduce the impact on groundwater.</p>
<p>WC-CW-14.4</p> <p>Future Part IV-Prohibit WHPA-A-v.10 within ICA (CHL)</p>	<p>To ensure any new, below grade snow storage greater than 0.01 hectare in area or at or above grade snow storage greater than 1 hectare in area within a WHPA-A in a Chloride ICA never becomes a significant drinking water threat this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.</p>
<p>WC-CW-14.5</p> <p>Existing/Future Part IV-RMP ICA (CHL)</p>	<p>To ensure any existing or new facility for snow storage within a Chloride ICA ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required where:</p> <ol style="list-style-type: none"> a prohibition policy does not apply; salt is or could be applied to the property; the salt application area is equal to or greater than 200 square metres or 8 parking spots; and the property is used for any land uses except residential consisting of four units or fewer.
<p>16. The Handling and Storage of a Dense Non-Aqueous Phase Liquid (DNAPL)</p>	
<p>WC-CW-16.1</p> <p>Existing Part IV-RMP WHPA-A/B/C;</p>	<p>To ensure any existing handling and storage of a dense non-aqueous phase liquid greater than 25 Litres, for industrial, commercial, institutional or agricultural purposes ceases to be a significant drinking water threat, where this activity is a significant drinking water threat, this activity is designated for the purpose of Section</p>

Policy Number	Policies Addressing Prescribed Drinking Water Threats within the County of Wellington
IPZ-1-v.10; ICA(TCE)	58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan is required.
WC-CW-16.3 Future Part IV-RMP WHPA-B/C; ICA(TCE)	To ensure any new handling and storage of a dense non-aqueous phase liquid greater than 25 Litres , for industrial, commercial, institutional or agricultural purposes within a WHPA-B, C or TCE ICA, never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.
21. The Use of Land as Livestock Grazing or Pasturing Land, an Outdoor Confinement Area or a Farm Animal Yard	
WC-CW-19.2 Existing/Future Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10 ICA (NIT)	To ensure a farm animal yard or an outdoor confinement area as defined in O. Reg. 267/03, for existing or new livestock operations within a WHPA-A or WHPA-B with a vulnerability score equal to ten (10) or IPZ-1 or a Nitrate ICA , cease to be or never become significant drinking water threats, where these activities are, or would be, significant drinking water threats, <ul style="list-style-type: none"> a. These activities shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required. b. The requirements of the Risk Management Plan will generally be based on the requirements of a nutrient management plan and/or strategy under the <i>Nutrient Management Act</i>, but may also include any modifications or additional requirements deemed necessary or appropriate by the Risk Management Official.

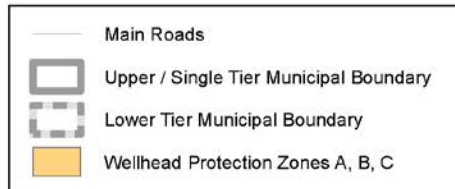


**Appendix B:
Draft updated policy applicability maps for Wellington County**

DRAFT UPDATED Schedule D: County of Wellington, Township of Centre Wellington, Index Map

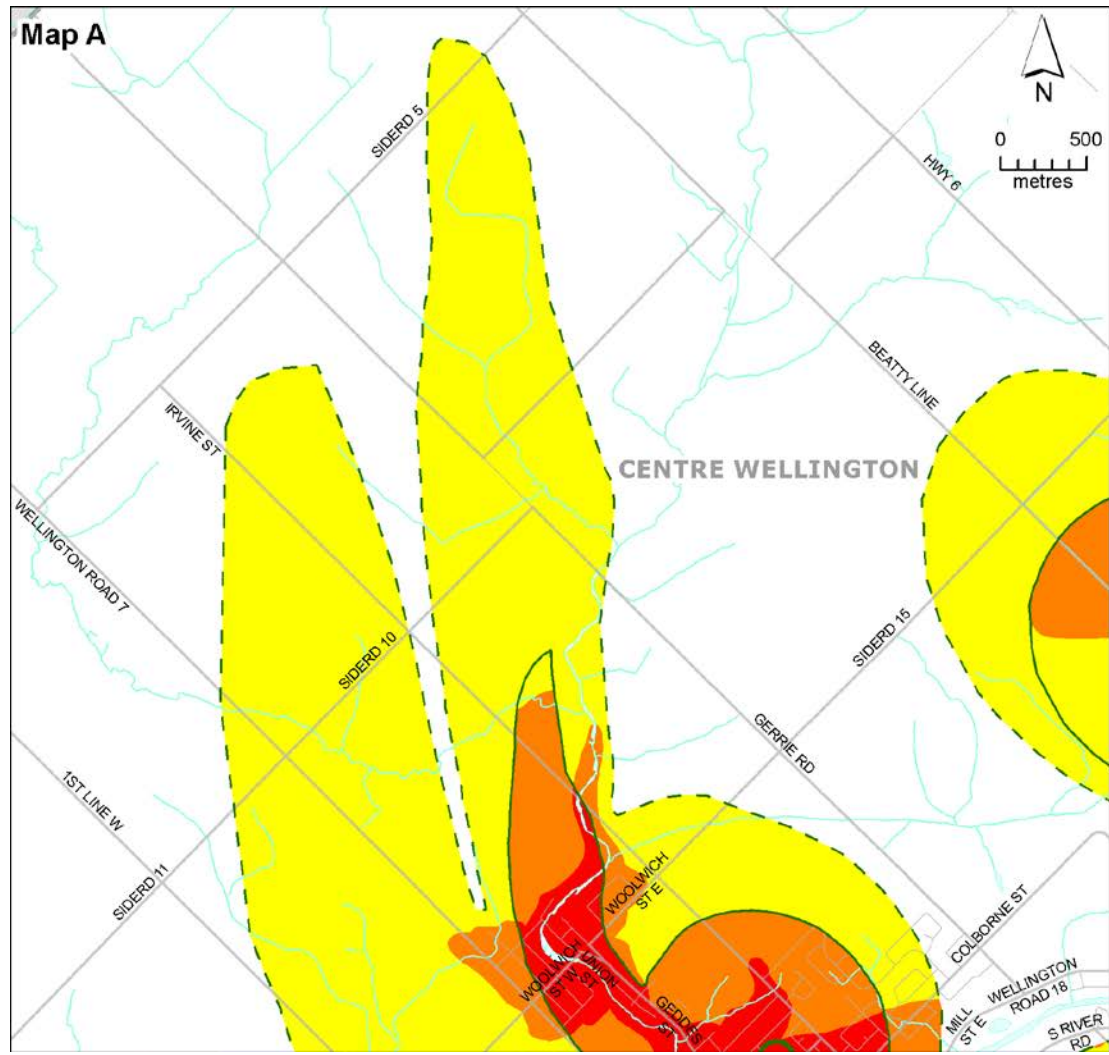


Significant Drinking Water
Threat Policy Applicability
Index Map -
Wellhead Protection Zones



1. Updated September 26, 2019
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
 3. This map is for illustrative purposes only. Information contained hereon is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

DRAFT UPDATED Schedule E: County of Wellington, Centre Wellington Well Supply, Map A



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	10	8	2,4,6
1. Waste Disposal	█		
2. Sewage Systems	█		
3, 4. Agricultural Source Material	█		
6, 7. Non-Agricultural Source Material*	█		
8, 9. Commercial Fertilizer*	█		
10, 11. Pesticide	█		
12, 13. Road Salt*	█		
14. Storage of Snow	█		
15. Fuel	█		
16. DNAPLs	█	█	█
17. Organic Solvents	█		
18. Aircraft Deicing	█		
21. Livestock Area	█		
22. Oil Pipelines	█		

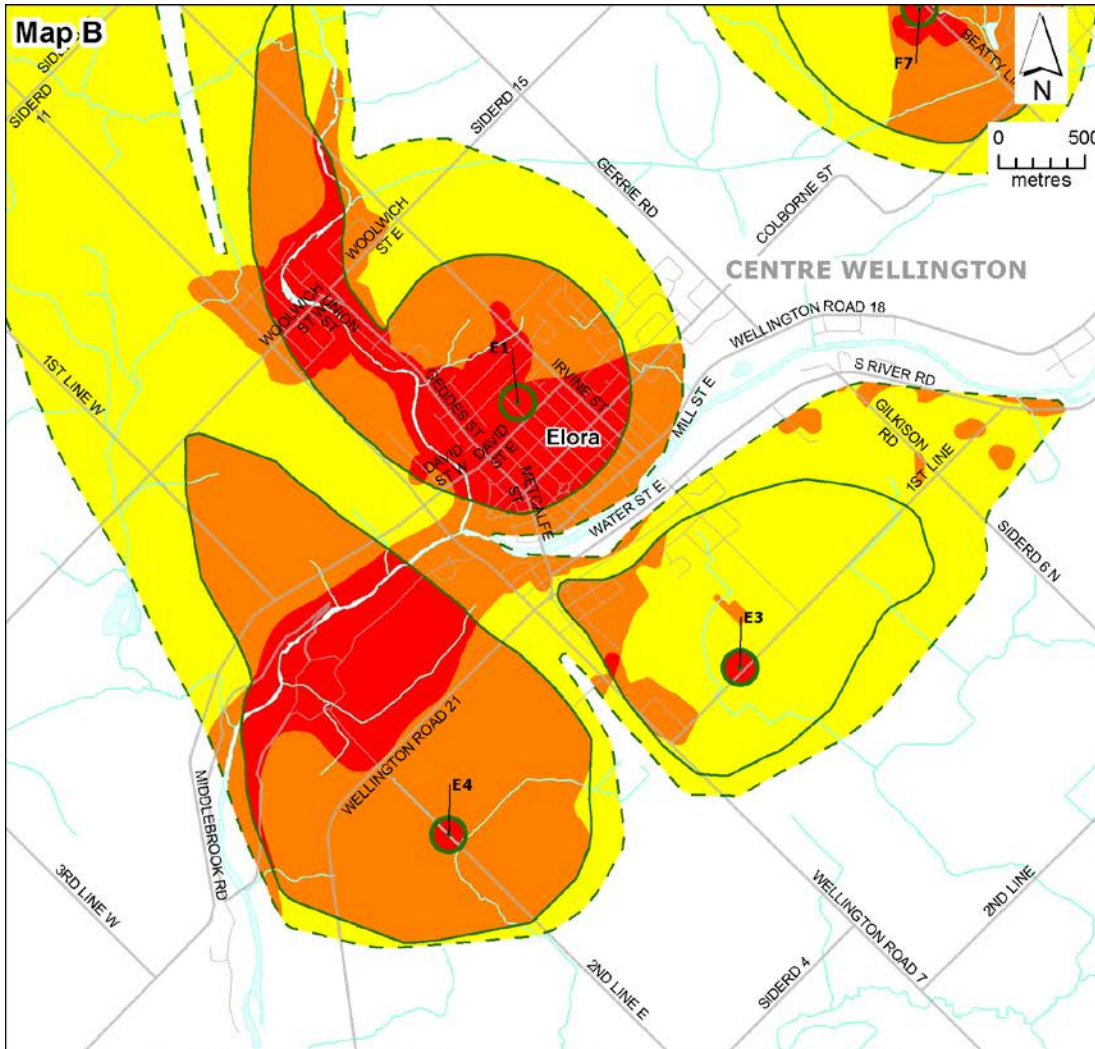
Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
*Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.

- Well
- Road
- ~ Minor River
- ~ Lake / Main River
- ▭ Wellington County Boundary
- ▭ Lower Tier Municipal Boundary
- Wellhead Protection Zones:**
- WHPA-A
- WHPA-B
- WHPA-C



1. Updated September 26, 2019
2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
3. This map is for illustrative purposes only. Information contained hereon is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

DRAFT UPDATED Schedule F: County of Wellington, Centre Wellington Well, Map B

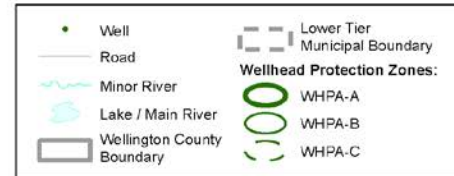


Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	10	8	2,4,6
2. Sewage Systems	10	8	2,4,6
3, 4. Agricultural Source Material	10	8	2,4,6
6, 7. Non-Agricultural Source Material*	10	8	2,4,6
8, 9. Commercial Fertilizer*	10	8	2,4,6
10, 11. Pesticide	10	8	2,4,6
12, 13. Road Salt*	10	8	2,4,6
14. Storage of Snow	10	8	2,4,6
15. Fuel	10	8	2,4,6
16. DNAPLs	10	8	2,4,6
17. Organic Solvents	10	8	2,4,6
18. Aircraft De-icing	10	8	2,4,6
21. Livestock Area	10	8	2,4,6
22. Oil Pipelines	10	8	2,4,6

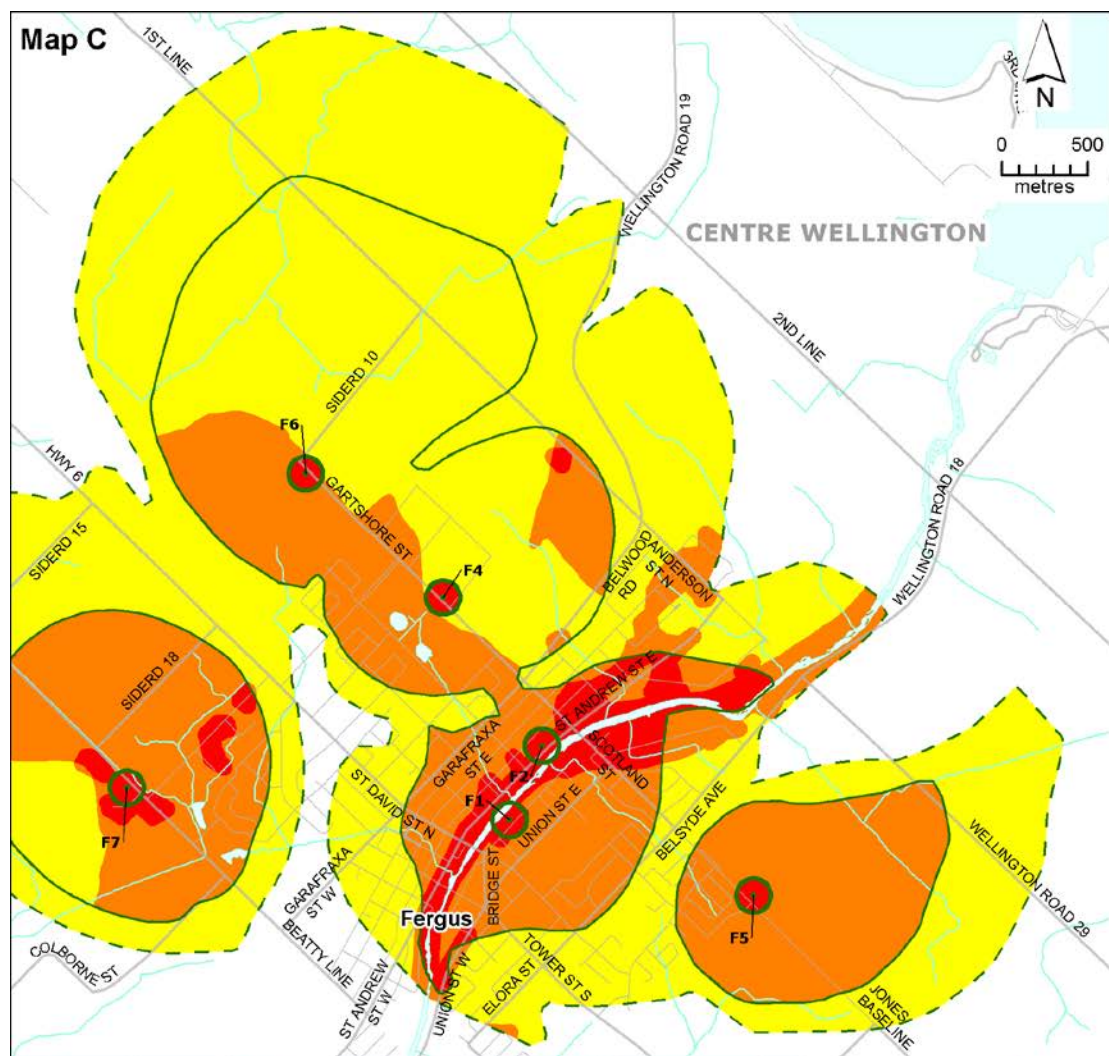
Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.

*Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.



1. Updated September 26, 2019
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DRAFT UPDATED Schedule G: County of Wellington, Centre Wellington Well Supply, Map C



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	Red	Orange	Yellow
2. Sewage Systems	Red	Orange	Yellow
3, 4. Agricultural Source Material	Red	Orange	Yellow
6, 7. Non-Agricultural Source Material*	Red	Orange	Yellow
8, 9. Commercial Fertilizer*	Red	Orange	Yellow
10, 11. Pesticide	Red	Orange	Yellow
12, 13. Road Salt*	Red	Orange	Yellow
14. Storage of Snow	Red	Orange	Yellow
15. Fuel	Red	Orange	Yellow
16. DNAPLs	Red	Orange	Yellow
17. Organic Solvents	Red	Orange	Yellow
18. Aircraft De-icing	Red	Orange	Yellow
21. Livestock Area	Red	Orange	Yellow
22. Oil Pipelines	Red	Orange	Yellow

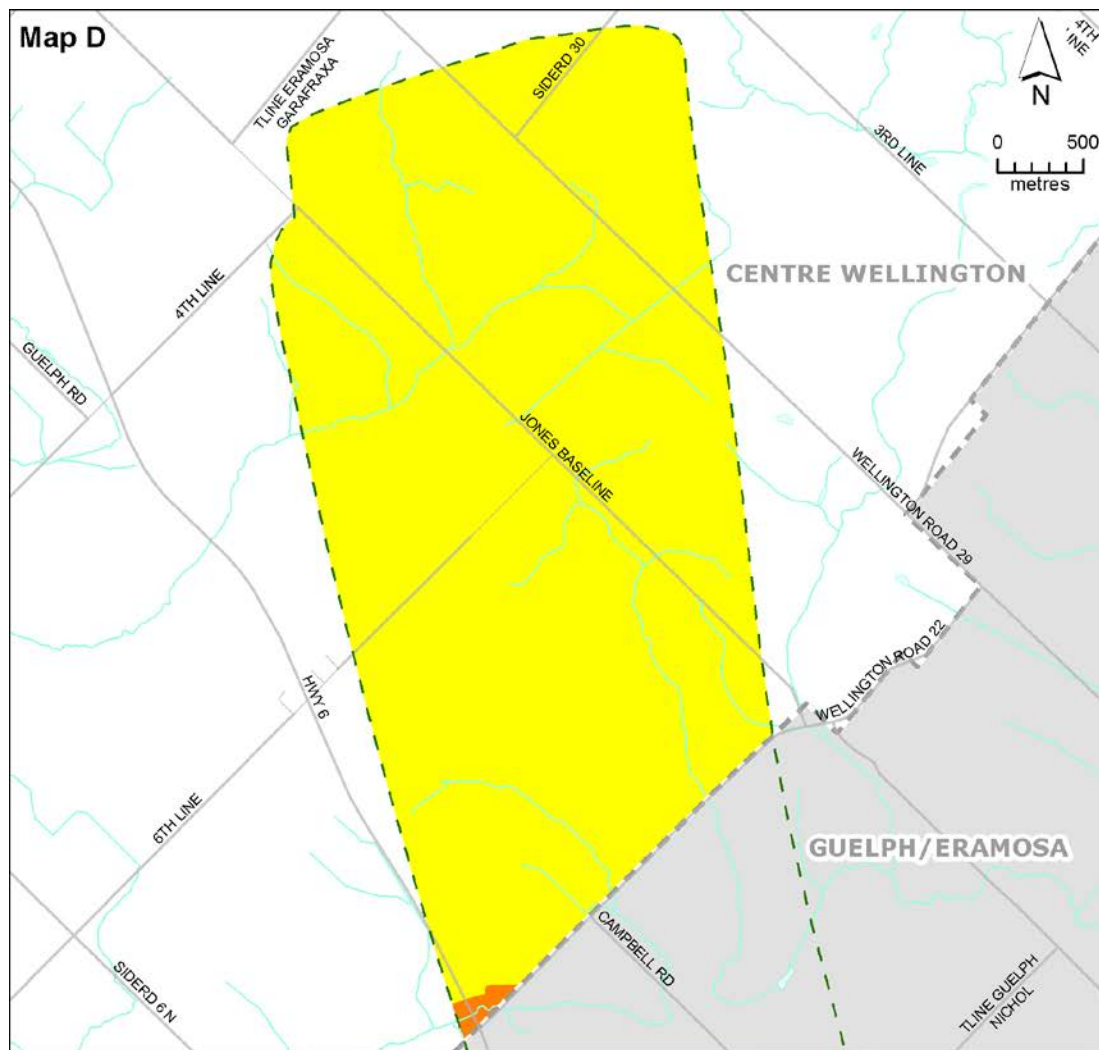
Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
*Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.

- Well
- Road
- Minor River
- Lake / Main River
- Wellington County Boundary
- Lower Tier Municipal Boundary
- Wellhead Protection Zones:
 - WHPA-A
 - WHPA-B
 - WHPA-C



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DRAFT UPDATED Schedule H: County of Wellington, Centre Wellington Well Supply, Map D



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	10	8	2,4,6
2. Sewage Systems	10	8	2,4,6
3, 4. Agricultural Source Material	10	8	2,4,6
6, 7. Non-Agricultural Source Material*	10	8	2,4,6
8, 9. Commercial Fertilizer*	10	8	2,4,6
10, 11. Pesticide	10	8	2,4,6
12, 13. Road Salt*	10	8	2,4,6
14. Storage of Snow	10	8	2,4,6
15. Fuel	10	8	2,4,6
16. DNAPLs	10	8	2,4,6
17. Organic Solvents	10	8	2,4,6
18. Aircraft De-icing	10	8	2,4,6
21. Livestock Area	10	8	2,4,6
22. Oil Pipelines	10	8	2,4,6

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
 *Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.

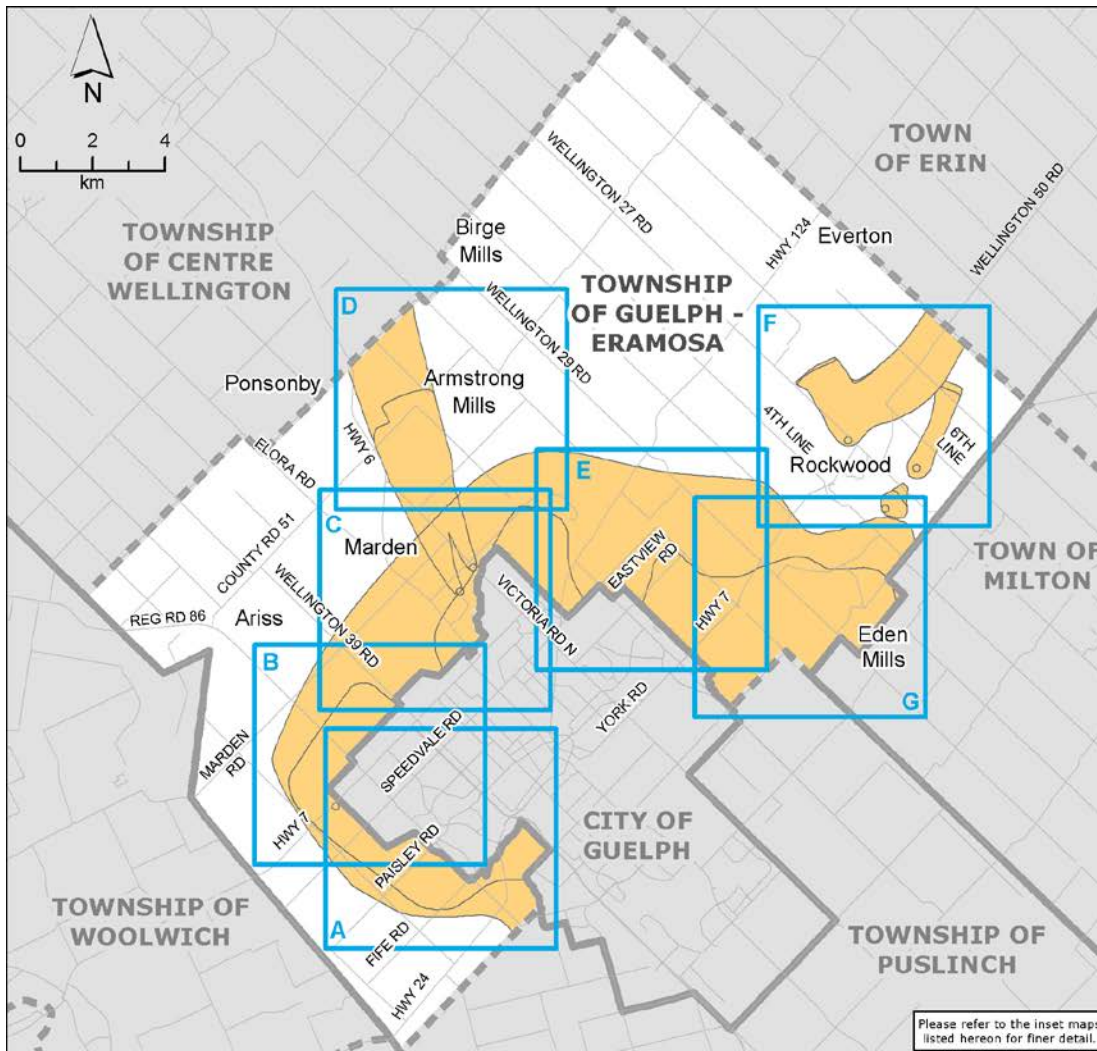
Legend:

- Well
- Road
- Minor River
- Lake / Main River
- Wellington County Boundary
- Lower Tier Municipal Boundary
- Wellhead Protection Zones:
 - WHPA-A
 - WHPA-B
 - WHPA-C



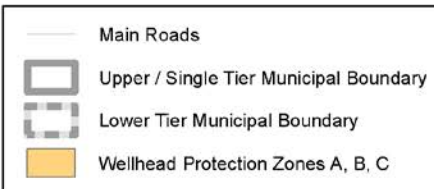
- Updated September 26, 2019
- Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
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DRAFT UPDATED Schedule I: County of Wellington, Township of Guelph-Eramosa, Index Map



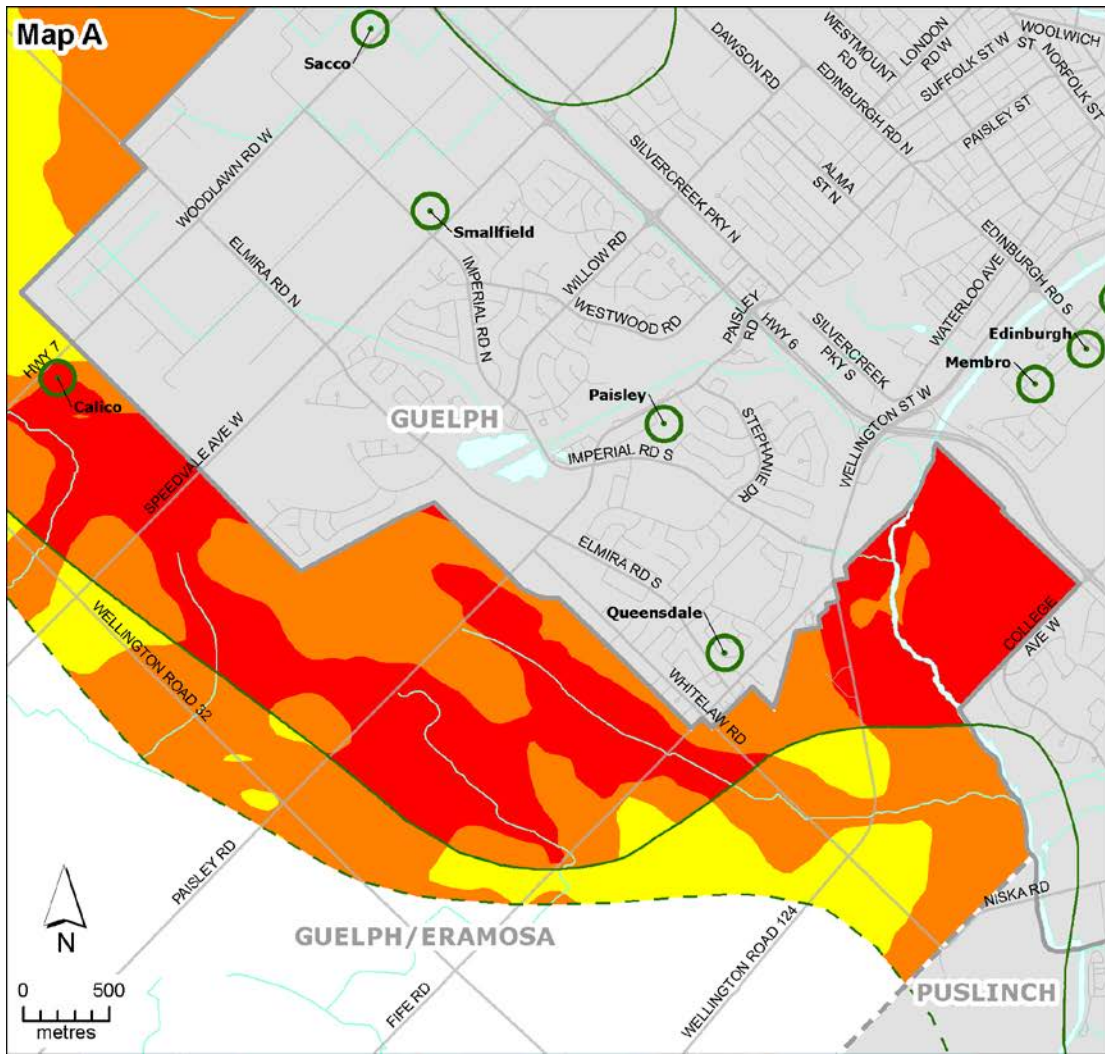
**Significant Drinking Water
Threat Policy Applicability**

Index Map -
Wellhead Protection Zones



1. Updated September 18, 2019
2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
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DRAFT UPDATED Schedule J: County of Wellington, Township of Guelph-Eramosa, Map A



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	█		
2. Sewage Systems	█		
3, 4. Agricultural Source Material			
6, 7. Non-Agricultural Source Material*	█		
8, 9. Commercial Fertilizer*	█		
10, 11. Pesticide	█		
12, 13. Road Salt*	█		
14. Storage of Snow	█		
15. Fuel	█		
16. DNAPLs		█	█
17. Organic Solvents	█		
18. Aircraft De-icing	█		
21. Livestock Area	█		
22. Oil Pipelines	█		

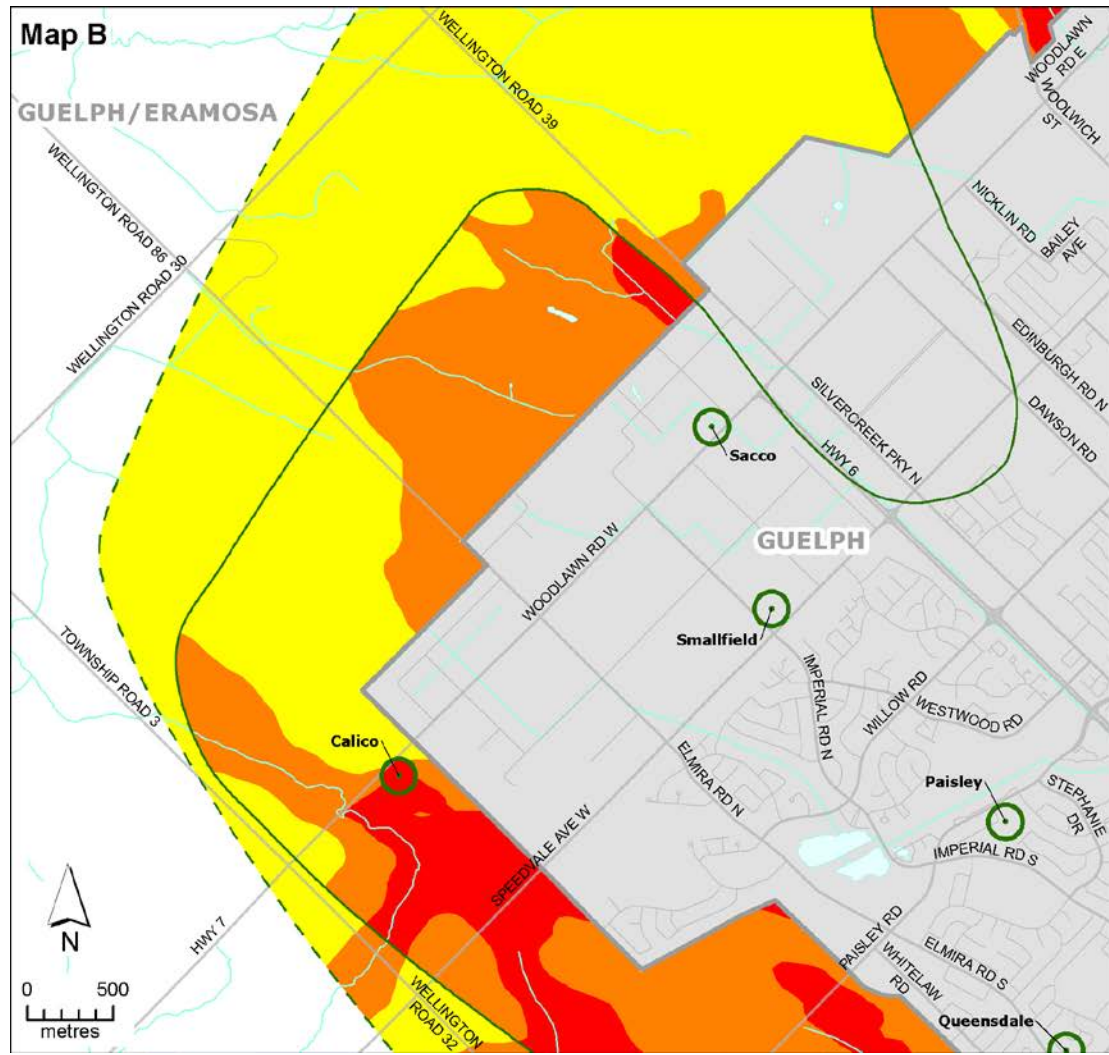
Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
*Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.

- Well
- Road
- ~ Minor River
- ~ Lake / Main River
- Wellington County Boundary
- Lower Tier Municipal Boundary
- Wellhead Protection Zones:**
- WH-PA-A
- WH-PA-B
- WH-PA-C



1. Updated September 19, 2019
2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
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DRAFT UPDATED Schedule K: County of Wellington, Township of Guelph-Eramosa, Map B



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	█		
2. Sewage Systems	█		
3, 4. Agricultural Source Material		█	
6, 7. Non-Agricultural Source Material*		█	
8, 9. Commercial Fertilizer*		█	
10, 11. Pesticide		█	
12, 13. Road Salt*		█	
14. Storage of Snow		█	
15. Fuel		█	
16. DNAPLs		█	█
17. Organic Solvents		█	█
18. Aircraft De-icing		█	
21. Livestock Area		█	
22. Oil Pipelines		█	

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
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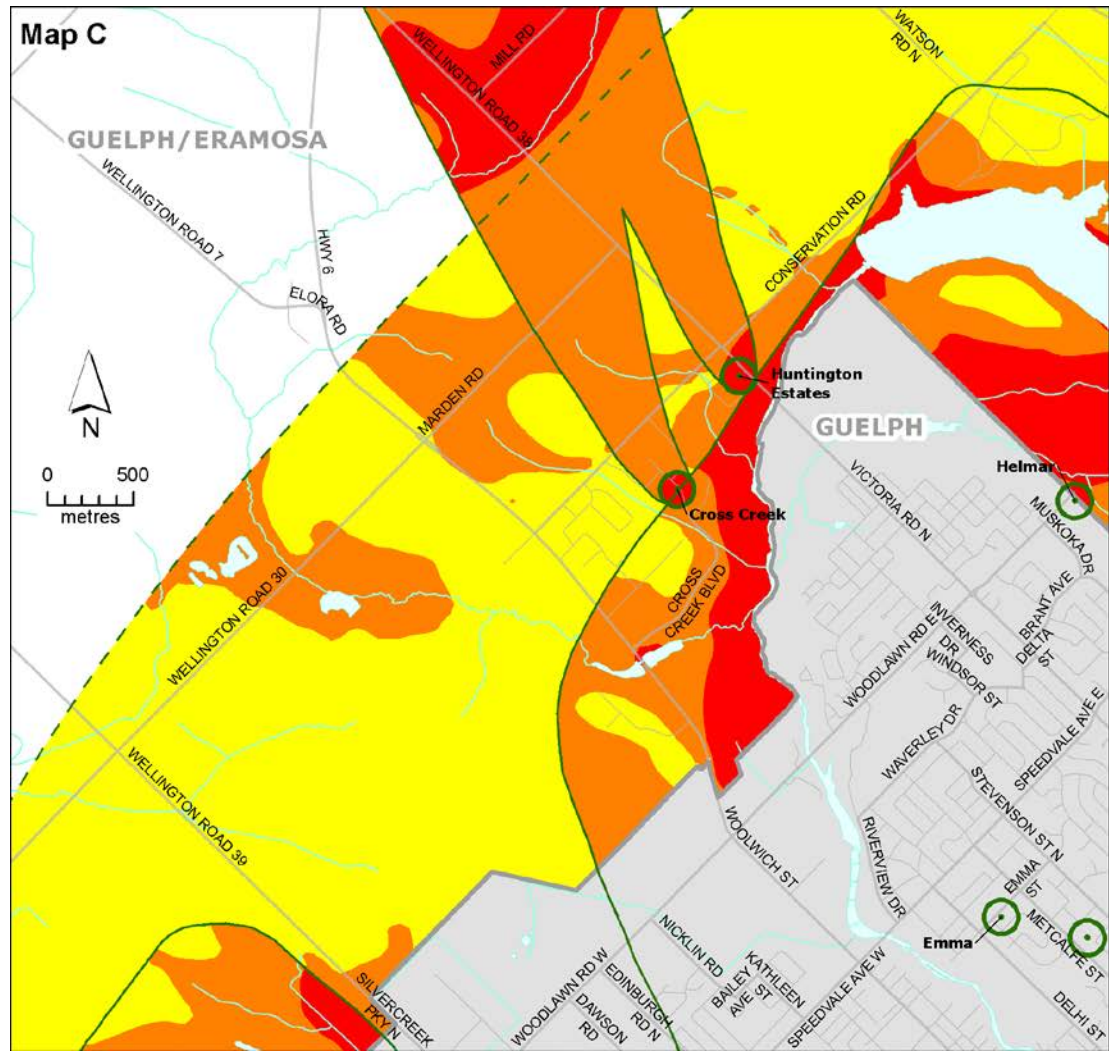
● Well
— Road
~ Minor River
— Lake / Main River
▭ Wellington County Boundary

▭ Lower Tier Municipal Boundary
Wellhead Protection Zones:
○ WH-PA-A
○ WH-PA-B
○ WH-PA-C



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DRAFT UPDATED Schedule L: County of Wellington, Township of Guelph-Eramosa, Map C



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	10	8	2,4,6
1. Waste Disposal	Red	Orange	Yellow
2. Sewage Systems	Red	Orange	Yellow
3, 4. Agricultural Source Material	Red	Orange	Yellow
6, 7. Non-Agricultural Source Material*	Red	Orange	Yellow
8, 9. Commercial Fertilizer*	Red	Orange	Yellow
10, 11. Pesticide	Red	Orange	Yellow
12, 13. Road Salt*	Red	Orange	Yellow
14. Storage of Snow	Red	Orange	Yellow
15. Fuel	Red	Orange	Yellow
16. DNAPLs	Red	Orange	Yellow
17. Organic Solvents	Red	Orange	Yellow
18. Aircraft De-icing	Red	Orange	Yellow
21. Livestock Area	Red	Orange	Yellow
22. Oil Pipelines	Red	Orange	Yellow

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
*Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.

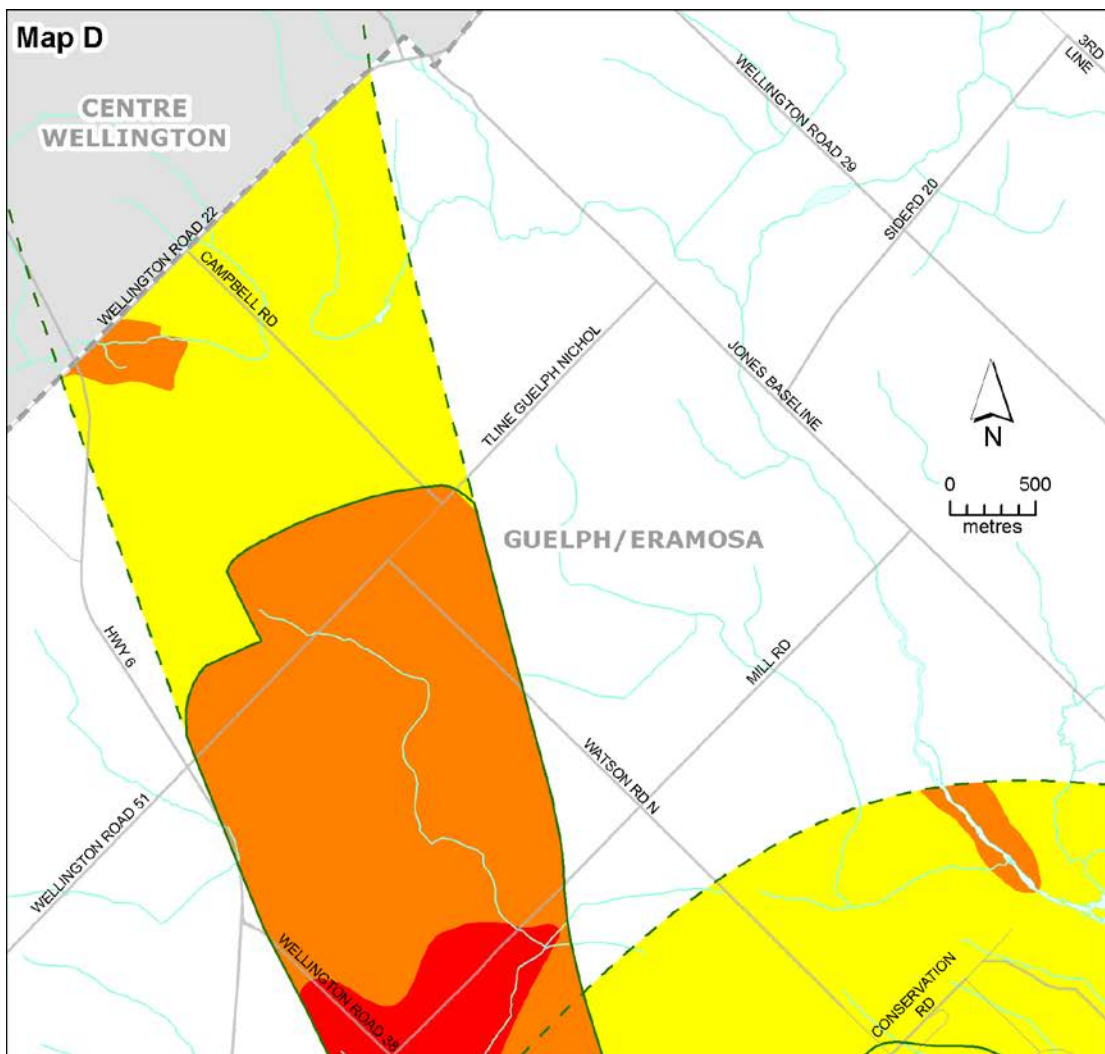
Well: ●
Road: —
Minor River: ~~~~~
Lake / Main River: [Blue Area]
Wellington County Boundary: [Grey Area]

Lower Tier Municipal Boundary: [Dashed Line]
Wellhead Protection Zones:
WHPA-A: [Green Circle]
WHPA-B: [Orange Circle]
WHPA-C: [Yellow Circle]



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DRAFT UPDATED Schedule M: County of Wellington, Township of Guelph-Eramosa, Map D



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	█		
2. Sewage Systems	█		
3, 4. Agricultural Source Material	█		
6, 7. Non-Agricultural Source Material*	█		
8, 9. Commercial Fertilizer*	█		
10, 11. Pesticide	█		
12, 13. Road Salt*	█		
14. Storage of Snow	█		
15. Fuel	█		
16. DNAPLs	█	█	█
17. Organic Solvents	█		
18. Aircraft De-icing	█		
21. Livestock Area	█		
22. Oil Pipelines	█		

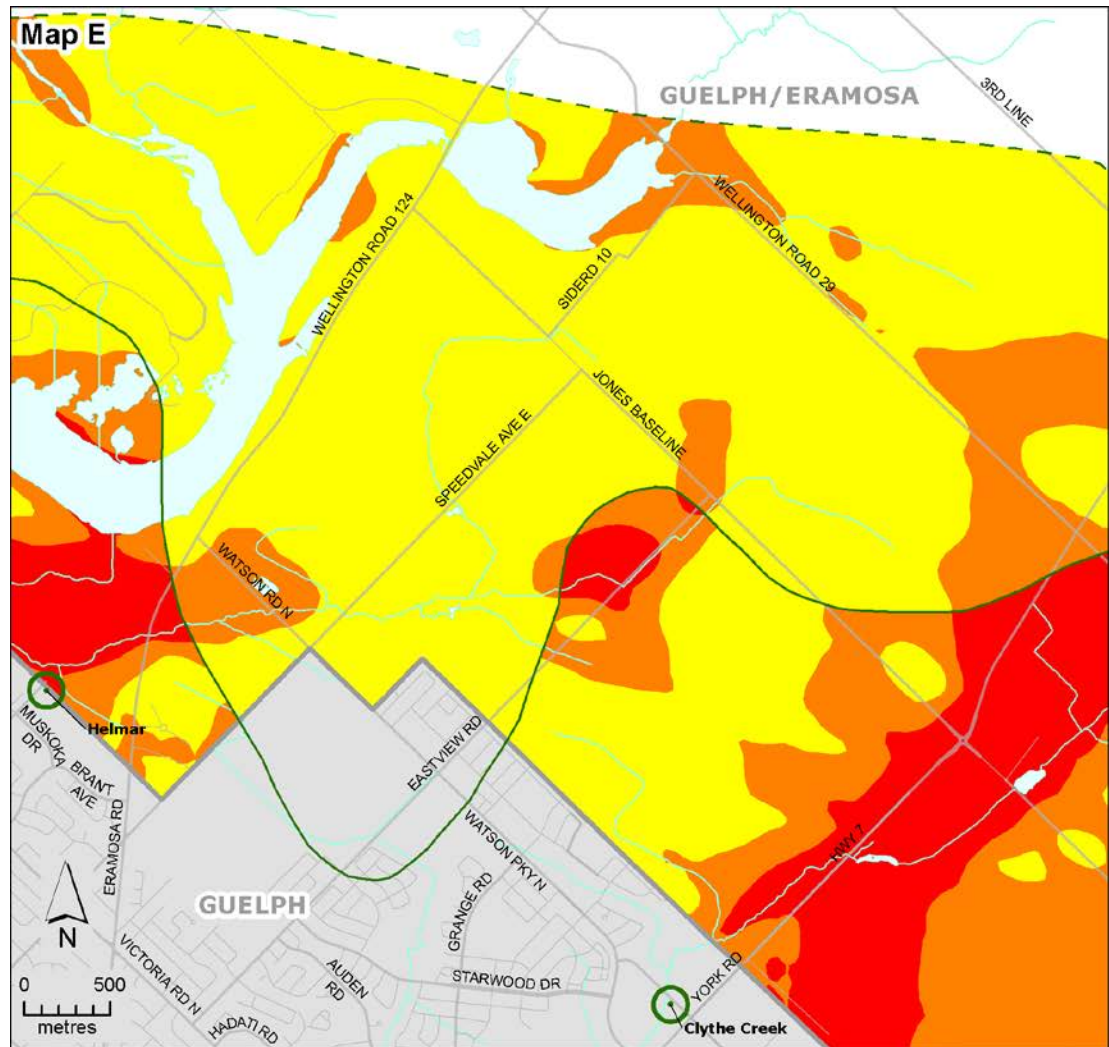
Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
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- Well
- Road
- ~ Minor River
- ~ Lake / Main River
- Wellington County Boundary
- Lower Tier Municipal Boundary
- Wellhead Protection Zones:**
- WHPA-A
- WHPA-B
- WHPA-C



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DRAFT UPDATED Schedule N: County of Wellington, Township of Guelph-Eramosa, Map E



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	█	█	█
2. Sewage Systems	█	█	█
3, 4. Agricultural Source Material	█	█	█
5, 7. Non-Agricultural Source Material*	█	█	█
8, 9. Commercial Fertilizer*	█	█	█
10, 11. Pesticide	█	█	█
12, 13. Road Salt*	█	█	█
14. Storage of Snow	█	█	█
15. Fuel	█	█	█
16. DNAPLs	█	█	█
17. Organic Solvents	█	█	█
18. Aircraft Deicing	█	█	█
21. Livestock Area	█	█	█
22. Oil Pipelines	█	█	█

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
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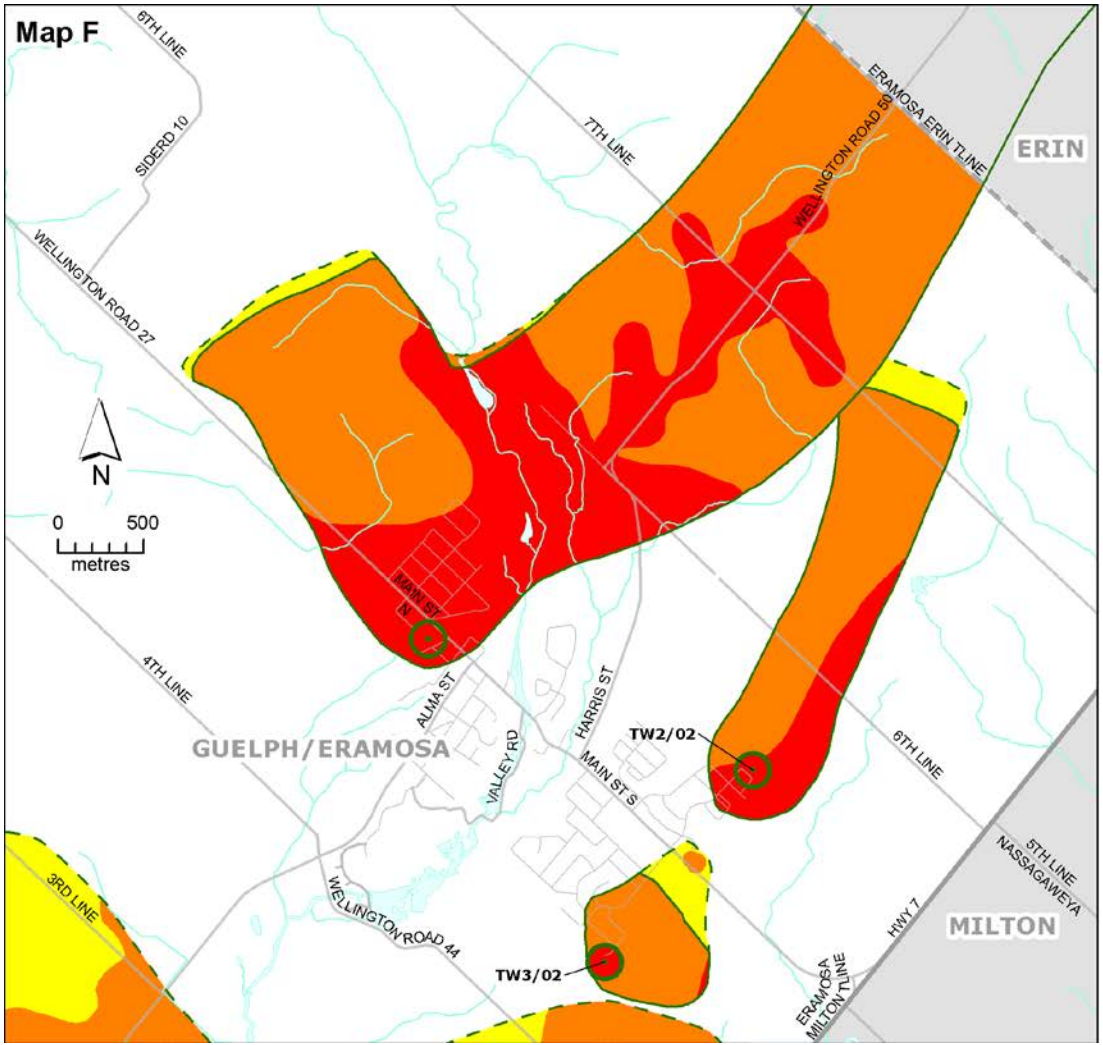
Wellhead Protection Zones:

- Well
- Road
- Minor River
- Lake / Main River
- Wellington County Boundary
- Lower Tier Municipal Boundary
- WHPA-A
- WHPA-B
- WHPA-C



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DRAFT UPDATED Schedule O: County of Wellington, Township of Guelph-Eramosa, Map F



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	■	■	■
2. Sewage Systems	■	■	■
3, 4. Agricultural Source Material	■	■	■
6, 7. Non-Agricultural Source Material*	■	■	■
8, 9. Commercial Fertilizer*	■	■	■
10, 11. Pesticide	■	■	■
12, 13. Road Salt*	■	■	■
14. Storage of Snow	■	■	■
15. Fuel	■	■	■
16. DNAPLs	■	■	■
17. Organic Solvents	■	■	■
18. Aircraft De-icing	■	■	■
21. Livestock Area	■	■	■
22. Oil Pipelines	■	■	■

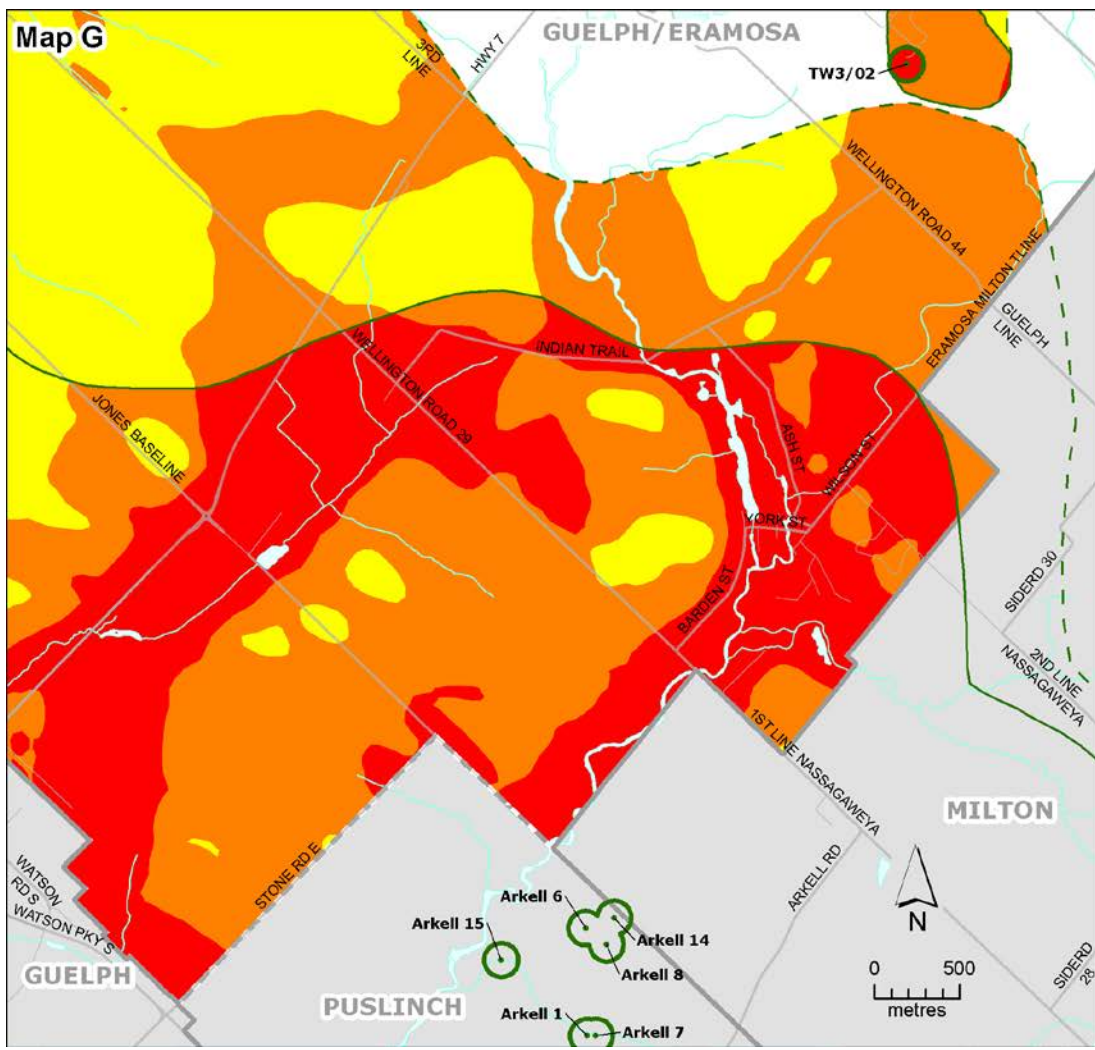

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
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- Well
- Road
- Minor River
- Lake / Main River
- Wellington County Boundary
- Lower Tier Municipal Boundary
- Wellhead Protection Zones:
 - WHPA-A
 - WHPA-B
 - WHPA-C



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DRAFT UPDATED Schedule P: County of Wellington, Township of Guelph-Eramosa, Map G


Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	■	■	■
2. Sewage Systems	■	■	■
3, 4. Agricultural Source Material	■	■	■
6, 7. Non-Agricultural Source Material*	■	■	■
8, 9. Commercial Fertilizer*	■	■	■
10, 11. Pesticide	■	■	■
12, 13. Road Salt*	■	■	■
14. Storage of Snow	■	■	■
15. Fuel	■	■	■
16. DNAPLs	■	■	■
17. Organic Solvents	■	■	■
18. Aircraft De-icing	■	■	■
21. Livestock Area	■	■	■
22. Oil Pipelines	■	■	■

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
*Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.

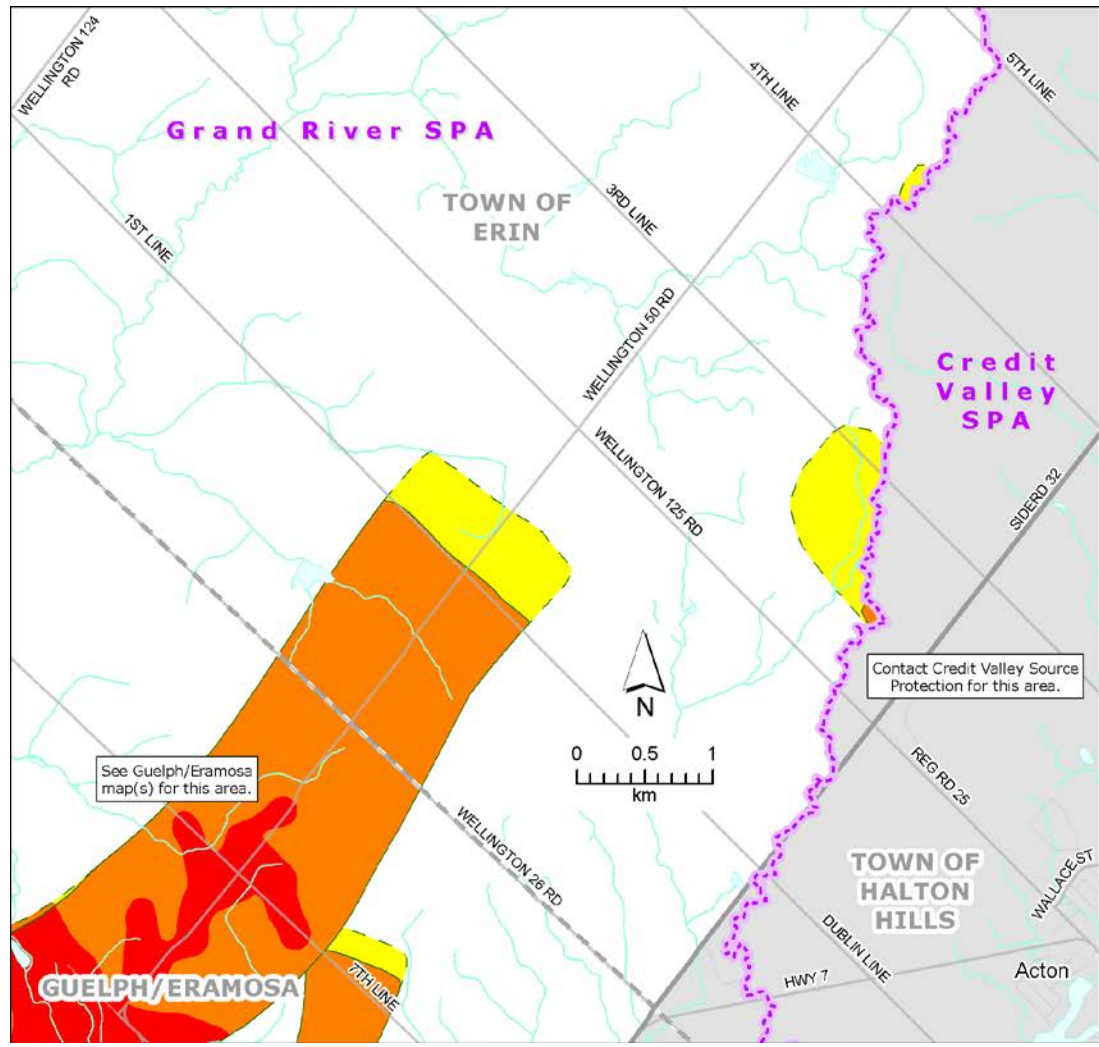
- Well
- Road
- ~ Minor River
- ~ Lake / Main River
- ▭ Wellington County Boundary

- ▭ Lower Tier Municipal Boundary
- Wellhead Protection Zones:**
- WHPA-A
- WHPA-B
- WHPA-C



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DRAFT UPDATED Schedule Q: County of Wellington, Town of Erin, Groundwater Vulnerability Areas



Significant Drinking Water Threat Policy Applicability

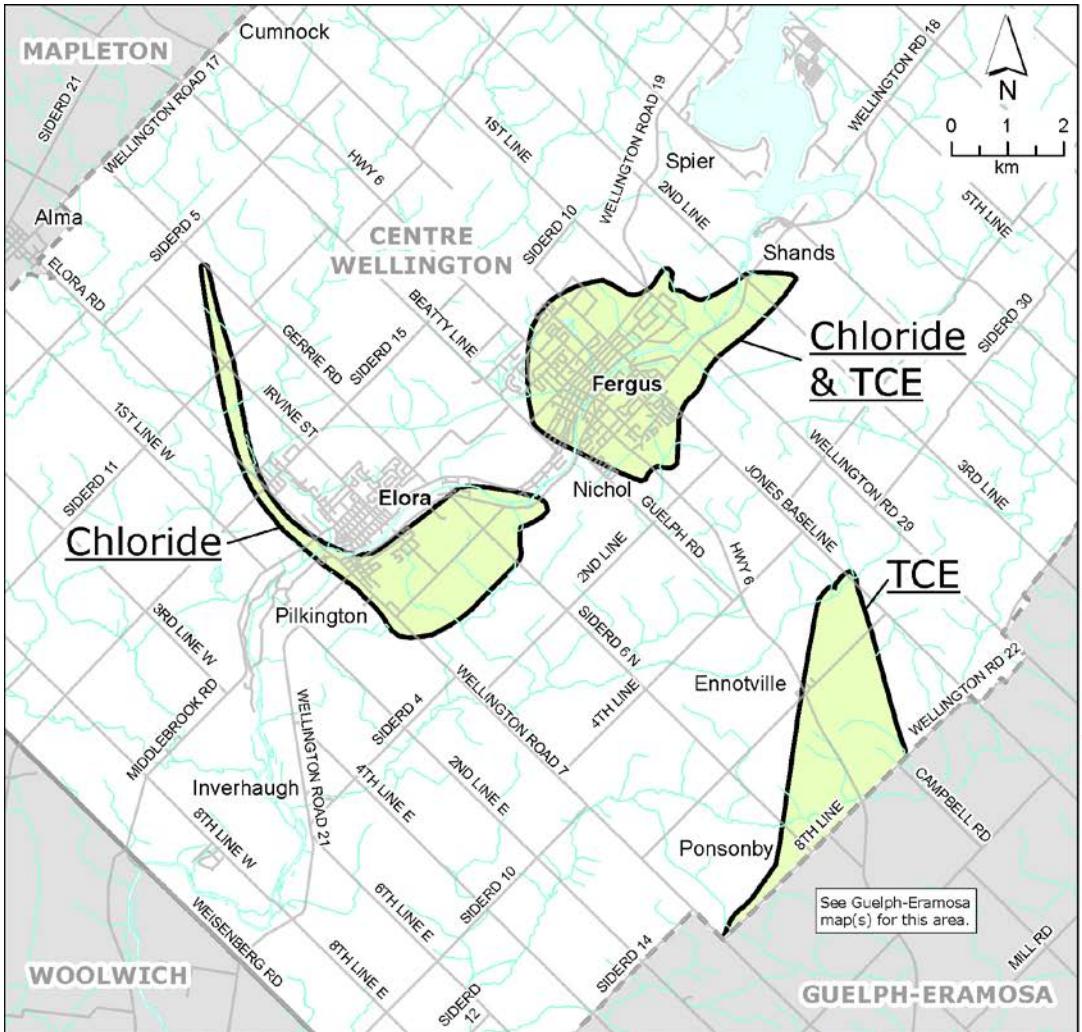
Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
1. Waste Disposal	10	8	2,4,6
2. Sewage Systems			
3, 4. Agricultural Source Material			
6, 7. Non-Agricultural Source Material*			
8, 9. Commercial Fertilizer*			
10, 11. Pesticide			
12, 13. Road Salt*			
14. Storage of Snow			
15. Fuel			
16. DNAPLs			
17. Organic Solvents			
18. Aircraft De-icing			
21. Livestock Area			
22. Oil Pipelines			

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
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DRAFT UPDATED Schedule W: County of Wellington, Township of Centre Wellington, Issue Contributing Areas



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Identified Issue			
	Chloride	Nitrate	Sodium	TCE
1. Waste Disposal		Y		Y
2. Sewage Systems	Y	Y	Y	Y
3, 4. Agricultural Source Material		Y		
6, 7. Non-Agricultural Source Material		Y		
8, 9. Commercial Fertilizer		Y		
12, 13. Road Salt	Y		Y	
14. Storage of Snow	Y	Y	Y	
16. DNAPLs				Y
21. Livestock Area		Y		

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) in the Issue Contributing Area(s) shown on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.

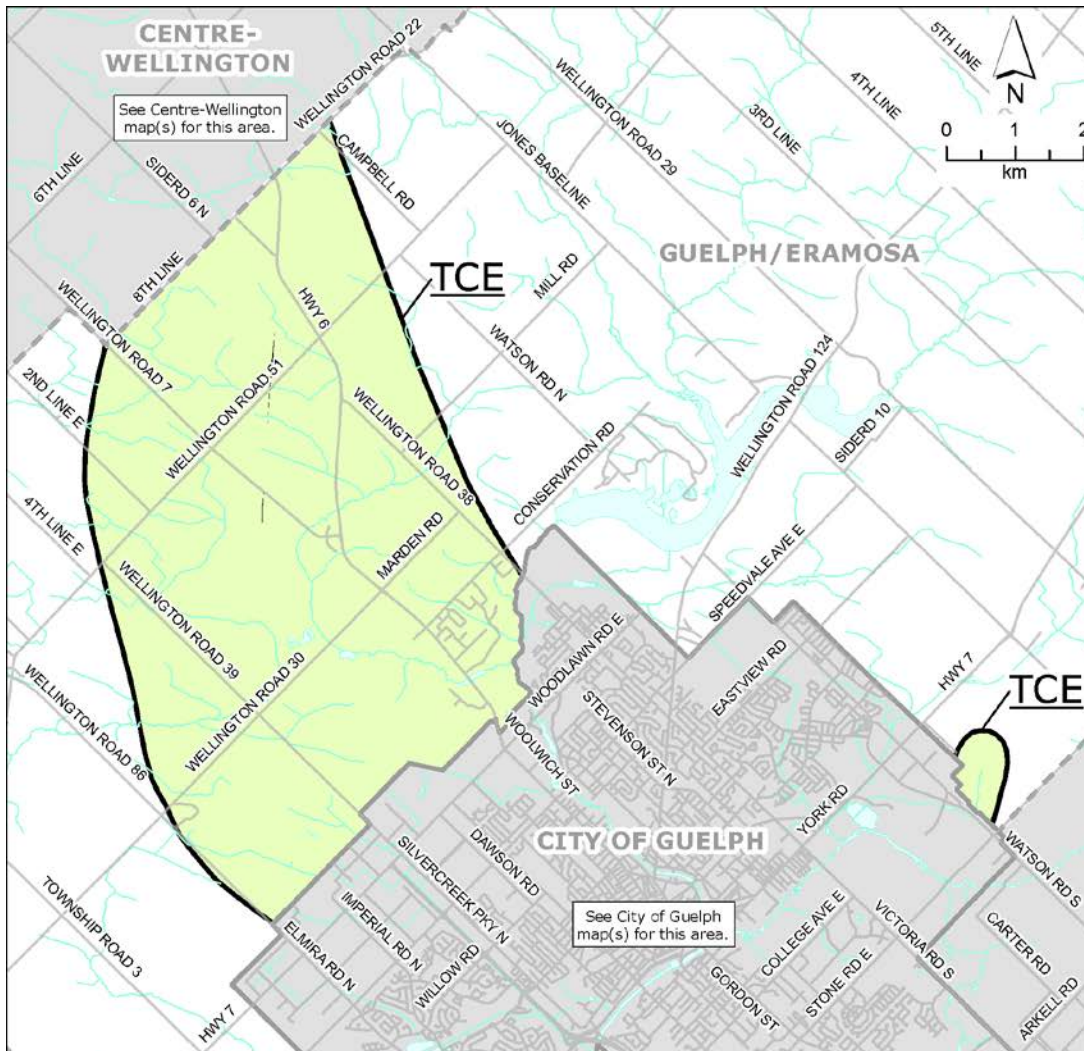
Legend:

- Roads
- Minor Rivers
- Lakes / Main Rivers
- Wellington County Boundary
- Lower Tier Boundary
- Issue Contributing Area
- Associated Issue Parameter



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DRAFT UPDATED Schedule X: County of Wellington, Township of Guelph-Eramosa, Issue Contributing Areas



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Identified Issue			
	Chloride	Nitrate	Sodium	TCE
1. Waste Disposal		Y		Y
2. Sewage Systems	Y	Y	Y	Y
3, 4. Agricultural Source Material		Y		
6, 7. Non-Agricultural Source Material		Y		
8, 9. Commercial Fertilizer		Y		
12, 13. Road Salt	Y		Y	
14. Storage of Snow	Y	Y	Y	
16. DNAPLs				Y
21. Livestock Area		Y		

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) in the Issue Contributing Area(s) shown on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.



1. Updated September 26, 2019
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
 3. This map is for illustrative purposes only. Information contained hereon is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

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6.0 WELLINGTON COUNTY

6.1 Township of Wellington North

6.1.1 Arthur Well Supply

The Township of Wellington North has two municipal water supply systems, one servicing the Town of Mount Forest and a second servicing the Town of Arthur. Within the Township of Wellington North, Arthur is the only community located within the Grand River watershed that is serviced by a municipal groundwater system. The serviced area is shown on **Map 6-1**.

The Arthur Well Supply system consists of 3 wells, 2 pump houses, 2 elevated water tanks and a distribution system. The municipal system supplies water to approximately 2,770 people within the community (Conestoga Rovers & Associates, 2009).

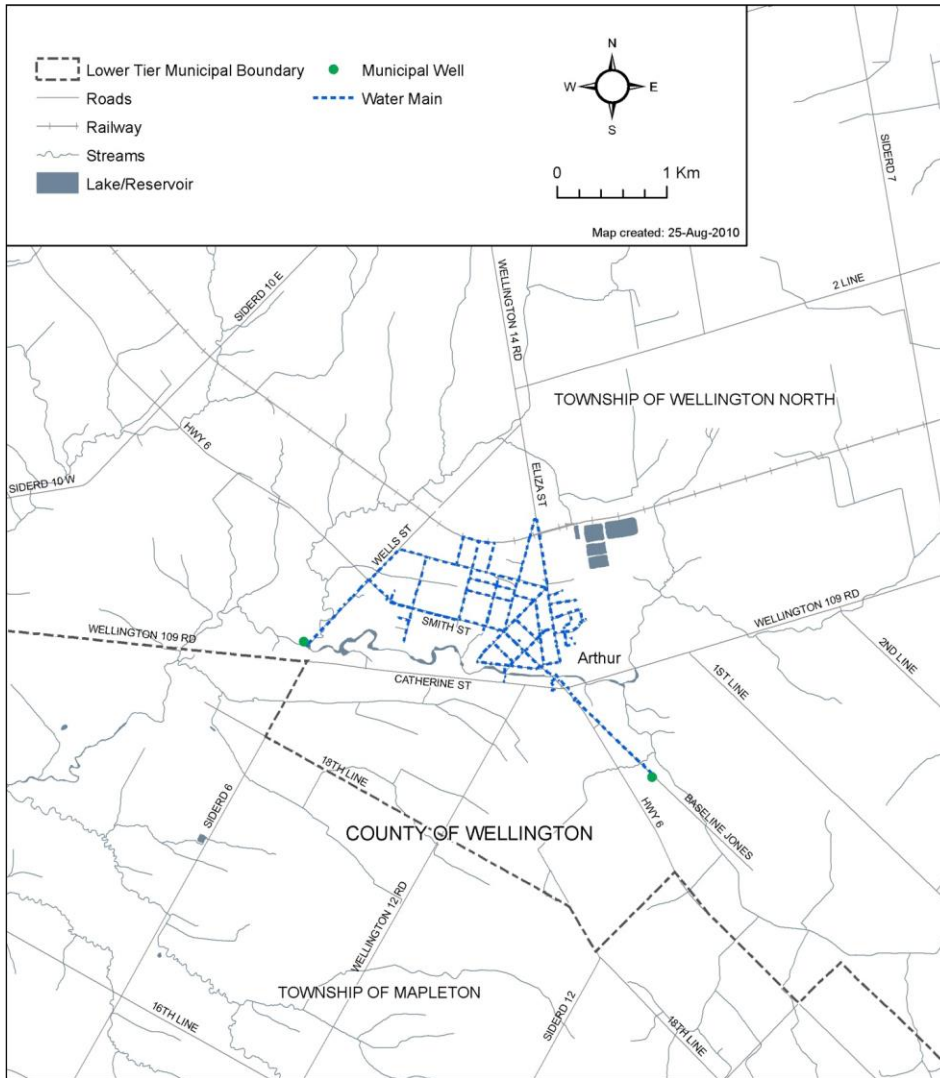
The Town of Arthur is currently serviced by three municipal production wells: 7B, 8A, and 8B. All three of the wells are completed in the deep overburden aquifer at approximately 46 m below ground surface. The upper surficial quaternary geology has been mapped as a clayey silt to silt till (Tavistock Till) which covers a large part of the area surrounding Arthur.

Well 7B is located to the west of Arthur along Highway 109 and Wells. 8A and 8B are located south of the Town of Arthur in a rural setting as presented on **Map 6-2**. The following tables, **Table 6-1** and **Table 6-2** provide a summary of the municipal drinking water system and average pumping rates.

Table 6-1: Municipal Residential Drinking Water System Information for the Township of Wellington North in the Grand River Source Protection Area (Arthur Well Supply)					
DWS Number	DWS Name	Operating Authority	GW or SW	System Classification ¹	Number of Users served ²
220000040	Arthur Well Supply	Township of Wellington North	GW	Large Municipal Residential System	2,770
¹ as defined by O. Reg. 170/03 (Drinking Water Systems) made under the <i>Safe Drinking Water Act, 2002</i> .					
² Drinking Water System Regulation 170/03, 2009b					

Table 6-2: Annual and Monthly Average Pumping Rates for the Arthur Well Supply													
Well or Intake	Annual Avg. Taking ¹ (m ³ /d)	Monthly Average Taking ¹ (m ³ /d)											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Well 7B	120.9	185.92	66.6	266.87	220.69	132.23	84.82	96.95	136.18	64.97	10.46	100.2	85.19
Well 8A	639.0	713.6	701.15	528.86	496.94	782.69	689.01	645.88	433.64	655.37	820.05	824.52	375.78
Well 8B	145.1	1.97	20.47	42.48	148.93	3.06	162.12	197.13	537.56	214.15	2.52	2.33	408.79
¹ source: Township of Wellington North 2009 annual summary report													

Map 6-1: Arthur Well Supply Serviced Areas



6.1.2 Vulnerability Analysis

Delineation of Wellhead Protection Areas

Wellhead Protection Areas (WHPAs) associated with the municipal water supply represents the areas within the aquifer that contribute groundwater to the well over a specific time period. Four Wellhead Protection Areas are specified, one a proximity zone and the others time-related capture zones:

- WHPA-A 100m radius from wellhead
- WHPA-B 2-year Time-of-Travel (TOT) capture zone
- WHPA-C 5-year time of travel capture zone
- WHPA-D 25-year time of travel capture zone.

Wellhead protection zones WHPA-E and WHPA-F are not included as part of this study because the water supply wells are not considered under the direct influence of surface water (GUDI).

Arthur Wellhead Protection Areas

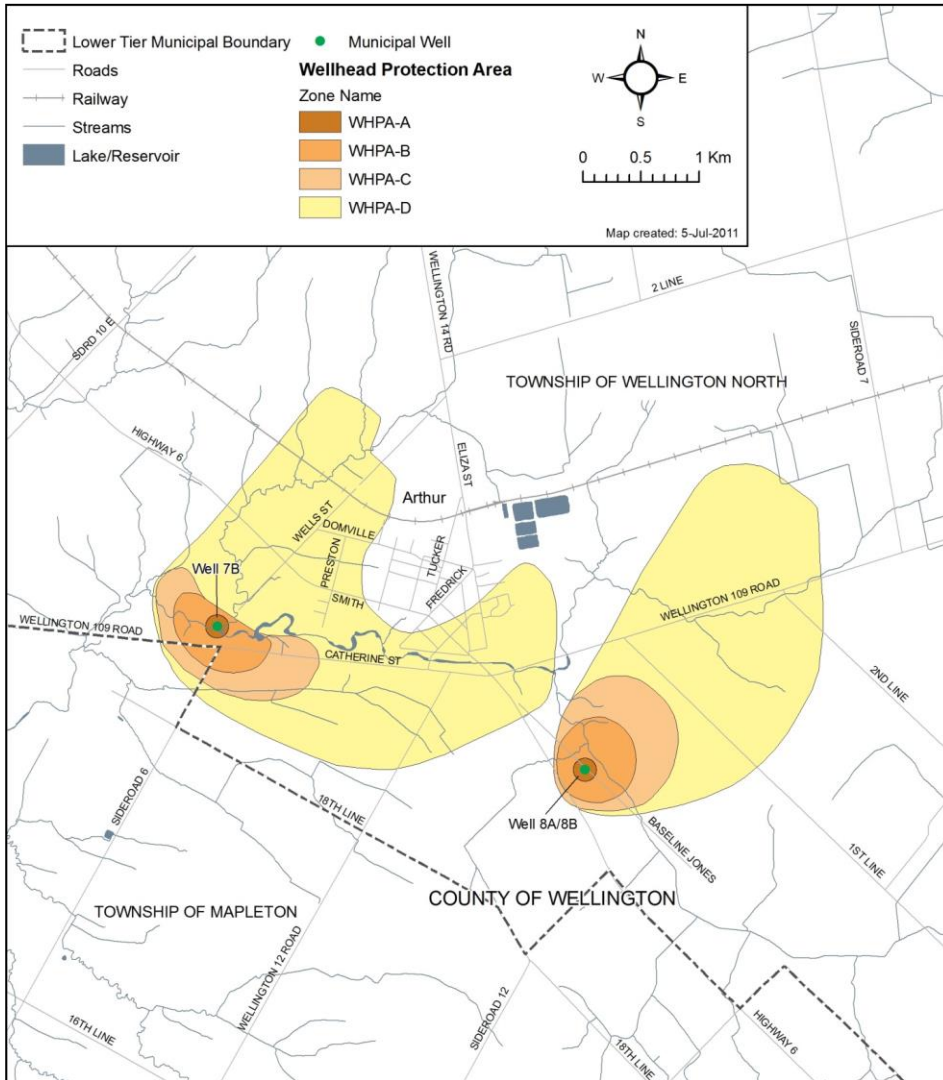
Existing Wellhead Protection Areas for the Township of Wellington North were developed by Golder Associates in 2005. Flow data for the Arthur system was reviewed, and updated flow projections were provided to Golder to develop the updated Wellhead Protection Areas. The models were also updated to reflect the new well system configuration for each of the systems. Wellhead Protection Areas for the Arthur Well Supply are presented on **Map 6-2**.

There are two distinct Wellhead Protection Areas for the Arthur 7B and Arthur 8A/B wells. The 25-year capture zone for Well 7B extends northeast encircling the urban footprint of Arthur, which is serviced by municipal sanitary sewers. The 25-year time of travel capture zone (Zone D) for Well 7B wellhead protection area has a total land area of approximately 6.16 km². The land with the 25-year time of travel capture zone encompasses a portion of the urban area and extends into rural areas to the northeast and southeast and consists of residential, commercial, cemetery, industrial, forested, and agricultural lands.

The 25-year capture zone for Arthur Wells 8A/B also extends northeast approximately 3.1 km outside the city to the east. The Conestoga River and its tributaries transect both Wellhead Protection Areas, and are within approximately 50 m from Well 7B and 200 m from Wells 8A/B. Land use overlying the Wellhead Protection Areas is primarily rural agricultural, although Zone D of Well 7B Wellhead Protection Area encroaches into the urban area. A few private septic systems and storm water infiltration features were identified within the 2-year capture zones (Zone B), and several water wells are mapped throughout the Wellhead Protection Area extents. Two historic waste disposal sites were also identified in Zone D of the Well 7B Wellhead Protection Area. ~~Vulnerability scores were adjusted accordingly to account for these transport pathways as discussed later in this section.~~

Projected pumping rates for Arthur Wells 8a/8b is approximately 350 m³/day greater than for Arthur Well 7b. However, due to the nature of the flow paths, the 25-year time of travel capture zone (Zone D) for Wells 8a/8b has a total land area of approximately 4.74 km², which is slightly less than the Well 7b Wellhead Protection Area.

Map 6-2: Arthur Well Supply Wellhead Protection Areas



Vulnerability Scoring in Wellhead Protection Areas

~~The objective of the groundwater vulnerability analysis is to assess the vulnerability of the municipal wells from surface and near surface sources of contamination and provide quantification of the relative vulnerability of the source water aquifer within each Wellhead Protection Area through a vulnerability scoring process, in accordance with the Assessment Report Regulation and Technical Rules.~~

~~The groundwater vulnerability scoring process involves four main steps:~~

- ~~1. Mapping wellhead protection areas based on defined fixed radius and time of travel (TOT) capture zones.~~
- ~~2. Categorization of areas of intrinsic groundwater vulnerability as high, medium, or low according to the natural susceptibility of the source water aquifer to becoming contaminated.~~
- ~~3. Adjustments to the intrinsic vulnerability of the aquifer based on the presence of constructed transport pathways, where warranted.~~
- ~~4. Subdivide wellhead protection areas by the boundaries of the adjusted intrinsic vulnerability and assign groundwater vulnerability scores based upon the relative location within the Wellhead Protection Area.~~

~~Wellhead protection zones WHPA E and WHPA F are not included as part of this study because the water supply wells are not considered under the direct influence of surface water (GUD).~~

Modelling Approach for the Arthur Well Supply

For all municipal wells included in the study, computer based three-dimensional groundwater flow models were used to delineate the extent of each protection zone determined by time-of-travel to the wellhead. This involved the refinement of time of travel analysis conducted as part of the 2001 MOE Groundwater Studies Initiative (Conestoga Rovers and Associates, 2007 and 2009).

While numerical models account for the three-dimensional flow through the groundwater system, the time of travel analyses were used to define the zones within the wellhead protections areas. With the exception of WHPA-A, which is based solely on proximity to the well or well field, the shape of the time of travel capture zones are determined primarily by the regional groundwater flow pattern, variations in aquifer properties, proximity to surface water features in contact with the aquifer system, and mutual interference between wells.

Time of travel capture zones were refined under this study using surveyed well locations, updated operational schedules (current as 2009), and updated forecasted pumping rates that account for future growth within each Wellhead Protection Area. Forecasted 2021 water demand was estimated based on the average 5-year pumping rate (2001 through 2006) and annual population growth rates reported in official plan documents, or as provided by municipal representatives.

Aquifer Vulnerability Index (AVI) assessed under the MOE Provincial Groundwater Studies Program initiated in 2001 was used in this study to categorize areas of intrinsic groundwater vulnerability as high, medium, or low within each Wellhead Protection Area. The AVI method provides a basic approach for decision-making, which considers the hydraulic conductivity of the pathway for water infiltrating from the ground surface and, in considering the uppermost significant aquifer, has respect for the shallow groundwater. Each category inversely reflects the relative

amount of protection provided by the physical features that overlie the aquifer closest to the ground surface (e.g., overlying strata, their hydraulic conductivities and thicknesses).

The AVI maps generated under the provincial program are regionally-derived products based largely on water well records, local geology and other hydrogeological data.

Vulnerability Scoring for the Arthur Wellhead Protection Areas

The Aquifer Vulnerability Index (AVI) mapping was developed for bedrock and deep overburden aquifers in the Municipality of Wellington North by Golder in 2006. Detailed methods for vulnerability scoring is outlined in Chapter 3.

Each Wellhead Protection Area was subdivided by the boundaries of the adjusted groundwater vulnerability index mapping. Based on the intersection, vulnerability scores ranging from 2 (low vulnerability) to 10 (high vulnerability) were generated across each Wellhead Protection Area, providing a relative indication of the intrinsic susceptibility of the underlying aquifer to contamination from drinking water quality threats. The following vulnerability scores are presented below in Table 7-3. The unadjusted intrinsic vulnerability is shown on Map 6-3.

Table 7-3: Wellhead Protection Area Vulnerability Scores – ISI/AVI

WHPA Protection Zone	Broader Landscape Intrinsic Groundwater Vulnerability		
	High	Medium	Low
WHPA-A: 100 m radius	10	10	10
WHPA-B: 2-year TOT	10	8	6
WHPA-C: 5-year TOT	8	6	4
WHPA-D: 25-year TOT	6	4	2

Typically, vulnerability scores are higher closer to the well. WHPA-A is mapped as one continuous sensitivity area, and applies to all potential contaminants. Within this zone there is no consideration given to the results from the vulnerability assessment – the intrinsic vulnerability score is solely based on proximity to the supply well or well field.

The initial vulnerability scoring for Arthur is included on Map 7-4.

Identification of Transport Pathways and Vulnerability Adjustment

Transport pathways are features that may increase the aquifer's vulnerability. Natural pathways, such as fracturing and karsts features, were considered in the regional ISI/AVI index mapping.

The existing potential threat source databases developed by WHI (2003) and Golder (2005) under previous provincial studies along with land use inventories completed under this study were used as a starting point to identify transport pathways within each Wellhead Protection Area. Available water well record databases, provincial and municipal mapping, aerial photography, and other source mapping data were also reviewed to determine the location of these features. Some additional databases used to identify transport pathways include the Ontario Drinking Water Information System (DWIS) database, oil and gas well inventories, Provincial Groundwater Monitoring Network (PGMN) database, the MNR NRVIS and Ontario Geologic Survey (OGS) pits and quarries inventories, and the MOE Sewage Treatment Plant (STP) inventory. Sewer and water-served subdivision and settled areas were determined through searches of government databases and cooperation with municipal representatives. Developed properties without sewer or water service were typically assumed to have septic systems.

Transport Pathways in the Arthur Wellhead Protection Areas

The following is a summary of the identified transport pathways:

- Municipal sewer infrastructure and septic systems;
- Well clusters and excavations (including construction and aggregate pits); and
- A large industrial property is located on the southern section of town where there are many excavations and what appear to be several dug settling ponds exist.

The transport pathways for the Arthur Wellhead Protection Areas are shown on **Map 6-4**.

Adjustments to Vulnerability to Account for Transport Pathways

~~The bypassing of the natural protection of an aquifer due to the presence of one or more transport pathways will essentially increase the relative vulnerability of the aquifer (i.e., from low to medium or high, or medium to high). Where an aquifer is already determined to be of high intrinsic vulnerability, no further increase is possible. It should be recognized that these adjustments only relate to the physical characteristics of the pathway from potential sources of contamination to the aquifer(s). In other words, they are applied independent of any consideration for specific chemicals of concern.~~

Adjusted Vulnerability Scoring for the Arthur Wellhead Protection Areas

Four factors were considered prior to adjusting the vulnerability of an area: (1) hydrogeological conditions, (2) the type and design of a pathway, (3) cumulative impact (density) of pathways, and (4) the extent of any assumptions used in the assessment.

Hydrogeologic conditions defining the intrinsic vulnerability of the aquifer, including type of aquifer, type and thickness of overburden materials, and groundwater flow conditions were considered within each WHPA and relevance of the existing ISI/AVI index mapping. These conditions were considered in conjunction with the type and design of the pathway, where known. The cumulative impact of multiple transport pathways (density and type of pathways) within a grid cell was also considered for vulnerability score adjustment. The spatial distribution of the constructed pathways provides a general indication of the aerial extent across which the vulnerability modifier should be applied, while the density of the constructed pathways provides a general indication of the likelihood of a constructed pathway providing a connection between a surface (or near surface) source of contamination and the aquifer of interest. It was assumed that a greater density of transport pathways (e.g., a cluster of private wells) represents a greater probability of contaminants being transported from the ground surface into the aquifer. As such, where multiple pathways were identified, or where multiple pathways were assumed, groundwater vulnerability was adjusted accordingly to reflect greater vulnerability.

In addition to the spatial distribution and density of the pathways in each WHPA, the physical characteristics of the pathway was considered, where known or assumed, to determine if the constructed pathway extends to the water table or breaches protective layers (e.g., low permeability soils or bedrock strata) above the aquifer(s) of interest. Where a constructed pathway is not deep enough to penetrate the natural protective layers above the aquifer, an adjustment to the original score may not be necessary. Conversely, where the constructed pathway completely penetrates the overlying layers (e.g., an improperly abandoned or poorly constructed well) then an adjustment (increase) in the intrinsic vulnerability may be warranted on a local basis. To be conservative, it was assumed all identified pathways had the potential to breach the natural protective layers above the aquifer.

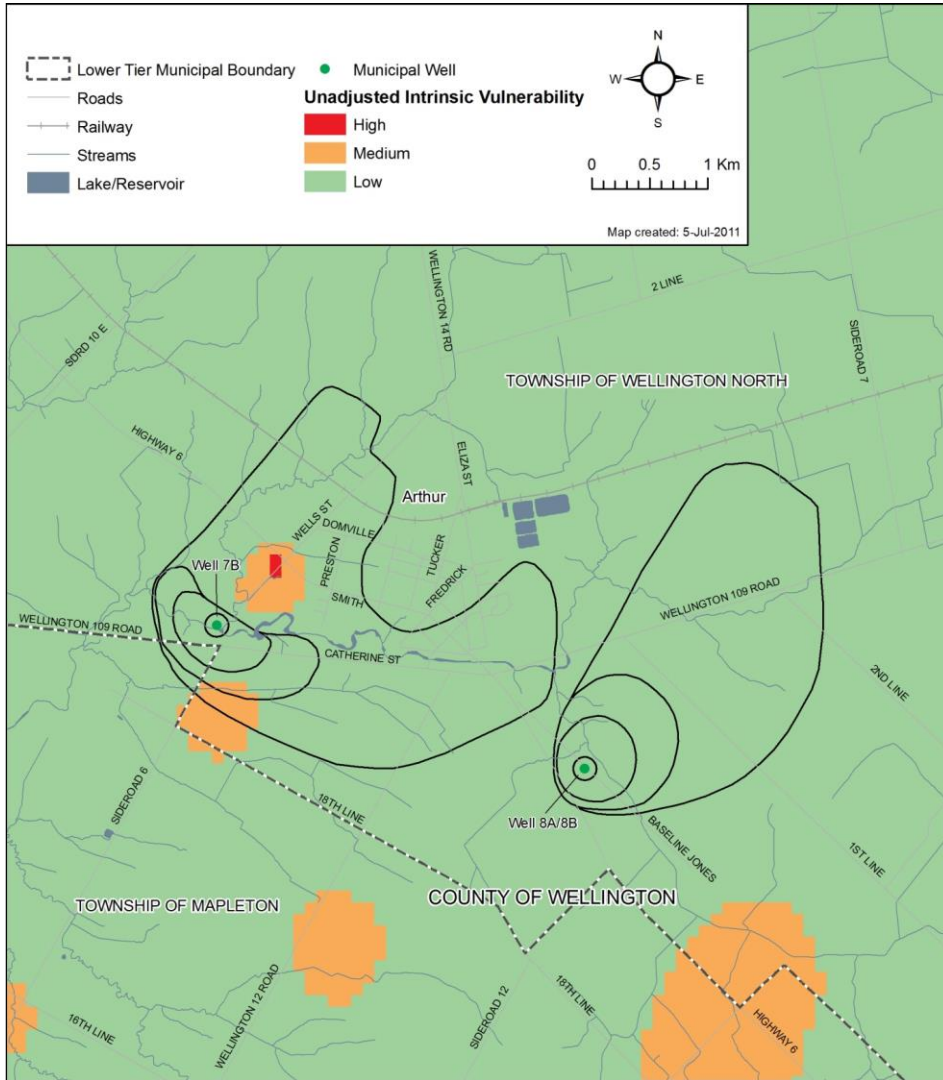
Since septic and sanitary sewer systems and infrastructure were only identified within the 2-year time-of-travel capture zone, only those areas within the WHPA-B protection zone with an initial

vulnerability score of less than 10 were selected for a transport pathway score adjustment. The transport pathway areas of influence are shown on **Map 6-5** and the final vulnerability score is shown on **Map 6-6**.

Uncertainty in the Wellhead Protection Area Delineation and the Vulnerability Scoring for the Arthur Well Supply

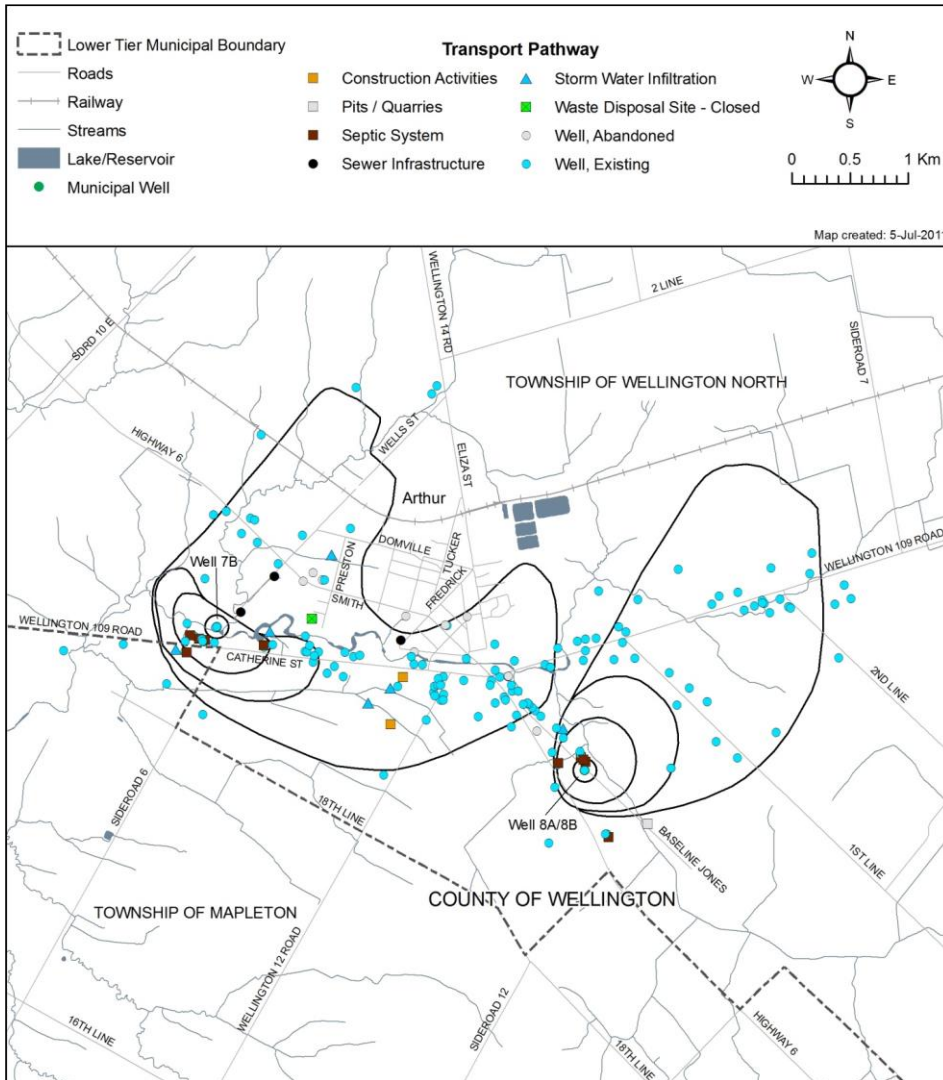
Data errors and data gaps are likely present in the information collected and thus the level of certainty is limited by the quality and completeness of the information available at the time the work was performed. Uncertainty associated with the regional aquifer vulnerability index mapping as part of the groundwater vulnerability analysis was determined to be high. Typically, the spatial accuracy and density of data points used to generate the mapping was low within the vulnerable areas included in this study. Since the vulnerability scoring is a fundamental segment brought forward to the threats evaluation, uncertainty must remain high for the number of significant threats identified.

Map 6-3 Arthur Well Supply Unadjusted Intrinsic Vulnerability

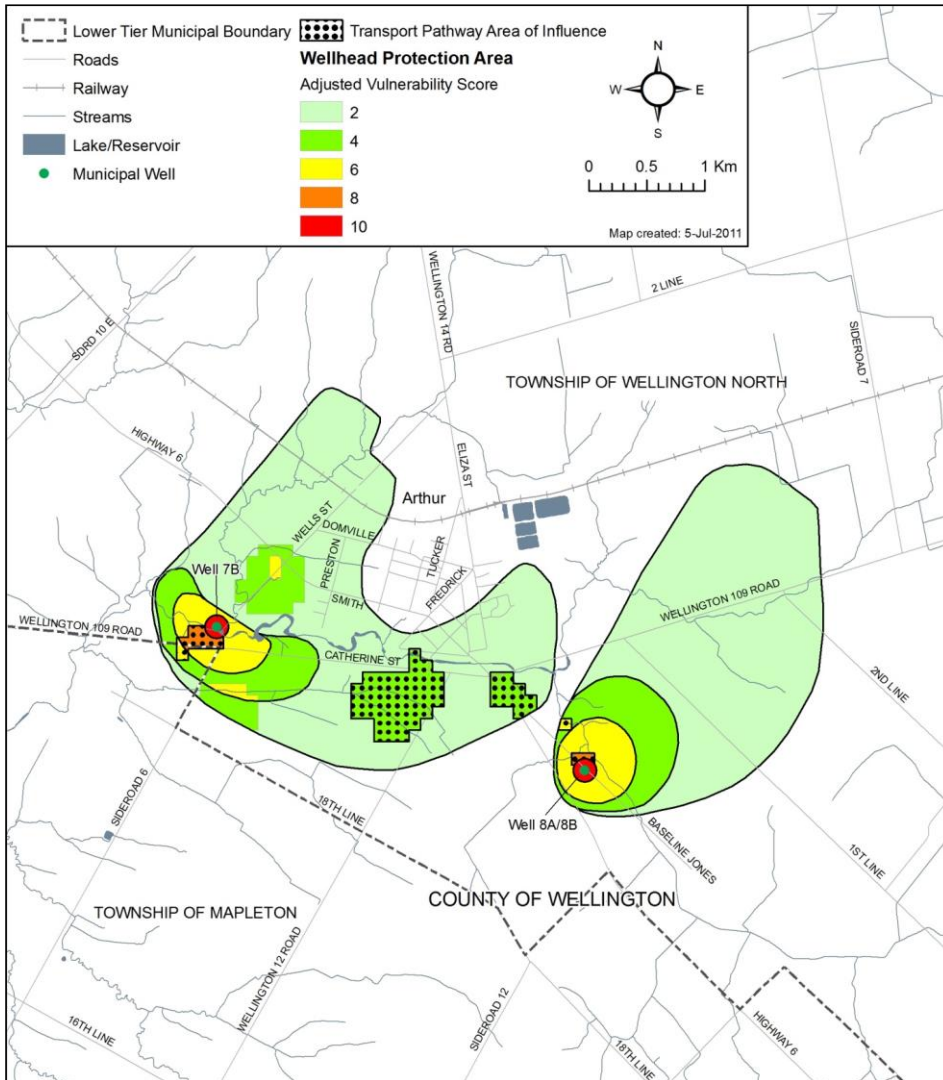


Map 7-4: Arthur Well Supply Wellhead Protection Area Initial Vulnerability

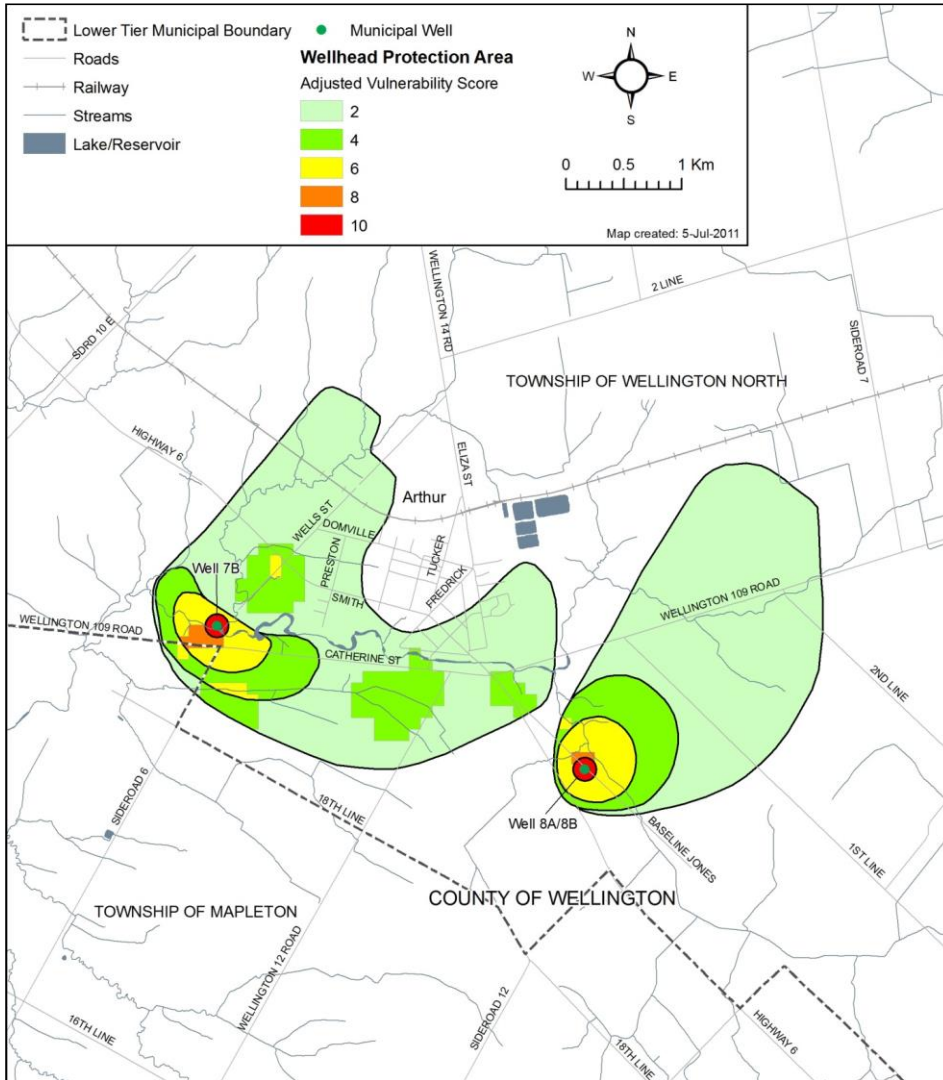
Map 6-4: Arthur Well Supply Wellhead Protection Area Transport Pathways



Map 6-5: Arthur Well Supply Wellhead Protection Area Transport Pathways Areas of Influence



Map 6-6: Arthur Well Supply Wellhead Protection Area Final Vulnerability



Managed Lands within the Arthur Wellhead Protection Areas

Managed lands are lands that may receive agricultural source material (ASM), non-agricultural source material (NASM) or commercial fertilizer and can be divided into 2 categories of agricultural managed lands (AML) and non-agricultural managed lands (NAML). Agricultural managed lands include cropland, fallow and improved pasture that may receive ASM. Non-agricultural managed lands may include golf courses, sports fields, residential lawns and other built-up grassed areas or turf that may have commercial fertilizers applied.

Calculation of the percentage of managed lands was done in accordance with Technical Rule 16(9) (MOECCOE, 2017) with details outlined in Chapter 3 of this Assessment Report. Mapping the percentage of managed lands area is not required where the vulnerability score for an area is less than the vulnerability score necessary for the activity to be considered a significant threat. Therefore, the percentage of managed lands was only calculated where the vulnerability score in each Wellhead Protection Areas was 6 or greater. This criterion was used to determine the need to calculate managed lands surrounding the wells in the Arthur Well Supply as presented in Table 7-4.

Table 7-4: Wellhead Protection Areas with Vulnerability Scores of 6 or Higher in the Arthur Well Supply

Township	Location	Well	WHPA-A	WHPA-B	WHPA-C	WHPA-D
Wellington	Arthur Well Supply	7A/7B	Yes	Yes	No	Yes
		8A/8B	Yes	Yes	No	No

Methodology for Calculating Managed Land Percentage

Each Wellhead Protection Area zone that required assessment for managed lands was selected and mapped using ArcGIS. The MPAC property layer with the associated farm code data table was overlaid over the Wellhead Protection Areas and all the properties that fell entirely or partially within the Wellhead Protection Area were selected for assessment. A union of these two layers was completed to determine the area of each parcel that only fell within the Wellhead Protection Area.

The GIS layers for wooded areas, wetlands (GRCA) and drainage (polygons determining spatial extent, not just linear location) were used to determine the extent of these land uses and were excluded from the combined MPAC parcel and Wellhead Protection Area layer.

Determining the non-agricultural managed lands utilized the MPAC description of the particular land use, but was also supplemented via air photo interpretation and an orthoimagery taken in 2006. Certain areas such as single residential unit parcels were analyzed for NAML area through air photo interpretation. For instance, by using a representative set of parcels within that MPAC category, areas that had potential as NAML (such as turf, lawns) were estimated with the area calculating tool. Further interpretation of the air photo were used to include or exclude parcels that were similar, then all these parcels were applied with the same percentage of managed land. Areas that had no managed lands included parcels with completely impervious cover or natural areas of scrubland or the like.

Utilizing attributes as described by the MPAC category and air photo interpretation, other areas were assessed to determine the percentage of NAML within the parcels in the Wellhead Protection Areas in the same method. These percentages of NAML were multiplied by the area to get the amount of NAML in each parcel. The sum of all the NAML areas for the parcels within

~~the Wellhead Protection Area was divided by the total area of the Wellhead Protection Areas to get the percentage of NAML.~~

~~Farm codes were supplied in a separate table that was joined to the MPAC parcels to determine which parcels had the potential for application of ASM. Non farm parcels were not coded (“Not Defined” in the Farm Operation code) and were assumed to not be agricultural in nature, unless the air photo was interpreted otherwise. AML includes cropland, improved pasture and fallow. The land area of these agricultural lands was summed then calculated as a percentage of the Wellhead Protection Area.~~

~~The area of NAML and the area of AML were summed then divided by the total area of the Wellhead Protection Area to get the percentage of managed lands.~~

The results of the calculations for managed lands are provided in **Table 6-3** and **Map6-7**, for the Arthur Wellhead Protection Areas.

Table 6-3: Managed Lands Percentage in the Arthur Wellhead Protection Areas

Township	Location	Well	WHPA-A	WHPA-B	WHPA-C	WHPA-D
Wellington North	Arthur	7A/7B	24.16%	47.72%	N/A [ⓐ]	63.86%
		8A/8B	79.39%	96.11%	N/A [ⓐ]	N/A [ⓐ]

The coding of N/A indicates that the vulnerability score in this area is 4 or less, and this area has not been assessed.

Livestock Density within the Arthur Wellhead Protection Areas

Technical Rule 16 also requires the mapping of livestock density. Livestock density is defined as the number of nutrient units over a given area, and is expressed by dividing the nutrient units by the number of acres in the agricultural managed land area or the livestock grazing area depending on the threat being assessed. Livestock density is used as a measure to determine the intensity of livestock animals and as such can be used as a measure of the potential for generating, storing and land applying agricultural source material. **The method to calculate livestock density is detailed in Chapter 3 of this Assessment Report.**

Methodology for Determining Livestock Density

~~As stated previously for the methodology on managed lands, the farm operation code table joined to the MPAC layer was used to determine what type of farming took place in each parcel. Often these categories were helpful for scoping of livestock housing, yet some were too generic (such as ‘mixed farming’) or erroneous and air photo interpretation was needed to determine what structures had the potential to house livestock.~~

~~The first screening of the air photo was to determine whether barns were present on a parcel that fell either partially or entirely within each Wellhead Protection Area. The barns on farms with codes not related to livestock (such as ‘cash crops— feed and seed’) were looked at but often quickly ruled out as livestock barns due to the farm code description.~~

~~Barns on farm parcels with codes related to livestock were looked at more carefully to determine what type of livestock could be housed and in which structures. Air photo interpretation with some knowledge of key identifying features of housing structures and land use practices allowed some confidence in selecting the correct structure as a livestock housing structure.~~

Once a livestock housing barn was selected, the type of livestock that was assumed to be housed in the barn was estimated with help from the farm code description and air photo interpretation. A polygon was drawn to cover the footprint of the structure to represent of the area of housing space for the livestock. The area of the barn was multiplied by the conversion factor for that livestock type, relating the area of the barn (in square metres) per Nutrient Unit, as supplied by OMAFRA in the Technical Memorandum issued by the Grand River Conservation Authority (GRCA) for Lake Erie Region Technical Studies (September 23, 2009) (GRCA, 2009a). This amount of nutrients is assumed to be applied to all the AML area on that farm unit evenly.

To verify the air photo interpretation, drive by site visits were done to capture a photograph of the barn from the road side.

Once all the livestock barns were found and the NU's calculated, the total NU applied to only the area within the Wellhead Protection Area is needed. Using area weighting, the livestock density (in NU/acre) of each farm parcel was applied to only the area within the Wellhead Protection Area and summed with all the other NU calculations on farm parcels in the Wellhead Protection Area.

The total NU generated by all the barns is divided by the total AML in the Wellhead Protection Area, as calculated in Step 5 of the Managed Lands Methodology, regardless of the type of farm (livestock or non-livestock). The livestock density in the Wellhead Protection Area is thus the sum of all NU applied within the Wellhead Protection Area divided by the total AML area (in acres).

The results of the calculations for livestock densities are provided in **Table 6-4** and **Map 6-8**, for the Arthur Wellhead Protection Areas.

Township	Location	Well	WHPA-A	WHPA-B	WHPA-C	WHPA-D
Wellington North	Arthur	7A/7B	0	0.13	N/A	0.95
		8A/8B	2.59	0.801	N/A	N/A

The coding of 0 indicates that there were no agricultural livestock barns to contribute nutrients and therefore the value for livestock density is 0. The coding of N/A indicates that the vulnerability score in this area is 4 or less, and this area has not been assessed.

Assumptions While Assigning Non-Agricultural Managed Lands

Some default values were used for estimating NAML based on the air photo interpretations and for ease of calculating. Roads generally had right-of-ways that were about 50% of the parcel size while the rest was the actual roadway, so most of these parcels were given NAML percentage of 50%. Parks or other open green-space that were interpreted as turf or grass were all assumed to have commercial fertilizers applied and thus defined as managed lands.

Percent Impervious Surface Area within the Arthur Wellhead Protection Areas~~To calculate the percent impervious surface, information on land cover classification from the Southern Ontario Land Resource Information system (SOLRIS) was used. This provided land use information, including road and highway transportation routes, as continuous 15x15 metre grid cells across the entire Source Protection Area. All the cells that represent highways and other impervious surfaces used for vehicular traffic were re-coded with a cell value of 1 and all other land cover classifications were given a value of 0, to identify impervious surface areas.~~

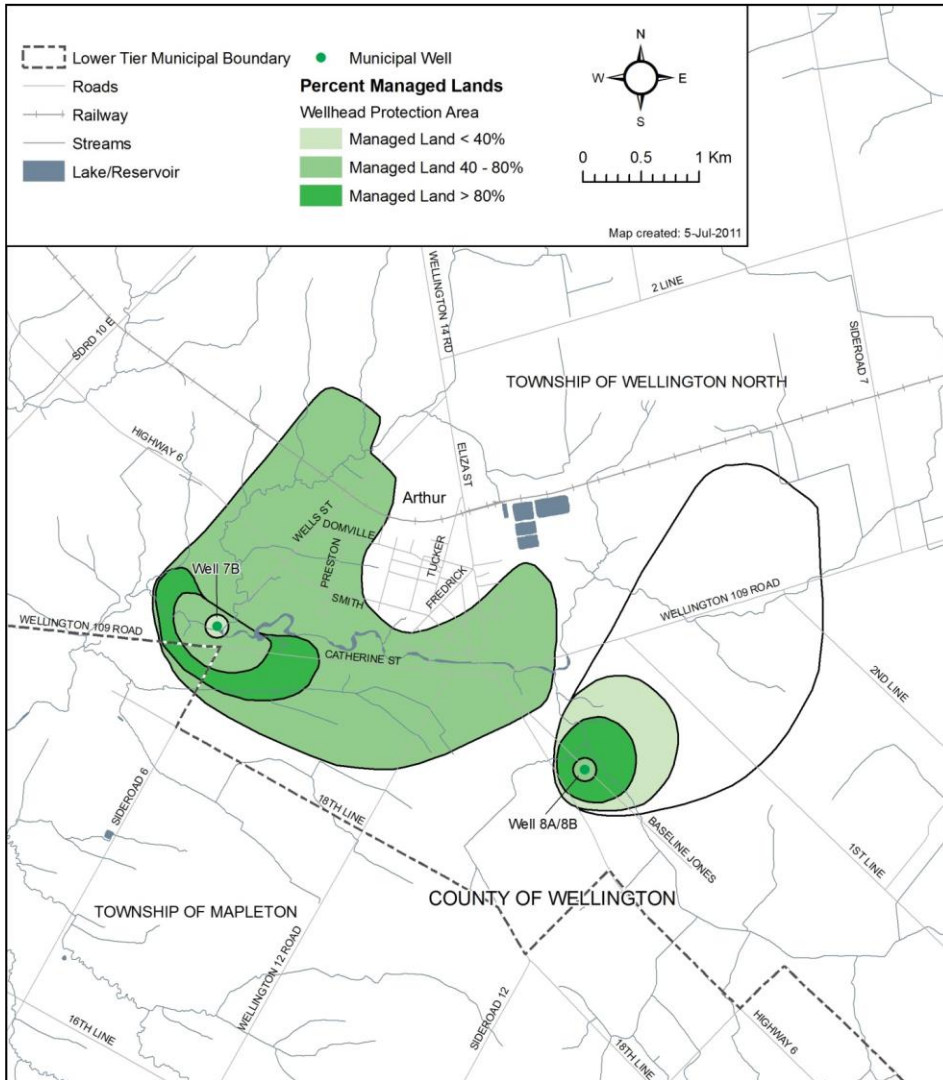
Then, a focal sum moving window average was applied using the Spatial Analyst module of the ArcGIS software. For each 15x15 metre cell, the total number of neighbouring grid cells coded as impervious, within a 1x1 kilometre search area, was calculated. This total was then converted into the percentage of impervious surface by land area, using the area of each cell (225 sq. m) and the area of the moving window (1 sq. km). This provides a 1x1 kilometre moving window calculation of percent impervious surface, represented in 15x15 metre spatial increments. This dataset was calculated for the entire Source Protection Area, but was clipped to show those results only in the Wellhead Protection Areas and Intake Protection Zones. The analysis is more representative of road density and is better than the method described in the Technical Rules. As per Technical Rule 15.1, the Director has confirmed his agreement with the departure. The Director's letter of confirmation can be found in Appendix B.

Percent impervious surface area for the Arthur WHPAs was calculated using the average moving window method, which is described further in Chapter 3 of this Assessment Report. Table 6-5 and Map 6-9 provide a summary of percent imperviousness within each of the Arthur Wellhead Protection Areas.

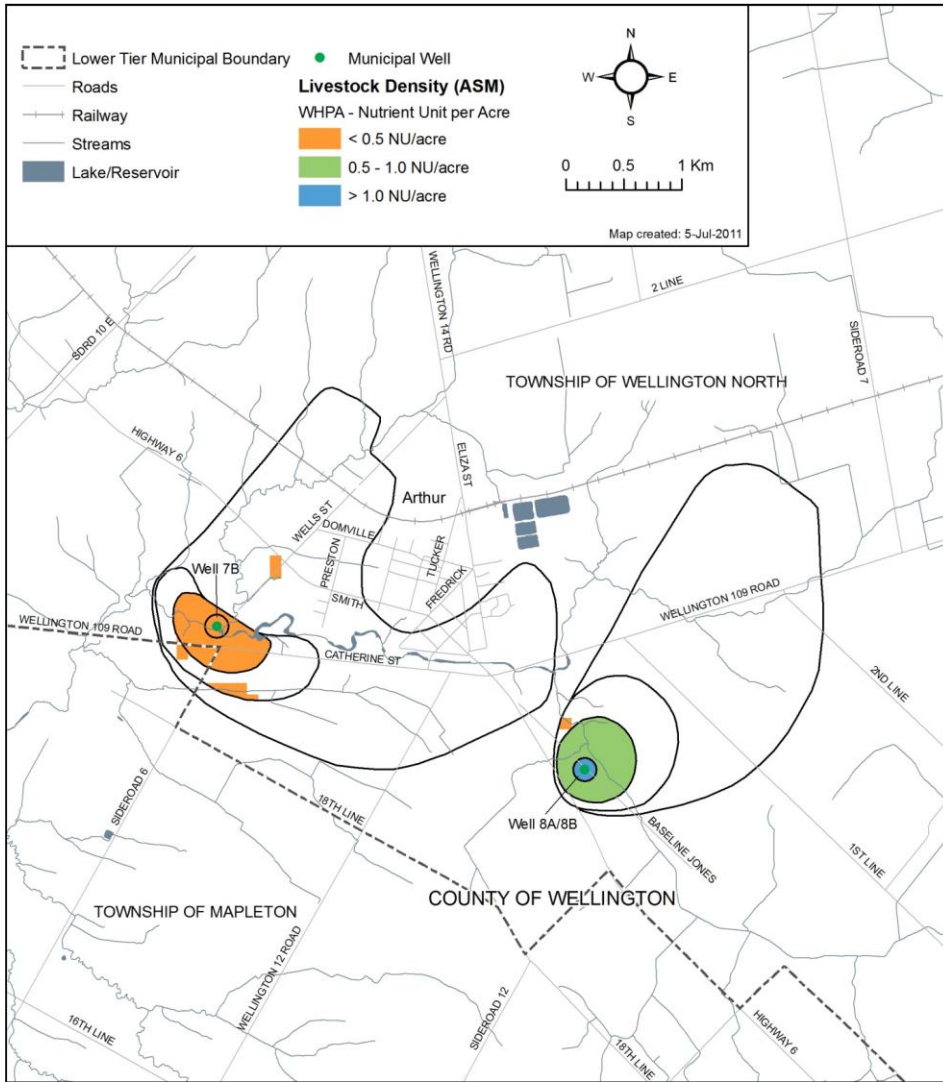
Table 6-5: Percent Impervious Surface Area in the Arthur Wellhead Protection Areas

Arthur Well ID	WHPA-A	WHPA-B	WHPA-C	WHPA-D
7B	0%	7.77%	3.23%	21.24%
8B	0%	1.16%	1.64%	2.4%

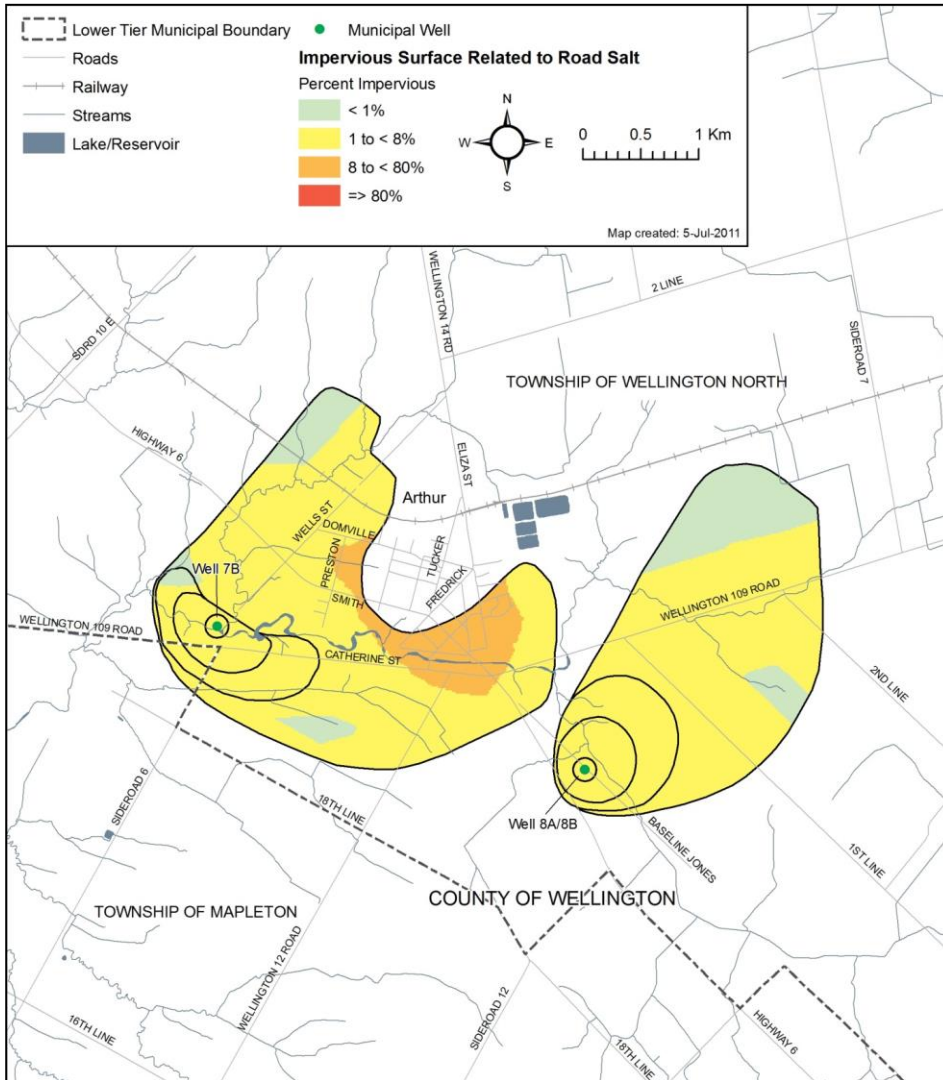
Map6-7 : Arthur Well Supply Percent Managed Lands



Map 6-8: Arthur Well Supply Livestock Density



Map 6-9: Arthur Well Supply Percent of Impervious Surfaces



6.1.3 Drinking Water Threats Assessment

The Ontario *Clean Water Act*, 2006, defines a Drinking Water Threat as “an activity or condition that adversely affects or has the potential to adversely affect the quality or quantity of any water that is or may be used as a source of drinking water, and includes an activity or condition that is prescribed by the regulation as a drinking water threat.” A Prescribed Drinking Water Threats table in Chapter 3 of this Assessment Report lists all possible drinking water threats.

Identification of Significant, Moderate and Low Drinking Water Quality Threats for the Arthur Well Supply

The identification of a land use activity as a significant, moderate, or low drinking water threat depends on its risk score, determined by considering the circumstances of the activity and the type and vulnerability score of any underlying protection zones, as set out in the Tables of Drinking Water Threats available through www.sourcewater.ca. Information on drinking water threats is also accessible through the Source Water Protection Threats Tool: <http://swpip.ca>. The information above can be used with the vulnerability scores shown in **Map 6-6** to help the public determine where certain activities are or would be significant, moderate and low drinking water threats.

Table 6-6 provides a summary of the threat levels possible in the Arthur Well Supply for Chemical, Dense Non-Aqueous Phase Liquid (DNAPL), and Pathogens. A checkmark indicates that the threat classification level is possible for the indicated threat type under the corresponding vulnerable area / vulnerable score; a blank cell indicates that it is not. The colours shown for each vulnerability score correspond to those shown in **Map 6-6**.

Threat Type	Vulnerable Area	Vulnerability Score	Threat Classification Level		
			Significant 80+	Moderate 60 to <80	Low >40 to <60
Chemicals	WHPA-A	10	✓	✓	✓
	WHPA-B	8	✓	✓	✓
	WHPA-B/C/D	6		✓	✓
	WHPA-C/D	2 & 4			
Handling / Storage of DNAPLs	WHPA-A/B/C	Any Score	✓		
	WHPA-D	6		✓	✓
	WHPA-D	2 & 4			
Pathogens	WHPA-A	10	✓	✓	
	WHPA-B	8		✓	✓
	WHPA-B	6			✓

6.1.4 Conditions Evaluation

Conditions are contamination that already exist and are a result of past activities that could affect the quality of drinking water. To identify a Condition, Part XI.3, Rule 126 of the CWA Technical Rules (2009b), lists the following two criteria for groundwater sources:

- The presence of a non-aqueous phase liquid in groundwater in a highly vulnerable aquifer, significant groundwater recharge area or wellhead protection area.

- The presence of a contaminant in groundwater in a highly vulnerable area, significant groundwater recharge area or a wellhead protection area, if the contaminant is listed in Table 2 of the Soil, Groundwater and Sediment Standards and is present at a concentration that exceeds the potable groundwater standard set out for the contaminant in that Table.

The above listed criteria were used to evaluate potentially contaminated sites within the Arthur WHPAs to determine if such a Condition was present at a given site.

Conditions Evaluation for the Arthur Well Supply

There is no indication of existing groundwater conditions resulting from past activities or spills that constitute a drinking water threat (as defined under Part XI.3 Rule 126 of the Assessment Report Technical Rules).

Ecolog records from the Occurrence Reporting Information System (1988-2002) were reviewed to identify reported spills and occurrences within each Wellhead Protection Area that have the potential to contaminate groundwater. Fuel spills were identified in Arthur. These spills may have resulted in surface water or soil contamination, but none were reported to have contaminated groundwater.

6.1.5 Drinking Water Quality Issues Evaluation

The objective of the Issues evaluation is to identify drinking water Issues where the existing or trending concentration of a parameter or pathogen at an intake, well or monitoring well would result in the deterioration of the quality of water for use as a source of drinking water. The parameter or pathogen must be listed in Schedule 1, 2 or 3 of the Ontario Drinking Water Quality Standards (ODWQS) or Table 4 of the Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines (Technical Rules XI.1 (114 – 117)). Elevated concentrations of selected parameters that are naturally occurring or where effective treatment is in place are not considered drinking water Issues.

Once a drinking water Issue is identified, the objective is to identify all sources and threats that may contribute to the Issue within an Issue Contributing Area and manage these threats appropriately. If at this time the Issue Contributing Area can not be identified or the Issue can not be linked to threats then a work plan must be provided.

If an Issue is identified for an intake, well or monitoring well, then all threats related to a particular Issue within the Issue Contributing Areas are significant drinking water threats, regardless of the vulnerability.

Data Sources for the Drinking Water Quality Issues Evaluation

Drinking water quality data for each municipal well and surface water intake was collected from governmental sources, including:

- Engineer Reports
- Operator Statements
- The Drinking Water Information Systems Database (DWIS)
- Annual Reporting to the ~~MOE~~ MECP (web-based)
- The Assessment Report's Watershed Characterization Report

Drinking Water Quality Issues Evaluation for the Arthur Well Supply

Parameters that are possible Issues are listed in **Table 6-7**. The table lists the parameter or pathogen of concern, and municipal well at which the exceedance(s) occurred, frequency of occurrence, potential source of contamination, and source of information.

Municipal Well	Parameter/ Pathogen	Contaminant	Potential Contaminant Source	Reference	Comments
Arthur 7A and 7B	Iron	Chemical	Naturally Occurring	Annual Reporting; BM Ross, 2001	Commonly exceeds ODWQS Technical Support Document Table 4.
Arthur 7A and 7B	Fluoride	Chemical	Naturally Occurring	Annual Reporting; BM Ross, 2001	Infrequently exceeds ODWQS Schedule 2.
Arthur 7A	Water Colour	Chemical	Naturally Occurring	Annual Reporting; BM Ross, 2001	Commonly exceeds ODWQS Technical Support Document Table 4.
Arthur 7A and 7B	Total Dissolved Solids	Chemical	Naturally Occurring	Annual Reporting; BM Ross, 2001	Occasionally exceeds ODWQS Technical Support Document Table 4.
Arthur 7B	Manganese	Chemical	Naturally Occurring	Annual Reporting; BM Ross, 2001	Infrequently exceeds ODWQS Technical Support Document Table 4.

There is currently no evidence to suggest that the presence of any of these parameters would lead to a deterioration of the Arthur Well Supply drinking water quality, nor is there any evidence to suggest a trend of increasing concentrations. In addition, the parameters of concern are all naturally occurring. No Issues have been identified under Rule 114 of the Technical Rules (MOE/MOEC, 2017~~99b~~).

Summary of Water Quality Issues Evaluation for the Arthur Well Supply

A total of four parameters listed in **Table 6-7** (iron, water colour, total dissolved solids, and manganese) were identified to commonly or occasionally exceed the drinking water quality standards of the Technical Support Document for Ontario Drinking Water Standards, Objectives, and Guidelines, and one parameter (fluoride) that was found to infrequently exceed the limits listed under Schedule 2 of the Ontario Drinking Water Quality Standards (CRA, 2009). It was noted, however, that the identified Issues for the Arthur Well Supply are naturally occurring, therefore, no Issues are reported for the Arthur Well Supply.

Limitations and Uncertainty for the Drinking Water Quality Issues Evaluation for the Arthur Well Supply

Data collected for the Issues Evaluation was limited in quantity and in temporal continuity. Raw water quality results ranged from 2 to 18 years in age, depending on the source. Recent analytical data typically included only raw water analysis for pathogens. Analytical data for metals, chemical and physical parameters were typically after treatment, resulting in the possibility for false

negatives. Also, since large temporal gaps existed in the data, it was difficult to define increasing trends.

6.1.6 Enumeration of Significant Drinking Water Quality Threats

The Technical Rules require an estimation of the number of locations at which an Activity is a significant drinking water threat and the number of locations at which a Condition resulting from past activity is a significant drinking water threat.

The enumeration of land use activities that may be associated with prescribed drinking water threats was based on a review of multiple data sources, including public records, data provided through questionnaires completed by municipal officials, previous contaminant/historical land use information, and data collected during windshield surveys. No site specific information was collected; therefore. As more site specific information becomes available during the source protection planning process, the presence of drinking water threats and their current level of management can be confirmed.

Drinking water threats as defined in the Ontario Clean Water Act (2006) were identified within the Arthur Wellhead Protection Areas through an enumeration of land use activities that may be associated with Prescribed Drinking Water Threats (Ontario Regulation 287/07).

The main objective of the assessment was to identify significant threats. A significant threat to a source of drinking water has a high likelihood of rendering a current or future drinking water source impaired, unusable or unsustainable, combined with a potential route for the contaminant to enter the source water.

Methodology for Enumerating Significant Drinking Water Quality Threats

Land use inventories were developed for each vulnerable area to associate activities with prescribed drinking water quality threats and generate a list of threats that are or have the potential to adversely affect the quality of drinking water. Existing and historical land uses were identified for each land parcel within (or intersecting) each Wellhead Protection Area and logged into a geospatial drinking water threat source database based on unique parcel identifiers (PINS).

A series of field walks and windshield surveys within the vulnerable areas was undertaken to identify existing land use activities. Residential, commercial, industrial, municipal, and other land uses were identified, cataloged and mapped within each Wellhead Protection Area. Other sources of information included government databases, assessment information, aerial photography, and general knowledge of the study area through Municipal representatives. EcoLog Environmental Risk Information Services Ltd. (ERIS) was used to conduct a search of available federal, provincial and private databases within each Wellhead Protection Area. Searchable databases which returned records are listed below.

- Aggregate Inventory
- Certificates of Approval
- Environmental Registry
- ERIS Historical Searches
- Fuel Storage Tank
- Occurrence Reporting Information System
- Ontario Regulation 347 Waste Generators Summary
- Ontario Regulation 347 Waste Receivers Summary
- Pesticide Register
- Private and Retail Fuel Storage Tanks

- Scott's Manufacturing Directory
- Water Well Information System

Land use categories were adapted from the Municipal Property Assessment Corporation (MPAC) property codes

A North American Industrial Classification System (NAICS) code was assigned to each land use activity identified within each parcel. In many instances, the land use activities identified through the available database searches, in the field, or through air photo interpretation differed from the MPAC property code classification. Professional judgment was used to assign an appropriate NAICS code. Where more than one land use activity was identified within a property, the appropriate NAICS codes were assigned.

The land uses identified within each parcel were used to determine if the associated activity (or activities) represents a potential significant threat to a drinking water source for which a policy in the source protection plan would be required to reduce or eliminate the threat.

The key data sources used to identify threats within the Arthur Wellhead Protection Areas included the following: Windshield surveys; government databases; assessment information; aerial photography; discussions with municipal representatives; EcoLog Environmental Risk Information Services Ltd. Search; and Municipal Property Assessment Corporation (MPAC) property codes.

Significant Drinking Water Quality Threats in the Arthur Wellhead Protection Areas

Table 6-8 summarizes the total number of significant pathogen, chemical, and DNAPL threats identified within each vulnerable area.

PDWT ¹ #	Threat Subcategory ²	Number of Activities	Vulnerable Area
1	Waste Disposal Site- Storage of Hazardous Waste at Disposal Sites	1	WHPA-A
2	Sewage System or Sewage Works- Septic System Onsite Sewage Systems	2	WHPA-A
3	Application of Agricultural Source Material to Land	3	WHPA-A
8	Application of Commercial Fertilizer	2	WHPA-A
10	Application of Pesticide to Land	3	WHPA-A
16	Handling and Storage of DNAPLs	2	WHPA-A, WHPA-C
17	Handling and Storage of Organic Solvents	1	WHPA-A
Total Number of Properties			6
Total Number of Activities			14

PDWT ¹ #	Threat Subcategory ²	Number of Activities	Vulnerable Area
<p>1: Prescribed Drinking Water Threat Number refers to the prescribed drinking water threat listed in O.Reg 287/07s.1.1.(1).</p> <p>2: Where applicable, waste, sewage, and livestock threat numbers are reported by sub-threat; fuel and DNAPL by Prescribed Drinking Water Threat category.</p> <p>Note: Storm sewer piping is not considered to be part of a storm water management facility.</p>			

Limitations and Uncertainty for the Enumeration of Significant Drinking Water Supply Threats for the Arthur Well Supply

Certainty in the threats evaluation is limited by the completeness and accuracy of the land use information and knowledge of the circumstances associated with the parcel-based activities identified across the study area. Any revisions to the vulnerability scoring and/or to the list of activities/Conditions and their circumstances would effectively impact the threats evaluation, altering the number of significant threats identified within the vulnerable areas included in the study. As the threats evaluation was a desktop exercise, verification would be needed to confirm the threats listed above.

Limitations include the general completeness of the databases used, currency of the data, accuracy of the data, and the generic nature of the threat ranking.

The following assumptions were made during the threat evaluation:

- ASM and NASM assumed based on land use activities, qualities estimated;
- Application of pesticides assumed based on land use activity;
- The presence of a on-Site septic system could lead to the discharge of a pathogen in the ground or surface water; and
- Storage of pesticides was based on the presence of farm buildings. The circumstances were unknown, therefore the quantities were assumed.

6.2 Township of Mapleton

Two municipal groundwater supply wells are located within the Township of Mapleton within the Grand River Source Protection Area: Drayton and Moorefield.

6.2.1 Drayton Well Supply

The Village of Drayton Well Supply system provides water for the Village of Drayton which has a population of approximately 1,550 persons (Statistics Canada, 2002). The area serviced is shown in **Map 6-10**. The system consists of two production wells located in a pumphouse off of Wood Street.

The Drayton production wells are both 250 mm diameter wells located approximately 6.1 m apart and in the context of this report they were modelled as a single source. Well 1 was drilled to a depth of 66.29 m in 1967 and Well 2 was drilled to a depth of 67.05 m in 1984. The two municipal wells were completed as open holes in the upper portion of the dolostone bedrock aquifer which is overlain by about 58 m of fine-grained overburden (Burnside, 2001c).

The Drayton Well Supply system operates according to Permit to Take Water (PTTW) No. 85-P-2004. According to the permit, the rate from the Drayton wells is not to exceed 2.73 m³/min and the daily amount is not to exceed 3,927 m³/day. As required by the Permit to Take Water conditions, two domestic wells referred to as the Thomson Well and the Flinkert Well are monitored for water levels (Burnside, 2009a).

6.2.2 Moorefield Well Supply

The Moorefield Well Supply system services the small hamlet of Moorefield located at Wellington Road 10 and Concession 8 with a population of approximately 550 residents. The water supply system includes two production wells which are located at the Public Works property on Wellington Road 10. The serviced area is shown on **Map 6-10**.

Moorefield Well 1 was originally installed in 1996 and was drilled to a total depth of 91.5 m. Moorefield Well 2 was installed in 2002 as a backup well. Due to similarity in construction and separation distance these wells were also modelled as a single source in the context of this report. Water in the wells comes from an extremely permeable portion of the dolomite bedrock aquifer at a depth of 82 m. The aquifer responds as a confined aquifer with little to no leakage. Overburden sediments consist of primarily fine grained silt and clay till (Burnside, 2002a).

The Moorefield Well Supply system operates according to Permit to Take Water No. 4651-6JTS55 which provides that the pumping rate from each well is not to exceed 910 L/min and the daily amount from each well is not to exceed 1,310 m³/day (Burnside, 2009b). As part of the PTTW, a monitoring program has been established and results are reported annually to the **MECP**. Two monitoring wells known as the Yard Well and Lounabury Well are included in this program.

Map 6-10: Township of Mapleton Serviced Areas

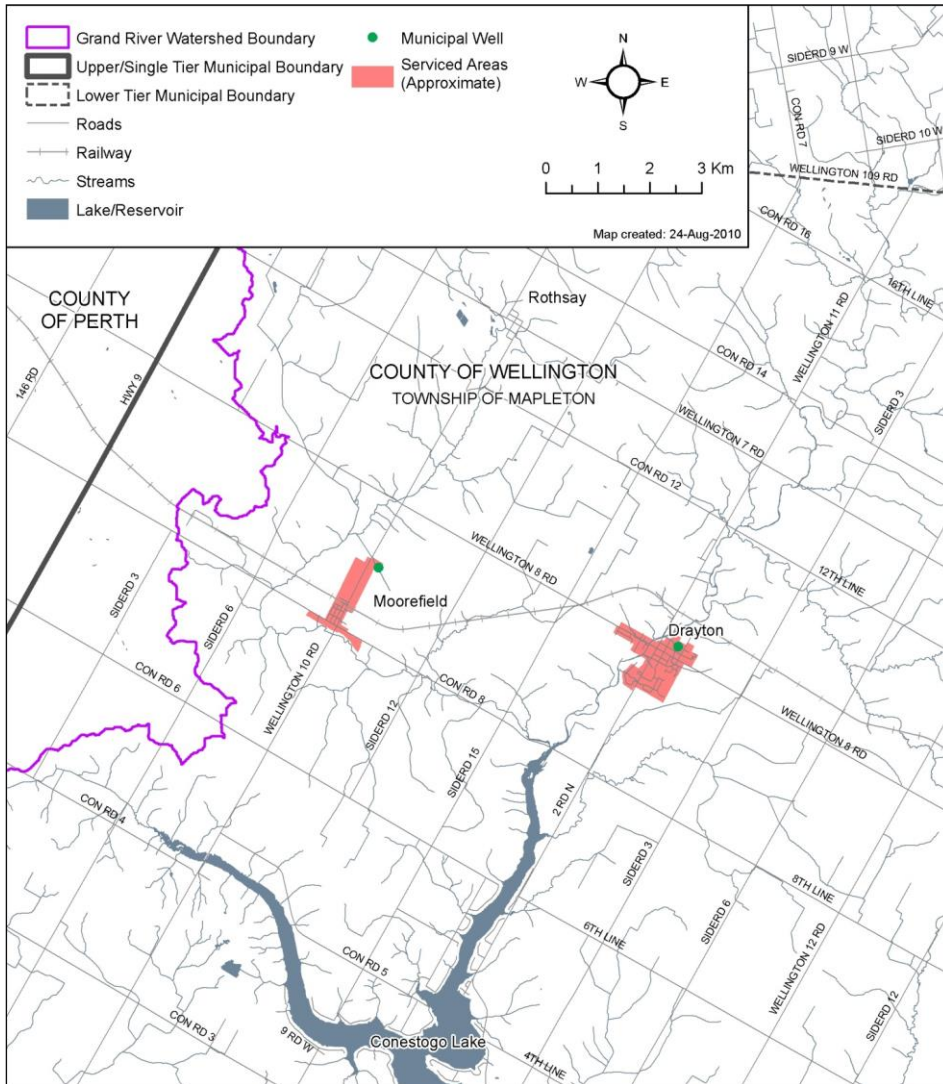


Table 6-9, Table 6-10 and Table 6-11 summarize the municipal groundwater systems and pumping rates for both the Drayton and Moorefield Well Supply systems within the Township of Mapleton.

Table 6-9: Municipal Production Wells in the Township of Mapleton

Well	Depth (m)	Open Interval	PTTW Number	Permitted Pumping Rate
Drayton PW1	66.3	62.2 m to 66.3 m	85-P-2004	273 L/min
Drayton PW2	67.05	61.6 m to 67.05 m		
Moorefield PW1	91.5	76.2 m to 91.5 m	4651-6JTS55	910 L/min
Moorefield PW2	91.5	73.1 m to 91.5 m		

Table 6-10: Municipal Residential Drinking Water System Information for the Township of Mapleton in the Grand River Source Protection Area (Drayton and Moorefield Well Supply Systems)

DWS Number	DWS Name	Operating Authority	GW or SW	System Classification ¹	Number of Users Served ²
220004064	Drayton Well Supply	OCWA	GW	Large Municipal Residential System	1,550
260069732	Moorefield Well Supply	OCWA	GW	Large Municipal Residential System	550

¹ as defined by O. Reg. 170/03 (Drinking Water Systems) made under the *Safe Drinking Water Act, 2002*.
² Drayton and Moorefield 2009 Annual Reports (O.Reg 170/03)

Table 6-11: Annual and Monthly Average Pumping Rates for Mapleton Municipal Residential Drinking Water Systems in the Grand River Region

Well or Intake	Annual Avg. Taking ¹ (m ³ /d)	Monthly Average Taking ¹ (m ³ /d)											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Drayton PW1	453.03	438.66	458.44	461.38	418.93	445.36	506.08	472.20	392.85	508.09	455.33	444.18	434.88
Drayton PW2	8.54	0.83	0.79	3.01	2.21	30.23	1.08	2.23	42.8	0.78	16.23	1.11	1.25
Moorefield PW1	60.98	71.63	71.39	63.81	63.84	63.84	61.96	60.39	54.64	56.42	54.91	52.84	56.04
Moorefield PW2	54.54	76.49	66.46	69.26	64.17	64.50	65.62	61.96	57.72	63.23	58.99	60.38	65.75

¹ source: Township of Mapleton 2009 annual summary report

6.2.3 Vulnerability Analysis

Delineation of Wellhead Protection Areas

Wellhead Protection Areas associated with the municipal water supply represents the areas within the aquifer that contribute groundwater to the well over a specific time period. Four Wellhead Protection Areas are specified, one a proximity zone and the others time-related capture zones:

- WHPA-A 100m radius from wellhead
- WHPA-B 2-year Time-of-Travel (TOT) capture zone
- WHPA-C 5-year TOT capture zone
- WHPA-D 25-year TOT capture zone

Modelling Approach for the Drayton and Moorefield Well Supply Systems

The Township of Mapleton delineated Wellhead Protection Areas as part of their previous groundwater management study (Golder, 2006a). The Wellhead Protection Areas were delineated using a regional scale MODFLOW model for the Township of Mapleton and the southern half of Wellington-North. The model was constructed and calibrated with available hydrogeological data and hydrogeological mapping products as described in the Groundwater Protection Study report (Golder, 2006a). The pumping rates used in developing the capture zones were based on a forecast of anticipated future groundwater use and are provided in **Table 6-12**.

Supply Wells	Pumping Rate Used
Drayton PW1/2	1,208 m ³ / day
Moorefield	225 m ³ / day

To develop Time of Travel capture zones, groundwater particles were released at the pumping wells in the models and tracked backwards towards their source of origin (recharge). At each well location, particles were released in all hydrostratigraphic units “open” to the wellbore. The time-related pathlines that are subsequently generated by the model from this analysis are then overlain and a single Time of Travel capture zone drawn around the “family” of pathlines generated at each well. To check the capture areas generated from the backward tracking analysis (and in some cases to refine the Time of Travel outline produced) a series of forward particle tracking simulations were completed. The resulting capture zone from this process represents the two-dimensional (2-D) projection of the particle outlines to ground surface. The models infer that the groundwater flow systems are equivalent porous media at the scale of the time-related capture zones under consideration. While groundwater flow in bedrock aquifers occurs primarily in the fractures, the use of an equivalent porous medium approach can still provide a reasonable approximation of the time of travel related capture zones of a bedrock supply well provided the scale of observation is much greater than the scale of individual fractures, and consideration is given to the selection of a reasonable “effective” porosity. The effective porosity assumed for the travel time calculations was 5% (Golder, 2006a).

Delineation of the Drayton and Moorefield Wellhead Protection Areas

The locations and orientations of the Drayton and Moorefield Wellhead Protection Areas are shown in **Map 6-11** and **Map 6-12**, respectively.

The Drayton capture zones extend in a north-east direction from the well up gradient of regional groundwater flow in the bedrock. The WHPA-D zone extends approximately 6 km from the well and the total Wellhead Protection Area covers an area of 1,082 ha. The Moorefield capture zones also extend in a north-east direction. The Wellhead Protection Area is 4 km long and approximately 900 m wide with a total area of 236 ha.

Delineation of WHPA-E and WHPA-F for the Drayton and Moorefield Wellhead Protection Areas

~~The Technical Rules (MOE, 2009b) require that all wells that are identified as GUDI (groundwater under the direct influence of surface water) delineate an additional protection zone that is representative of its surface water vulnerability, known as a WHPA-E. GUDI wells are identified in accordance with subsection 2 (2) of O. Reg. 170/03 (Drinking Water Systems) of the Safe Drinking Water Act, 2002.~~

None of the wells in this study have been identified as GUDI, therefore delineation of a WHPA-E was not required. The Technical Rules also require that a WHPA-F be delineated for a well when the wells Wellhead Protection Area contains a WHPA-E and a drinking water Issue is identified that originates outside of the areas WHPA-A through WHPA-E. Since a WHPA-E was not required for any of the wells, the delineation of a WHPA-F was also not required.

Uncertainty of the Delineation of the Drayton and Moorefield Wellhead Protection Areas

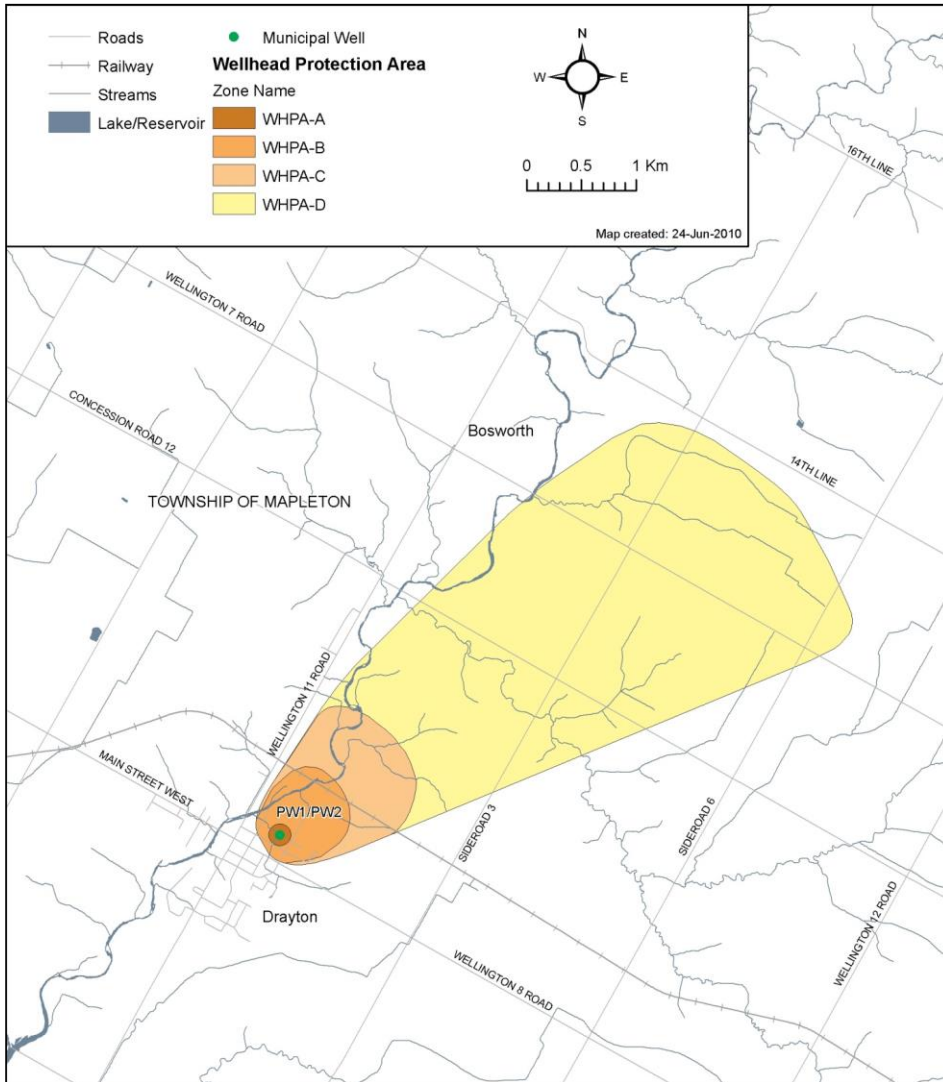
The delineation of the Wellhead Protection Areas was completed by Golder in the Wellington County Groundwater Protection Study, 2006 through the use of a MODFLOW groundwater model. The model was completed based on a number of simplifying assumptions that incorporate some level of uncertainty that is dependent on the nature, spatial distribution and density of available data.

The groundwater model was calibrated to represent steady state conditions in the aquifer using static water levels from 1,323 points. The NRMS error for the calibration is reported as being 4.5% which is considered to be within the acceptable limits of less than 10% for numerical models (Golder, 2006a). Model boundary conditions included river boundaries, constant head boundaries and pumping well boundaries.

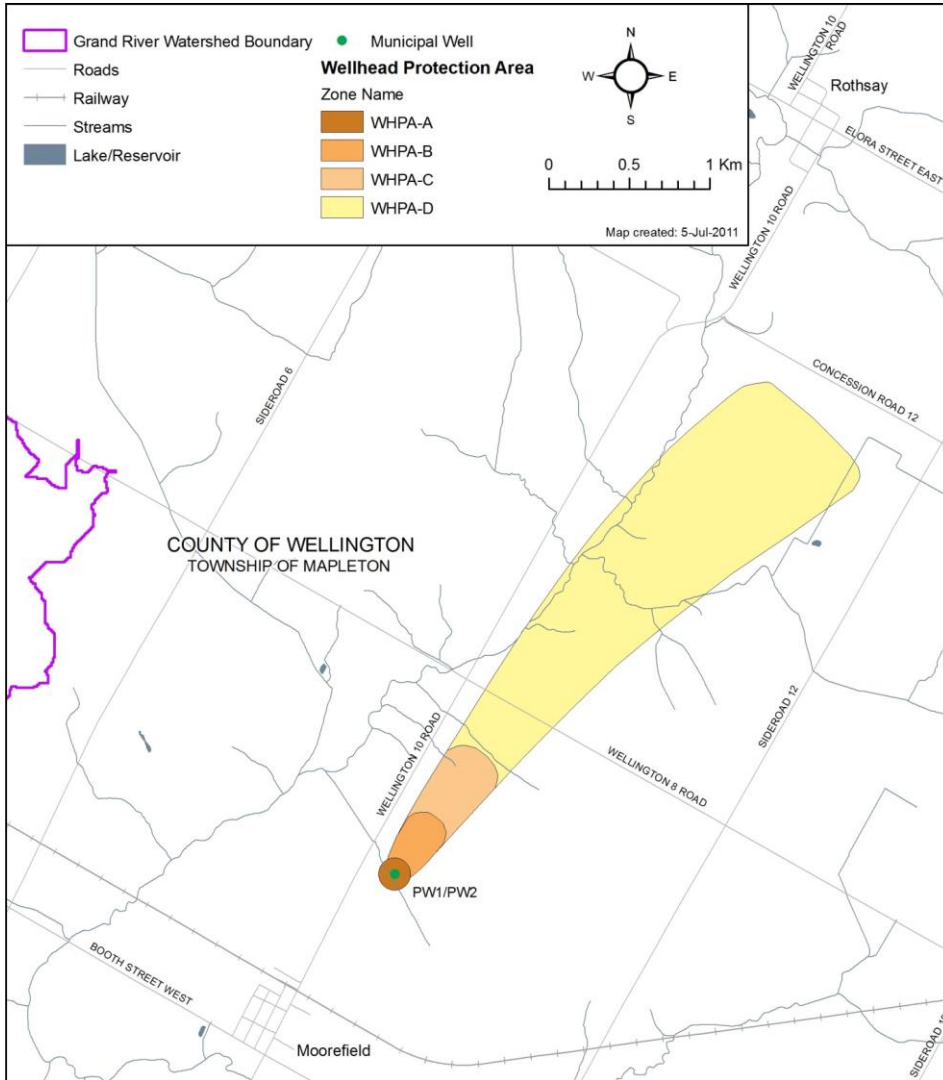
Uncertainties within the model are associated with limitations in the availability of subsurface information and can be related to projected variability in the aquifer properties (e.g. hydraulic conductivity; porosity) or uncertainties with the conceptual model (e.g. groundwater-surface water interactions; location of flow boundaries; recharge rates; continuity in aquitards; direction of regional groundwater flow). To account for some of these uncertainties Golder has applied a factor of safety to the Wellhead Protection Areas. The factor of safety has been applied to two components of the Wellhead Protection Areas; the width and length of the capture zones were increased by 20% to account for uncertainty in the hydraulic characteristics of the aquifer system and the orientation of the capture zone was adjusted by 5 degrees (plus and minus) along its centre line to account for some uncertainty in the regional flow direction by increasing the width of the capture zones at increasing distances from the pumping well. This reflects the concept that the available data is typically concentrated around the pumping well and that the uncertainty in the hydrogeological understanding increases at increasing distances from the supply wells (Golder, 2006a).

Based on the calibration results of the model and the safety factor applied to the Wellhead Protection Areas the uncertainty of the delineations can be considered low.

Map 6-11: Drayton Well Supply Wellhead Protection Area



Map 6-12: Moorefield Well Supply Wellhead Protection Area



Vulnerability Scoring in Wellhead Protection Areas

~~The completion of aquifer vulnerability scoring is outlined under Part VII, subsection VII.3 of the Technical Rules (MOE, 2009b). Mapping for this study was completed in three stages: i) development of aquifer vulnerability mapping ii) update of vulnerability due to transport pathways and iii) assignment of vulnerability scores.~~

Aquifer vulnerability mapping was completed by the GRCA using the Surface to Aquifer Advection Time (SAAT) approach. The SAAT approach estimates the average time required by a water particle to travel from a point at the ground surface to the aquifer of concern. The SAAT is approximated by using the vertical component of the advective velocity integrated over the vertical distance and the average porosity. The travel times generated are categorized into groups being <5 years, 5 to 25 years and > 25 years.

The GRCA retained Earthfx to complete the vulnerability mapping using the SAAT method for most of the Grand River watershed (Earthfx, 2008). The regional mapping was reviewed on a local scale in the vicinity of the water supply wells. The vulnerability mapping was refined based on the following considerations: bedrock outcrops, surficial geology, overburden thickness, SAAT point values and hydrogeological interpretations. There were no adjustments made to the Drayton and Moorefield SAAT ratings (Golder, 2010a). ~~The SAAT travel times were grouped to create ratings which were then used to construct an aquifer vulnerability map of the study area. Time of Travel values less than 5 years are rated as High Vulnerability. Values between 5 and 25 years are Medium vulnerability. Any value greater than 25 years is classified as having a Low Vulnerability. The various vulnerability ratings based on the travel times is shown in Table 7-16.~~ The intrinsic vulnerability for Drayton and Moorefield are shown on **Map 6-13 and Map 6-15**.

Table 7-16: SAAT Vulnerability Ratings

Time of Travel (years)	Vulnerability Rating
<5	High
5 to 25	Medium
>25	Low

~~A vulnerability score is assigned to each vulnerable area according to the groundwater's susceptibility to becoming contaminated and that contamination reaching a well (Technical Rules, MOE, 2009b). Within Wellhead Protection Areas, the vulnerability score is determined based on overlaying the aquifer vulnerability classification (high, medium, low) with the defined Wellhead Protection Areas. The vulnerability scoring was completed in accordance with Rule 82 of the Technical Rules. Vulnerability scores range from 10 for areas with the highest vulnerability to 2 for areas with low vulnerability. Scores were assigned as per Table 2(a) in Part VII of the Technical Rules (MOE, 2009b). A summary of the process used to define vulnerability scores is outlined in Chapter 3, the Table 7-17.~~

Table 7-17: Wellhead Protection Area Vulnerability Scores – SAAT

Time of Travel Zone (WHPA)	SAAT Times		
	0 to 5 years (High)	5 to 25 Years (Medium)	>25 Years (Low)
WHPA-A (100m)	10	10	10
WHPA-B (2 year TOT)	10	8	6
WHPA-C (5 year TOT)	8	6	2
WHPA-D (25 year TOT)	6	4	2

Aquifer vulnerability mapping for Drayton and Moorefield is provided on **Map 6-14 and Map 6-16** respectively. In both WHPAs, the vulnerability score for WHPA-A is 10, WHPA-B is 6, and WHPA-C and WHPA-D is 2. The mapping illustrates that the study area is rated as having a low vulnerability. This is a reflection of the fine-grained till overburden located in the area ranging from 60 to 70 m in thickness providing protection from contaminants reaching the municipal aquifer.

Uncertainty in the Vulnerability Scoring for the Drayton and Moorefield Well Supply Systems

Vulnerability assessment was completed by Earthfx on behalf of the GRCA in 2008 and was based on the SAAT. The SAAT calculation was based on a number of empirical formulae provided in past guidance documents from the MECPOE. Detailed descriptions of the methodology and associated assumptions for these calculations are included in the report entitled *Aquifer Vulnerability mapping for Norfolk, Brant Counties, Catfish Creek and Kettle Creek watershed* (Earthfx, 2008).

The calculation of SAAT is made up of two components; the unsaturated zone advection time (UZAT) and the water table to aquifer advection time (WAAT). In the Earthfx study both components were computed based on simplifying assumptions included in MECPOE provided formulae. It was noted that the UZAT was computed based on estimates for groundwater recharge derived from a GAWSER model. Also values for specific yield of soils were obtained from existing literature. The results of the UZAT analysis showed a high degree of variance which may be attributed to variance in the input GAWSER model. The results of the analysis indicate that there is a 95.5 % certainty that the UZAT time calculated is within +/-42 years of the actual time at any well. This indicates that the variability of the UZAT value (margin of error) is greater than the divisions of the vulnerability range i.e. the vulnerability could vary across the entire range of classifications from low to medium or high based on its margin of error. The potential for this high variation indicates that the uncertainty related to this component is high.

UZAT was computed at various water well points across the study area. There was considerable effort made within the study to improve the quality of the locational and lithologic data provided by each data point. In this regard only wells with a location accuracy of less than 100 m were used as part of the study. It can be interpreted that the computations performed represented values that were correct locationally across the study area.

The second component of the SAAT vulnerability, WAAT, was computed based on a formula provided by the MECPOE and was applied in areas where the target aquifer was known to be confined or where no aquifer material was recognized. The calculation assumes that flow within this zone can be approximated by the Darcy law for groundwater flow. The results of a statistical analysis indicate a high variance in the computed values which points to a high variance and high degree of uncertainty in the underlying data. The computation is known to be dependent on estimates of hydraulic properties, and interpolation of potentiometric surfaces which are based on sparse and unreliable data. The resulting product can be regarded as being an amalgamation of all the primary data uncertainties. Based on the uncertainty associated with the input data it is concluded that the WAAT calculation can be regarded as having a high uncertainty.

Finally the SAAT is derived by combining the previously discussed components of UZAT and WAAT. It is noted that the UZAT was computed using a GAWSER model to estimate recharge. The GAWSER model is known to be built on certain simplifying assumptions that have not been expounded in the background report from Earthfx. In light of this no level of uncertainty can be attached to the results of this model. Using the results of the UZAT and WAAT calculations as

outlined in the Earthfx report it is concluded that the level of uncertainty associated with the computation of SAAT is high. While the corrections applied to well locations resulted in locationally correct analyses, the underlying uncertainty in the computations themselves results in an overall ranking of high uncertainty for the process.

Earthfx performed a comparative analysis of vulnerability methods using Intrinsic Susceptibility Index (ISI) to compare with the values for SAAT. It was indicated that the SAAT ranking compared favourably to the ISI in the high vulnerability areas with more significant deviations in the medium and low ranked areas. The statistical analysis performed on the ISI however indicated that there was also a high uncertainty in these values.

The delineation of the Wellhead Protection Areas and the scoring of the vulnerable areas for the Township of Mapleton were completed using the most up to date models and information available for the area. Although there is some uncertainty involved the groundwater model, the amount of data available, the processing of this data to use only the highest quality data, and the use of conservative assumptions to account for uncertainty was sufficient to conclude that the uncertainty of the Wellhead Protection Areas delineations for the Drayton and Moorefield Well Supply systems is low.

The evaluation of the vulnerability indicated that due to variability in the underlying data the resulting uncertainty of vulnerability is considered to be high. This is despite the efforts to improve the spatial accuracy of some of the data points and also despite up to date approaches. It will be important to revisit the assumptions made as part of the assessment to try and develop methods to reduce the uncertainty associated with these values.

Identification of Transport Pathways and Vulnerability Adjustment

Rules 39 to 41 of the Technical Rules (MOE, 2009; MOECC, 2017) allows for an increase in vulnerability rating of an aquifer due to the presence of transport pathways that may increase the vulnerability of the aquifer by providing a conduit for contaminants to bypass the natural protection of the aquifer.

~~Transport pathways are developed where natural or man-made features in the aquifer provide a path along which contaminants can migrate to the regional aquifer. The presence of the transport pathways should be accounted for in the vulnerability assessment and these pathways may include private water wells, unused water wells, abandoned water wells, construction of underground services, subsurface excavations, pits and quarries. The vulnerability of an area may be increased from low, to medium or high and from medium, to high based on the presence of transport pathways.~~

~~The Technical Rules indicate that the following factors should be considered when evaluating whether the vulnerability of an area is increased:~~

~~Hydrogeological conditions;~~

~~Type and design of any transport pathways;~~

~~The cumulative impact of any transport pathways; and~~

~~The extent of any assumptions used in the assessment of the vulnerability of the groundwater~~

Transport Pathways in the Drayton and Moorefield Wellhead Protection Areas

A review of water well records from the MOE-MECP water well database and a field survey were conducted to identify wells within the Wellhead Protection Areas. The wells were then ranked based on their risk to the supply aquifer. The survey resulted in the identification of 32 water wells within the Drayton Wellhead Protection Areas and classified 18 of the wells as high risk wells.

Five water wells were identified in the Moorefield Wellhead Protection Areas and three were classified as high risk wells and had their locations field verified.

Septic systems are considered transport pathways as they can provide a conduit for contaminants to travel through the ground to the water table. Septic systems are generally built in the upper few metres of the sub-surface and consist of a tank and drainage tiles which distribute effluent allowing it to infiltrate back into the ground. In the case of thin confining layers or in unconfined aquifer conditions, these shallow penetrating systems may present a significant conduit for contaminants to the aquifer of concern. Both Drayton and Moorefield have municipal sewage collection systems, however septic systems may still be present that were used before servicing was available. In ground individual septic systems are assumed present at all rural residences outside of the serviced areas. The municipal aquifer for the Drayton and Moorefield water supply wells is a confined aquifer that are overlain by greater than 20 m of fine grained sediments. In this study individual septic systems are not considered to constitute a transport pathway due to their relatively shallow depth of penetration.

Utilities that are constructed in the sub-surface are potential transport pathways as the disturbed soil surrounding them can provide a pathway for contaminants to enter into the aquifer below. Utilities that may act as transport pathways include storm-water trunk sewers and sanitary infrastructure. The depth of excavation for the construction of utilities will determine the risk that the wells pose on the municipal supply aquifer. Since the aquifers used by the municipal supply wells are generally protected by an upper aquitard, the risk for transport pathways to be created due to utilities is low.

Surface water features can be considered transport pathways as they can create a short cut to the aquifer for contaminants, especially when the features are man-made such as man-made ponds, dugouts and aggregate extraction ponds. Based on the hydrogeology of the areas, the aquifer utilized by the municipal wells is protected by a thick aquitard, thus most constructed surface water features should have little to no connectivity with the regional aquifer.

Aggregate operations are defined as activities that involve the extraction of material from the surface and in the current study include both pits and quarries. Pits and quarries present a transport pathway as their creation serves to remove a potential layer or layers of protection from the regional aquifer. In some cases, these excavations may extend to below groundwater table in which case the pit or quarry is a direct conduit to the aquifer that the municipal source may be a part of.

As part of the current study aggregate operations have been mapped based on existing databases and the review of aerial photography and satellite imagery along with a windshield survey of the Wellhead Protection Areas. There were no aggregate operations located within the Wellhead Protection Areas.

Uncertainty of Transport Pathways within the Drayton and Moorefield Wellhead Protection Areas

In the Drayton and Moorefield Wellhead Protection Areas the aquifer vulnerability was modified to consider increases in vulnerability due to transport pathways. In this area only well locations were considered to increase the vulnerability of an area. To decrease the uncertainty in the location and risk of the wells mapped, a field verification survey was completed. This survey

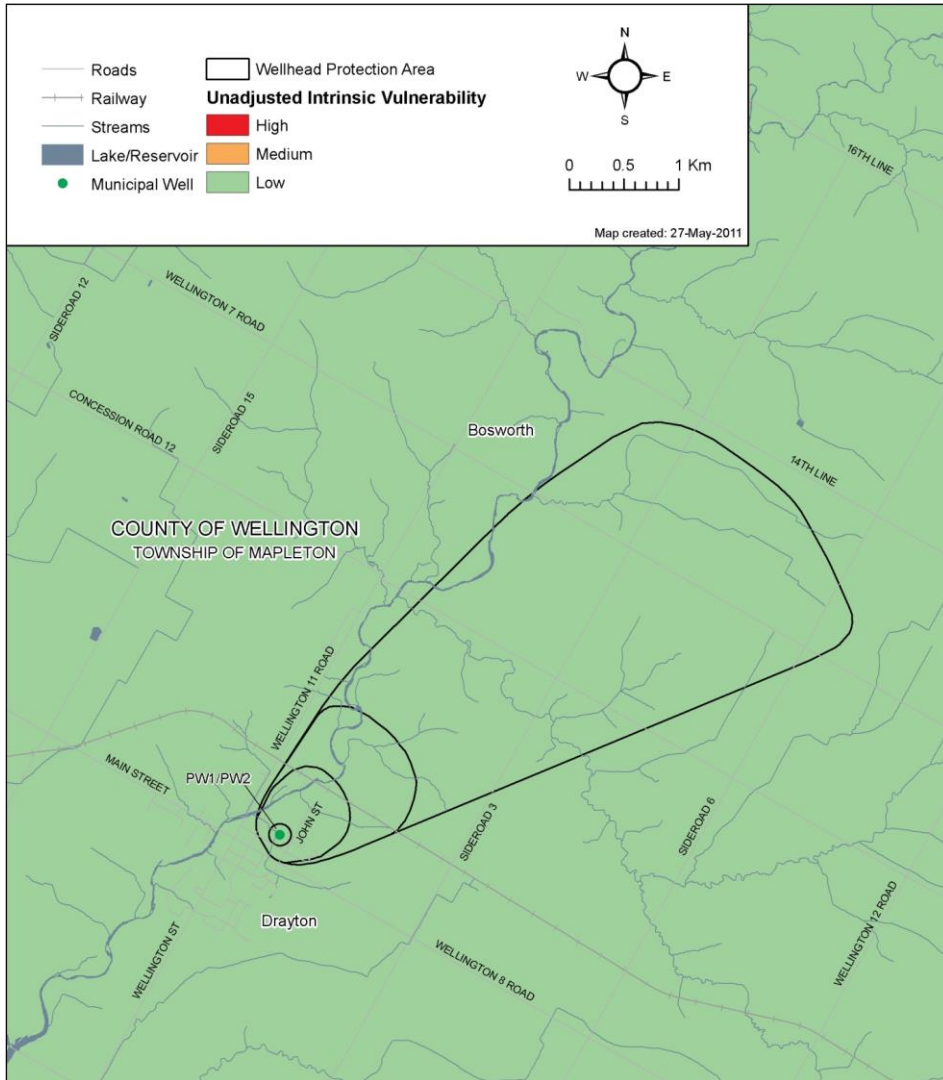
sought to verify the location of wells included in the various Wellhead Protection Areas and also evaluate the visual condition of these wells. The information gathered during the field verification exercise was used to update the project database, and formed the basis for the determination of the adjustment of vulnerability. When a well was not located in the field, the risk was assigned based on information provided in the **MECPOE** well records.

Adjusted Vulnerability Scoring for the Drayton and Moorefield Wellhead Protection Areas

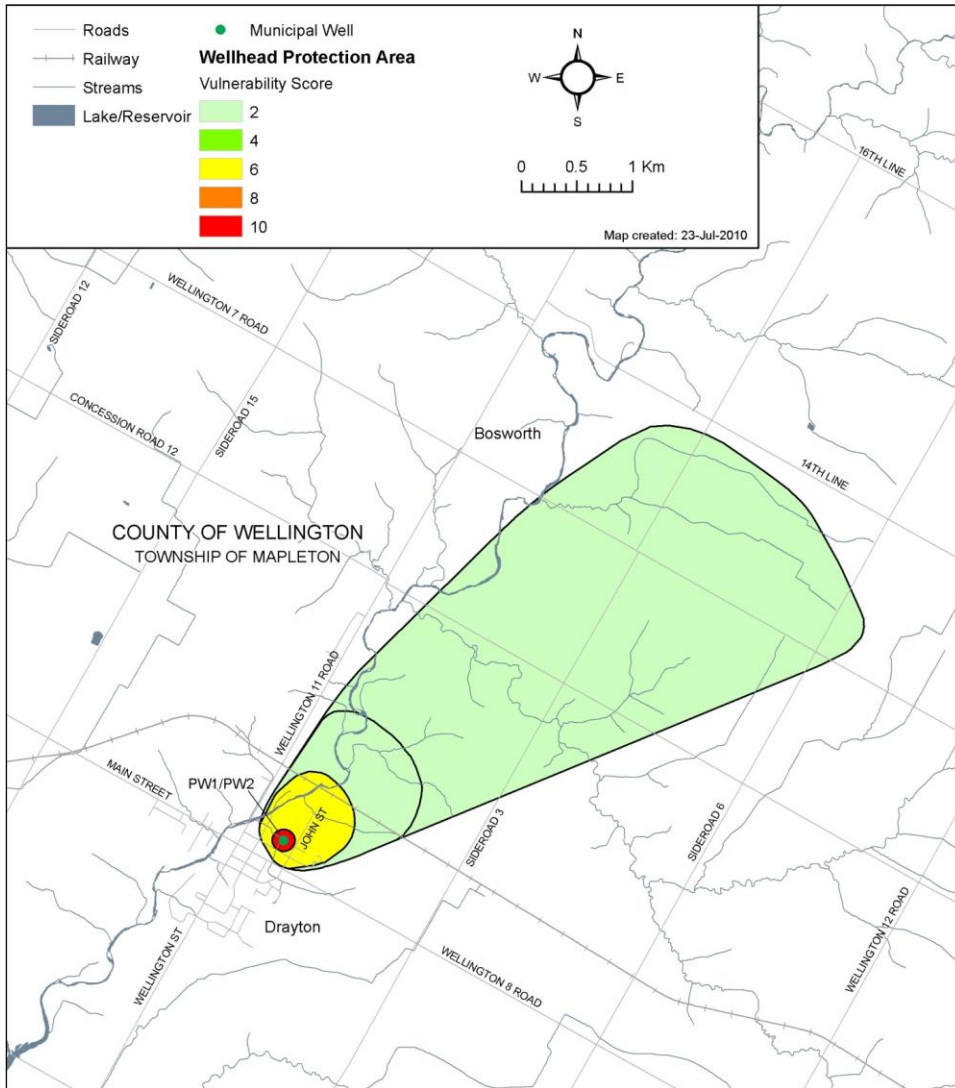
The increase in vulnerability as a result of transport pathways is generally limited to one rank (low to medium or medium to high) except in extreme cases where the constructed pathway is considered to increase the vulnerability of the aquifer from low to high. These cases may occur at pits or quarries that completely breach any low permeability layers overlying a deeper aquifer. To account for the presence of high risk wells as potential transport pathways, increases in vulnerability may be applied in areas with a high density of high risk wells.

For this evaluation a visual survey of high risk well locations was undertaken. Since there were no areas within the current study that had a significant concentration of high risk wells, no increases in vulnerability were made.

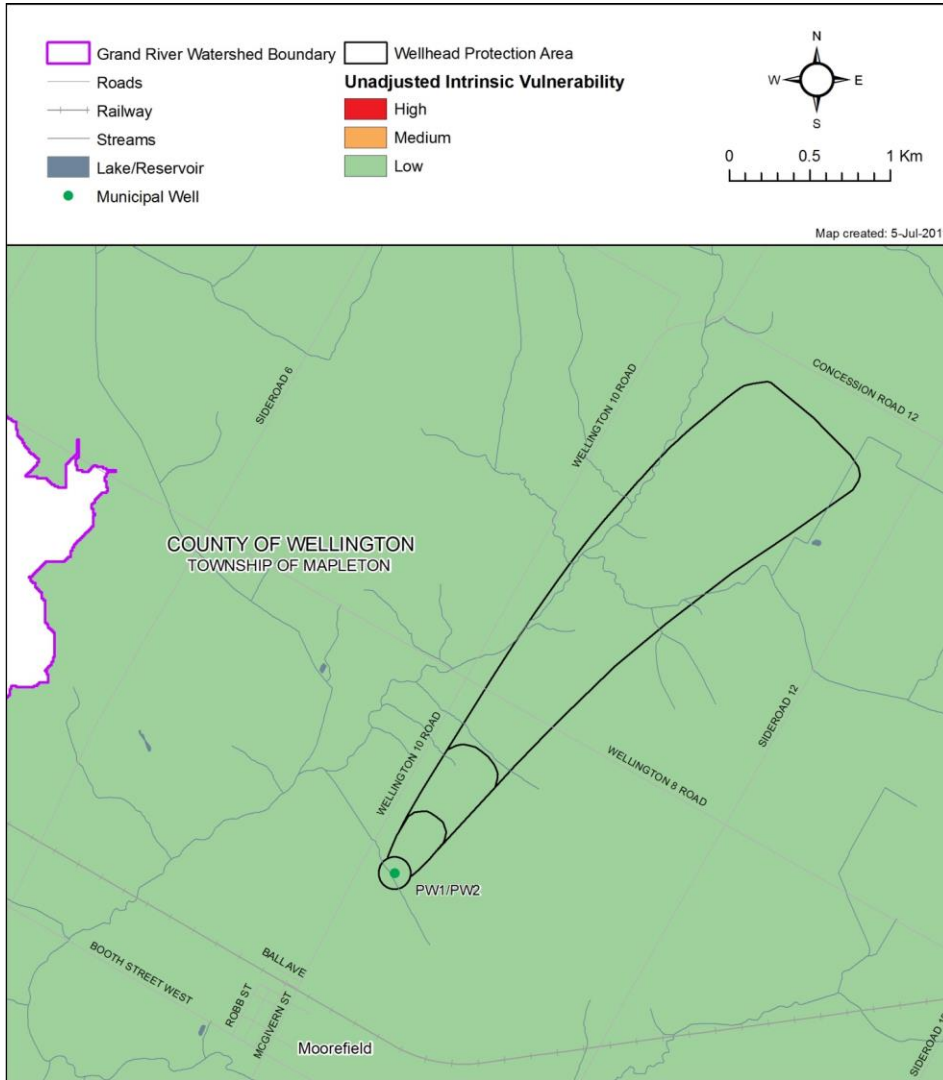
Map 6-13 Drayton Well Supply Unadjusted Intrinsic Vulnerability



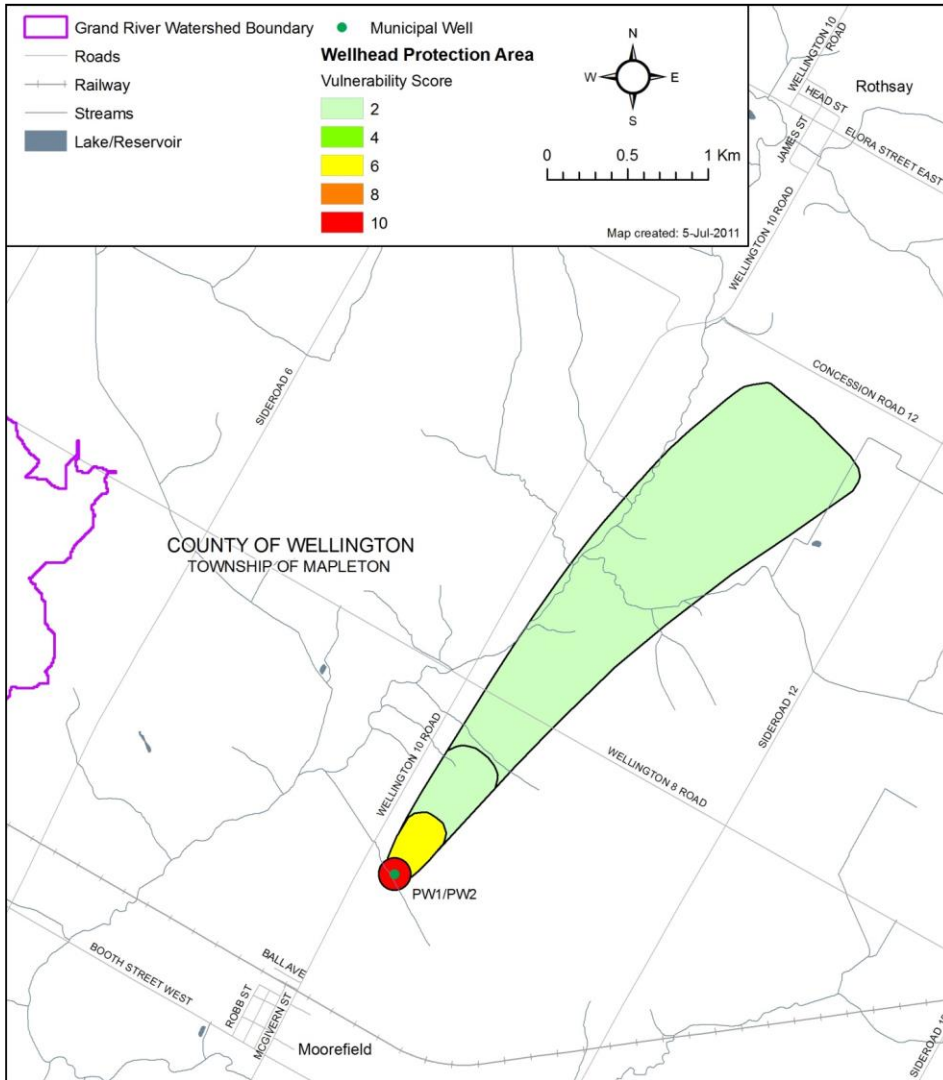
Map 6-14: Drayton Well Supply Wellhead Protection Area Final Vulnerability



Map 6-15 Moorefield Well Supply Unadjusted Intrinsic Vulnerability



Map 6-16: Moorefield Well Supply Wellhead Protection Area Final Vulnerability



Managed Lands within the Drayton and Moorefield Wellhead Protection Areas

Managed land is defined as any land to which there may be the application of agricultural source material (ASM), commercial fertilizer, or non-agricultural source material (NASM). Managed land includes the following crop land, fallow land, improved pasture, golf courses, sports fields and lawns. ~~Managed land can be broken down into two subsets; agricultural and non-agricultural managed land. Agricultural managed land includes cropland, fallow and improved pasture that may receive nutrients. Non-agricultural managed land includes golf courses (turf), sports fields, lawns (turf) and other built-up grassed areas that may receive nutrients (primarily commercial fertilizer). The storage, handling and application of pesticides, fertilizers and agricultural source material associated with managed land and agricultural activities can result in surface water runoff and potential pathogen and chemical contamination.~~

~~To measure the impacts from these activities on water supplies a methodology was developed by the GRCA in association with the MOE for the evaluation of percentage of managed land within each vulnerable area. The methodology is described in detail in a technical bulletin issued by the MOE in December 2009 and titled "Technical Bulletin: Proposed Methodology for Calculating Percentage of Managed Lands and Livestock Density for Land Application of Agricultural Source material, Non-Agricultural Source Material and Commercial Fertilizers."~~

~~Under the methodology the percentage of managed land is computed based on the land area associated with that vulnerable area or area within the vulnerable area. The percentage of agricultural managed lands are also evaluated separately from the overall managed land percentages. The overall percentage of managed land is used to categorize the landscape for further analysis of threats through the MOE provided Tables of Drinking Water Threats. For areas where the managed lands total accounts for less than 40% of the vulnerable area, the area is considered to have a low potential for nutrient application to cause contamination of drinking water sources. If the managed lands total accounts for 40% to 80% of the vulnerable area then the area is considered to have a moderate potential for nutrient application to cause contamination of drinking water sources. If the managed land total accounts for over 80% of the vulnerable area then the area is considered to have a high potential for nutrient application to cause contamination of drinking water sources.~~

Calculation of the percentage of managed lands was done in accordance with Technical Rule 16(9) (MOE, 2009b; MOECC, 2017) with details outlined in Chapter 3. ~~Mapping the percentage of managed lands area is not required where the vulnerability score for an area is less than the vulnerability score necessary for the activity to be considered a significant threat. Therefore, the percentage of managed lands was only calculated where the vulnerability score in each Wellhead Protection Areas was 6 or greater.~~

The results of the calculations for managed lands are provided in **Table 6-13**, **Map 6-17** and **Map 6-18** for the Drayton and Moorefield Wellhead Protection Areas. A coding of N/A indicates that the vulnerability score in this area is 4 or less, and this area has not been assessed.

Table 6-13: Managed Lands Percentage in the Drayton and Moorefield Wellhead Protection Areas

Township	Location	Well	WHPA-A	WHPA-B	WHPA-C	WHPA-D
Mapleton	Drayton	PW1/ PW2	48.04%	76.34%	N/A	N/A
	Moorefield	PW1/ PW2	44.82%	98.04%	N/A	N/A

Livestock Density within the Drayton and Moorefield Wellhead Protection Areas

Livestock density is used as a surrogate measure of the potential for generating, storing and land applying ASM as a source of nutrients in vulnerable areas. The livestock density is expressed as nutrient units per acre (NU/Acre) and is calculated based on the number of animals housed, or pastured on a farm unit that generate enough manure to fertilize an area of land. **Detailed methods for livestock density calculations is outlined in Chapter 3.**

~~Livestock density is combined with the results of the computations for percentage agricultural managed land for the purposes of determining the circumstances related to the application of nutrients and the associated threats as defined by the MOE's Table of Drinking Water Threats.~~

~~For the current study, both livestock density and the managed land calculations were completed by the GRCA. The methodology used was consistent with the methodology provided in the MOE publication "Technical Bulletin: Proposed Methodology for Calculating Percentage of Managed Lands and Livestock Density for Land Application of Agricultural Source material, Non-Agricultural". The resulting analyses and the interpreted data was incorporated into the project database and utilized for the subsequent evaluations of threat raking. The results of the calculations for livestock densities are provided in Table 6-14, Map 6-19, and Map 6-20, for the Drayton and Moorefield Wellhead Protection Areas.~~

Table 6-14: Livestock Density (NU/acre) in the Drayton and Moorefield Wellhead Protection Areas

Township	Location	Well	WHPA-A	WHPA-B	WHPA-C	WHPA-D
Mapleton	Drayton	PW1/ PW2	0	0.80	N/A	N/A
	Moorefield	PW1/ PW2	0	0	N/A	N/A

The coding of 0 indicates that there were no agricultural livestock barns to contribute nutrients and therefore the value for livestock density is 0. The coding of N/A indicates that the vulnerability score in this area is 4 or less, and this area has not been assessed.

Percent Impervious Surface Area in Wellhead Protection Areas

Road salt used during winter road maintenance is regarded as a threat. Generally road salt application rates depend on the amount of traffic a road receives and weather conditions.

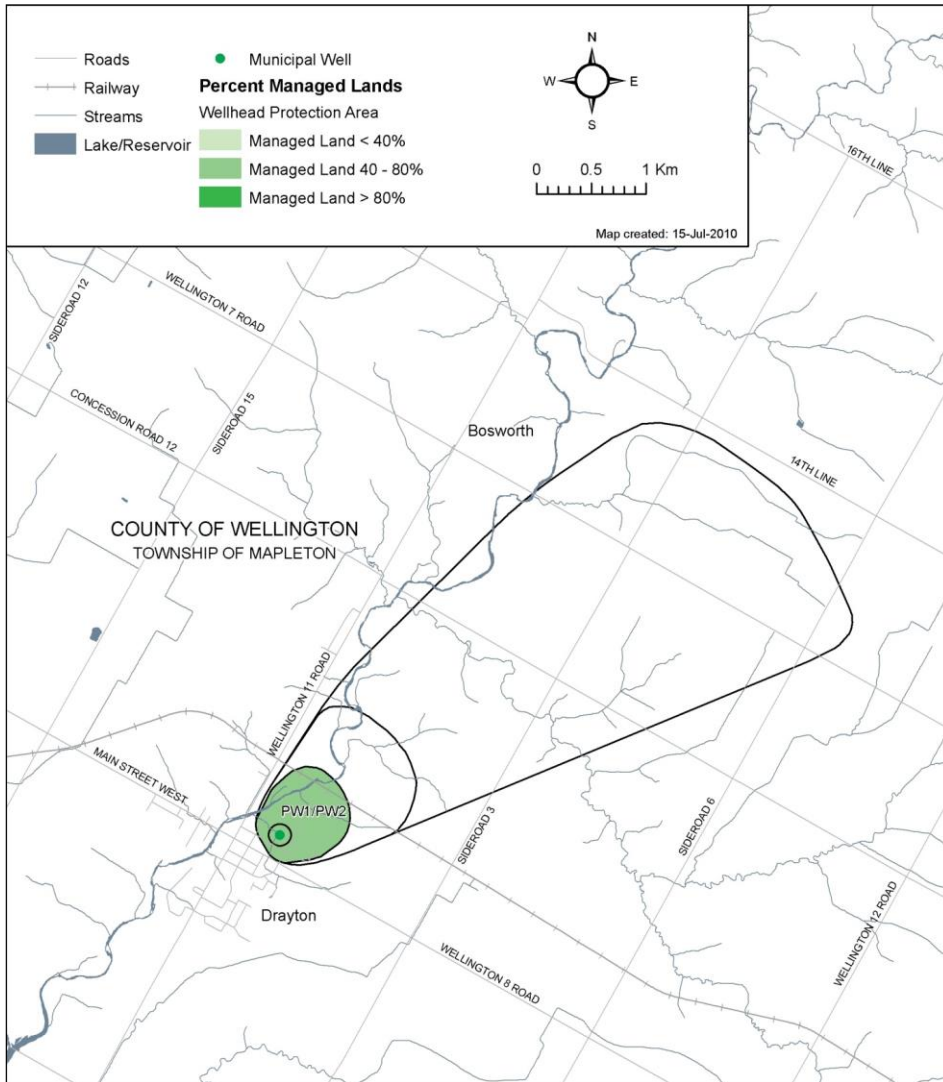
To calculate the percent impervious surface, information on land cover classification from the Southern Ontario Land Resource Information system (SOLRIS) was used. This provided land use information, including road and highway transportation routes, as continuous 15x15 metre grid cells across the entire Source Protection Area. All the cells that represent highways and other impervious surfaces used for vehicular traffic were re-coded with a cell value of 1 and all other land cover classifications were given a value of 0, to identify impervious surface areas.

Then, a focal sum moving window average was applied using the Spatial Analyst module of the ArcGIS software. For each 15x15 metre cell, the total number of neighbouring grid cells coded as impervious, within a 1x1 kilometre search area, was calculated. This total was then converted into the percentage of impervious surface by land area, using the area of each cell (225 sq. m) and the area of the moving window (1 sq. km). This provides a 1x1 kilometre moving window calculation of percent impervious surface, represented in 15x15 metre spatial increments. This dataset was calculated for the entire Source Protection Area, but was clipped to show those results only in the Wellhead Protection Areas and Intake Protection Zones. The analysis is more

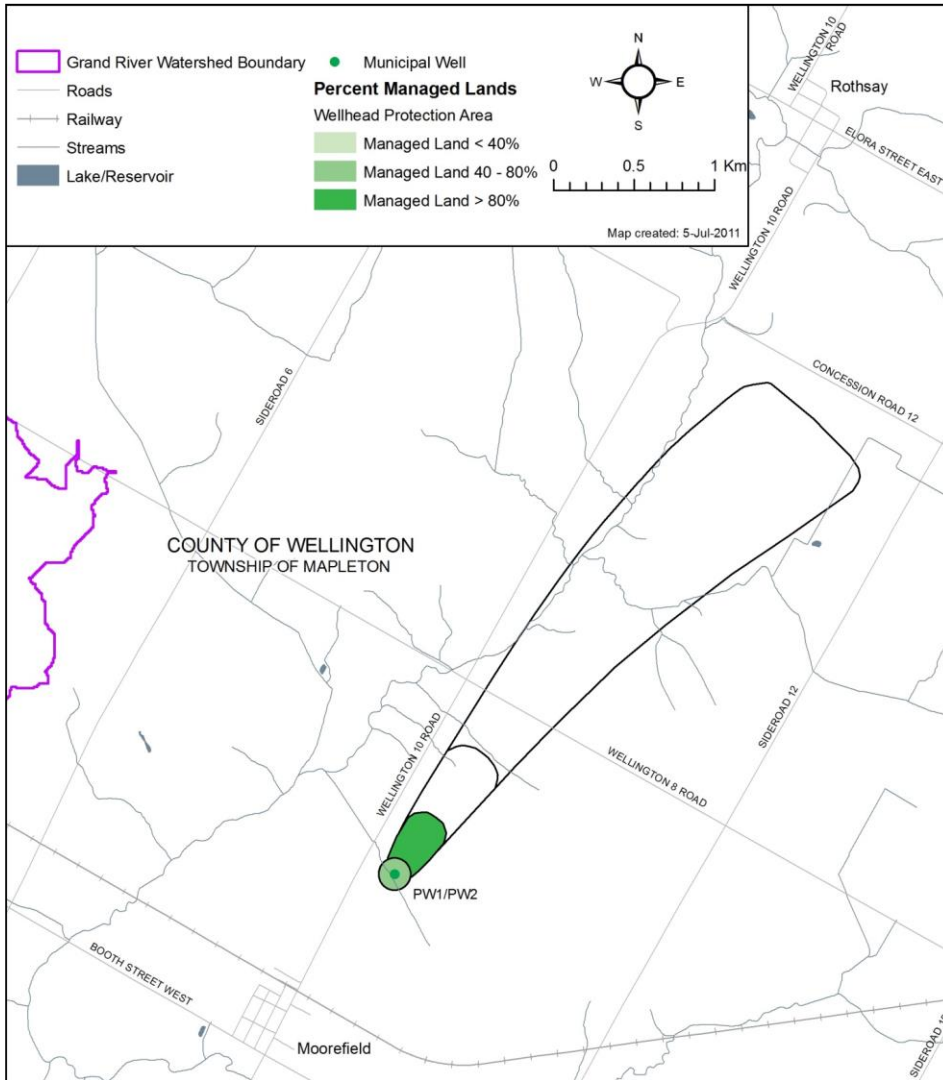
representative of road density and is better than the method described in the Technical Rules. As per Technical Rule 15.1, the Director has confirmed his agreement with the departure. The Director's letter of confirmation can be found in **Appendix B**.

The percentage of impervious surfaces is an indicator for the potential for impacts due to road salting. In areas with high levels of impervious surfaces (roads) there is an increased likelihood that road salts will be applied (**Map 6-21** and **Map 6-22**).

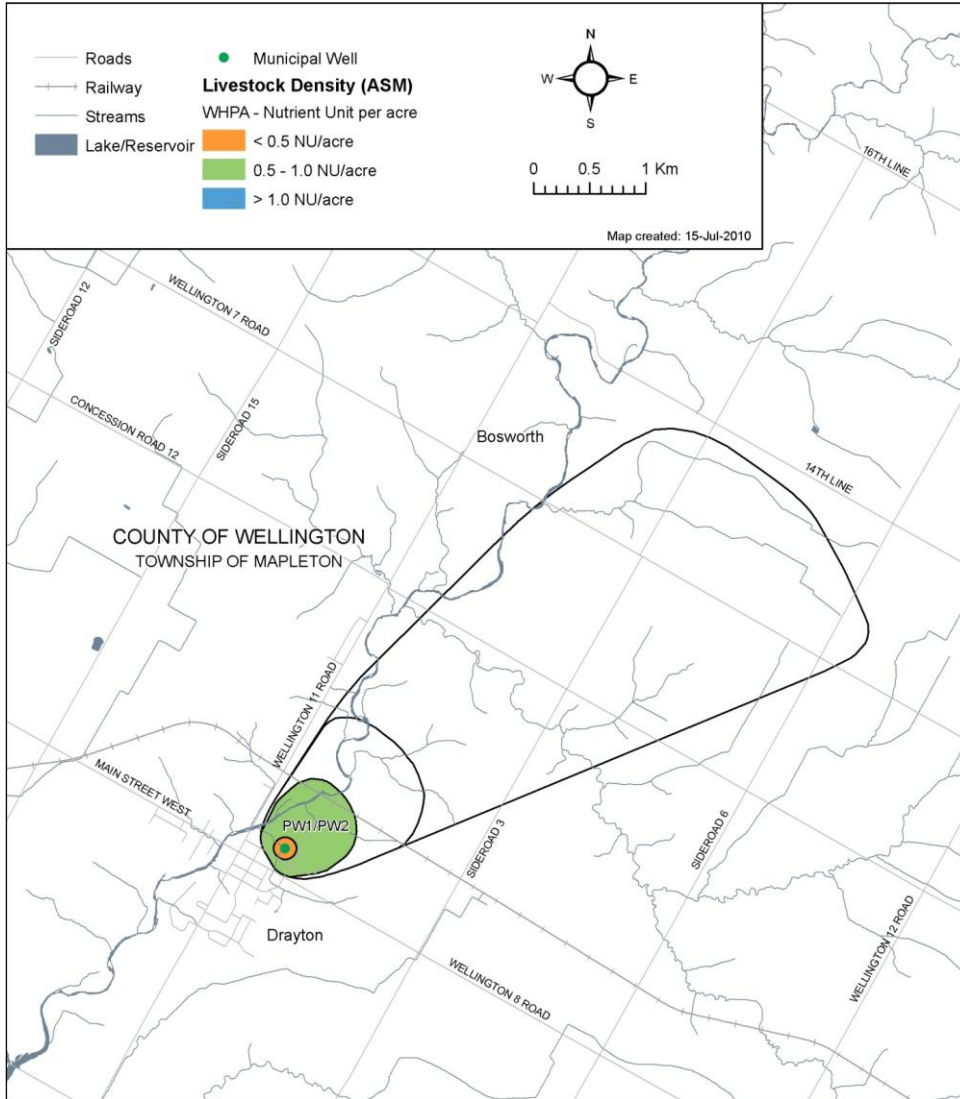
Map 6-17: Drayton Well Supply Percent Managed Lands



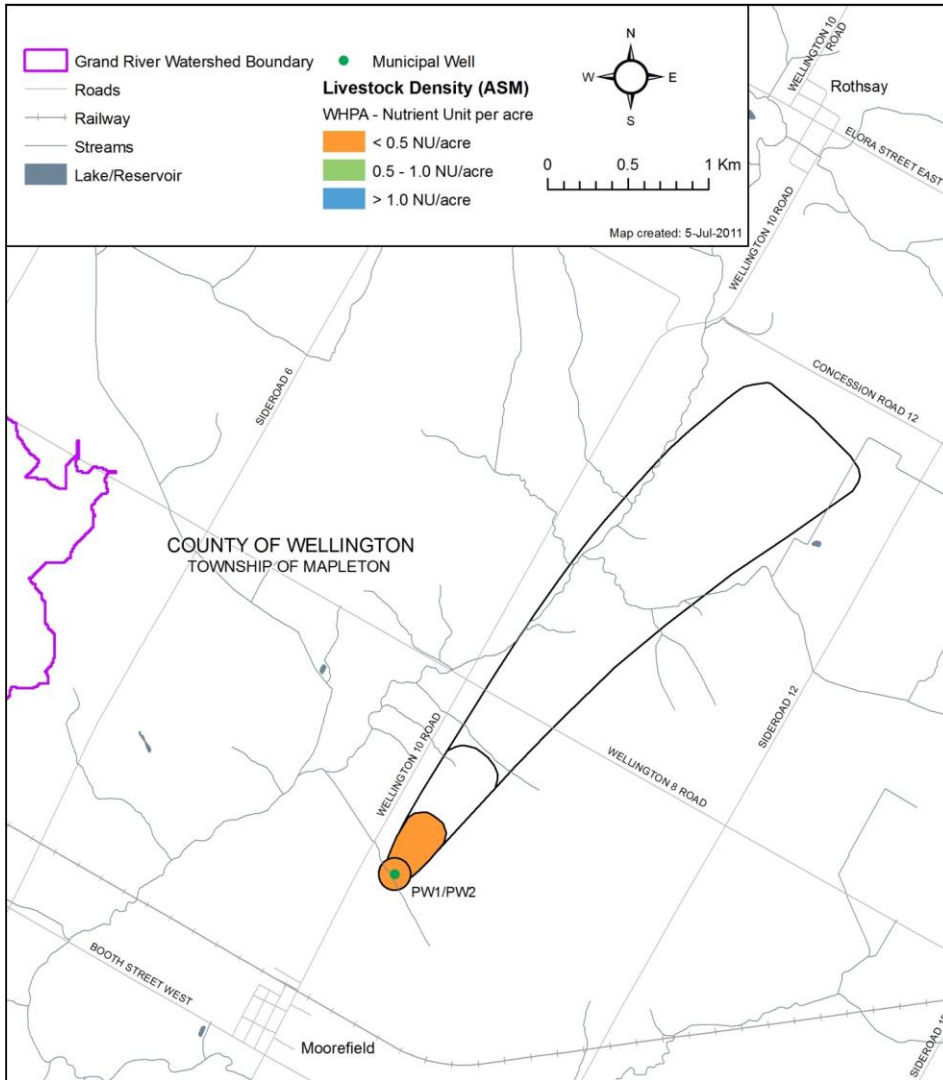
Map 6-18: Moorefield Well Supply Percent Manged Lands



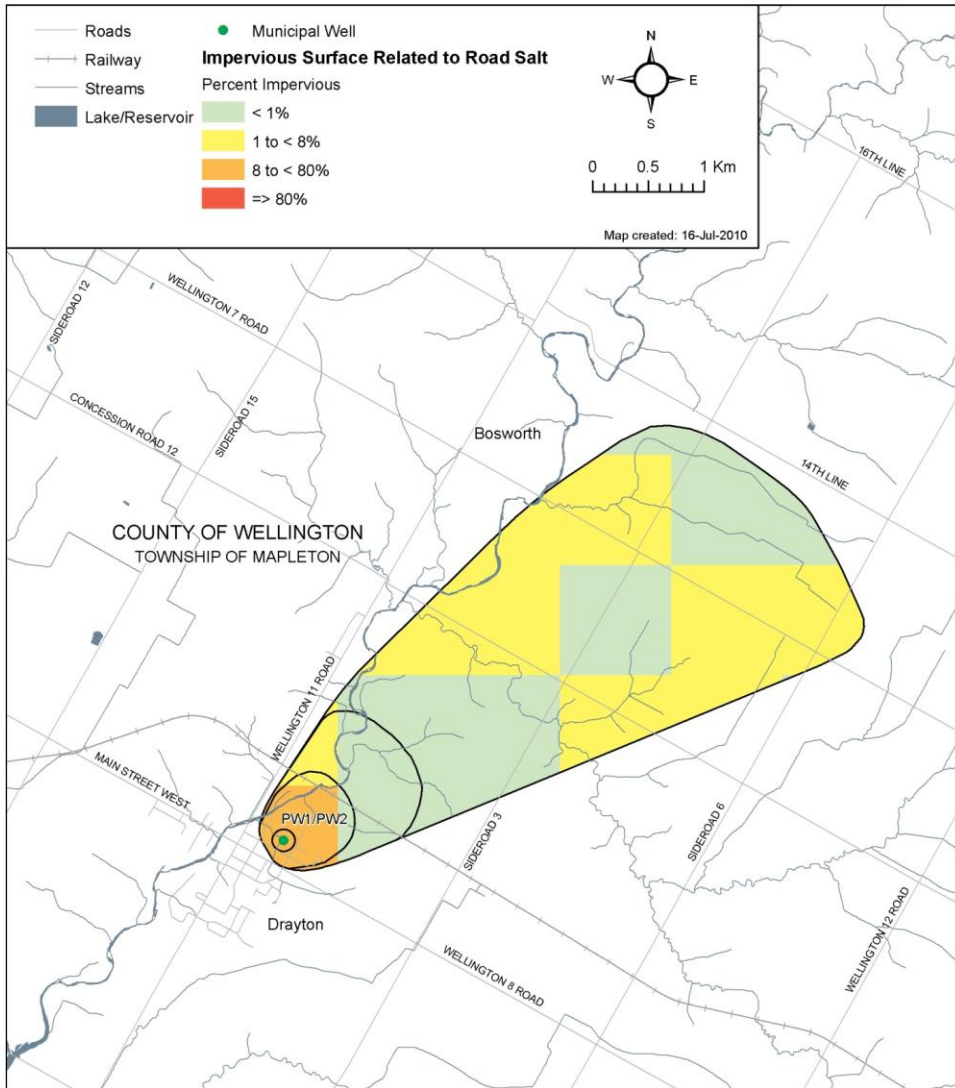
Map 6-19: Drayton Well Supply Livestock Density



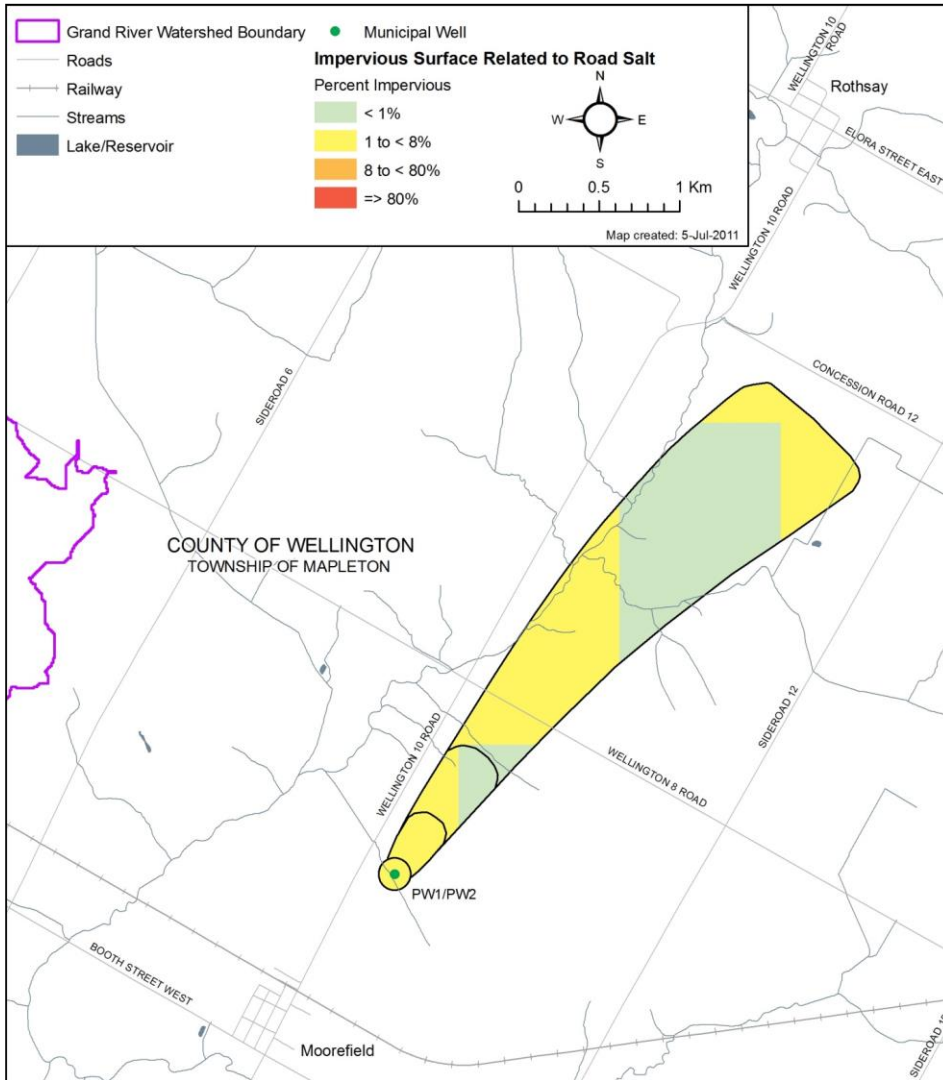
Map 6-20: Moorefield Well Supply Livestock Density



Map 6-21: Drayton Well Supply Percent of Impervious Surfaces



Map 6-22: Moorefield Well Supply Percent of Impervious Surfaces



6.2.4 Drinking Water Threats Assessment

The Ontario Clean Water Act, 2006, defines a Drinking Water Threat as “an activity or condition that adversely affects or has the potential to adversely affect the quality or quantity of any water that is or may be used as a source of drinking water, and includes an activity or condition that is prescribed by the regulation as a drinking water threat.” A Prescribed Drinking Water Threats table in Chapter 3 lists all possible drinking water threats.

Identification of Significant, Moderate and Low Drinking Water Quality Threats for the Drayton and Moorefield Well Supply

The identification of a land use activity as a significant, moderate, or low drinking water threat depends on its risk score, determined by considering the circumstances of the activity and the type and vulnerability score of any underlying protection zones, as set out in the Tables of Drinking Water Threats available through www.sourcewater.ca. Information on drinking water threats is also accessible through the Source Water Protection Threats Tool: <http://swpip.ca>. The information above can be used with the vulnerability scores shown in **Map 6-14 and Map 6-16** to help the public determine where certain activities are or would be significant, moderate and low drinking water threats.

Table 6-15 provides a summary of the threat levels possible in the Drayton and Moorefield Well Supplies for Chemical, Dense Non-Aqueous Phase Liquid (DNAPL), and Pathogens. A checkmark indicates that the threat classification level is possible for the indicated threat type under the corresponding vulnerable area / vulnerable score; a blank cell indicates that it is not. The colours shown for each vulnerability score correspond to those shown in **Map 6-14 and Map 6-16**.

Threat Type	Vulnerable Area	Vulnerability Score	Threat Classification Level		
			Significant 80+	Moderate 60 to <80	Low >40 to <60
Chemicals	WHPA-A	10	✓	✓	✓
	WHPA-B	6		✓	✓
	WHPA-C/D	2			
Handling / Storage of DNAPLs	WHPA-A/B/C	Any Score	✓		
	WHPA-D	2			
Pathogens	WHPA-A	10	✓	✓	
	WHPA-B	6			✓

6.2.5 Conditions Evaluation

Conditions are contamination that already exist and are a result of past activities that could affect the quality of drinking water. To identify a Condition, Part XI.3, Rule 126 of the Technical Rules (MOECC, 2017⁹⁹), lists the following two criteria for groundwater sources:

- The presence of a non-aqueous phase liquid in groundwater in a highly vulnerable aquifer, significant groundwater recharge area or wellhead protection area.

- The presence of a contaminant in groundwater in a highly vulnerable area, significant groundwater recharge area or a wellhead protection area, if the contaminant is listed in Table 2 of the Soil, Groundwater and Sediment Standards and is present at a concentration that exceeds the potable groundwater standard set out for the contaminant in that Table.

The above listed criteria were used to evaluate potentially contaminated sites within the Drayton and Moorefield WHPAs to determine if such a Condition was present at a given site.

Conditions Evaluation for the Drayton and Moorefield Well Supply Systems

A review of available data regarding potential contamination included databases from the Ecolog ERIS results such as Record of Site Condition, M~~ECP~~~~OE~~ Spills Database and Occurrence Reporting Information System.

There were no conditions identified in the Drayton and Moorefield Wellhead Protection Areas.

6.2.6 Drinking Water Quality Issues Evaluation

The objective of the Issues evaluation is to identify drinking water Issues where the existing or trending concentration of a parameter or pathogen at an intake, well or monitoring well would result in the deterioration of the quality of water for use as a source of drinking water. The parameter or pathogen must be listed in Schedule 1, 2 or 3 of the Ontario Drinking Water Quality Standards (ODWQS) or Table 4 of the Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines (Technical Rules XI.1 (114 – 117)). Elevated concentrations of selected parameters that are naturally occurring or where effective treatment is in place are not considered drinking water Issues.

Once a drinking water Issue is identified, the objective is to identify all sources and threats that may contribute to the Issue within an Issue Contributing Area and manage these threats appropriately. If at this time the Issue Contributing Area can not be identified or the Issue can not be linked to threats then a work plan must be provided to assess the possible link.

If an Issue is identified for an intake, well or monitoring well, then all threats related to a particular Issue within the Issue Contributing Areas are as significant drinking water threats, regardless of the vulnerability.

Methodology for the Drinking Water Quality Issues Evaluation

As part of the Issues evaluation, a review of the available water quality data to assess whether any contaminants are impacting or have the potential to impact or interfere with the Township of Mapleton drinking water sources. This included the following steps:

- Collection of water quality data.
- Comparison of water quality data to the ODWQS to see if any parameters were in exceedance.
- Concentrations of parameters of consideration over time were plotted to evaluate if there were any increasing trends.

Data Sources for the Drinking Water Quality Issues Evaluation

All available water quality data for the Drayton and Moorefield water supply wells was collected and reviewed. This included hydrogeological studies, engineering reports and M~~ECP~~~~OE~~ Annual reports for the water supply systems.

Drinking Water Issues Evaluation for the Drayton Well Supply

The following parameters were identified as parameters of consideration: hardness, iron, and organic nitrogen.

A hardness concentration of 226 mg/L was recorded at the Drayton wells in 2001 which exceeds the Operational Guideline (OG) of the ODWQS which ranges from 80-100 mg/L (MOE, 2006b). This level is typical of drinking water obtained from a dolostone bedrock source and is naturally occurring. Hardness in water is an aesthetic objective and is typically handled using household water softeners; hardness therefore should not interfere with the use of water from these sources.

A sample from the Drayton well collected in 2001 had an iron concentration of 0.374 mg/L. This exceeds the ODWQS guideline of 0.3 mg/L. Iron is an aesthetic objective, which means that it may impair the taste, smell or colour of the water or interfere with good water quality control practices. Elevated levels of iron are typical for bedrock aquifers. Since iron is an aesthetic objective and naturally occurring it is not considered a water quality Issue under Technical Rule 114.

Organic nitrogen has an operational guideline of 0.15 mg/L in drinking water. High levels may be caused by septic tank or sewage effluent contamination, which is often associated with odour and chlorine-worsened taste problems. Organic nitrogen compounds that contain amine groups can react with chlorine to severely reduce its disinfection power. An organic nitrogen concentration of 0.53 mg/L was measured in a 2001 sample from the Drayton well which exceeds the OG. This exceedance in organic nitrogen was identified in 2001 and was from a single sample. An exceedance has not been identified in any more recent sampling.

Water quality samples are collected routinely by OCWA (Ontario Clean Water Agency) licensed operators at the Drayton water systems. Data collected between July 2006 and December 2008 was reviewed as part of this study. Analysis completed were bacteriological analyses for *E. coli* and total coliforms for raw water, and nitrate and nitrate on treated water. The treatment process does not include nitrate reduction therefore the results should be reflective of raw water quality. No Issues with total coliforms or *E. coli* bacteria have been documented.

Summary of Water Quality Issues Evaluation for the Drayton Well Supply

Upon review of available current drinking water quality data there are no Issues under Technical Rule 114 for the Drayton Well Supply. Iron and hardness have elevated concentrations, however are naturally occurring and therefore do not reflect a deterioration of water quality. Neither of the above parameters is currently interfering or anticipated to interfere with the use of the groundwater as a source of drinking water.

Drinking Water Quality Issues Evaluation for the Moorefield Well Supply

The following parameters were identified as parameters of consideration: hardness, iron, and organic nitrogen.

Organic nitrogen has an operational guideline of 0.15 mg/L in drinking water. High levels may be caused by septic tank or sewage effluent contamination, which is often associated with odour and chlorine-worsened taste problems. Organic nitrogen compounds that contain amine groups can react with chlorine to severely reduce its disinfection power. The Moorefield Well also had an exceedance of organic nitrogen in 1995, however a sample collected in 2002 did not exceed the ODWQS (Burnside, 2002a). There are no other dates for which organic nitrogen was sampled for in the data reviewed making it difficult to know if it was only a single occurrence.

Water quality samples are collected routinely by OCWA (Ontario Clean Water Agency) licensed operators at the Moorefield water system. Data collected between July 2006 and December 2008 was reviewed as part of this study. Analysis completed were bacteriological analyses for *E. coli* and total coliforms for raw water, and nitrate and nitrite on treated water. The treatment process does not include nitrate reduction therefore, the results should be reflective of raw water quality. No Issues with Total Coliforms or *E. coli* bacteria have been documented.

Summary of Water Quality Issues Evaluation for the Moorefield Well Supply

Upon review of available current drinking water quality data there are no Issues under Technical Rule 114 for the Moorefield Well Supply. Iron and hardness have elevated concentrations, however are naturally occurring and, therefore, do not reflect a deterioration of water quality as per Rule 114 of the Technical Rules (MOE, 2009b; MOECC, 2017).

Limitations and Uncertainty for the Drinking Water Quality Issues Evaluation for the Drayton and Moorefield Well Supply Systems

The water quality data reviewed includes data from 1995 to 2008. This is a limited time span making it difficult to identify trends, especially when not all parameters were sampled during each year. It is also noted that there is no monitoring well water quality data available. Monitoring wells are only monitored for water levels as part of PTTW requirements.

6.2.7 Enumeration of Significant Drinking Water Quality Threats

~~The Technical Rules (MOE, 2009b) require an estimation of the number of locations at which an Activity is a significant drinking water threat and the number of locations at which a Condition resulting from past activity is a significant drinking water threat.~~

The threats enumeration was compiled using the data from various sources that were reviewed as part of this study. Following the preliminary research, field assessments were used to verify and complete the threats inventory process. As a conservative measure no effort to include the impact of management techniques that may be employed at any threat location was considered. It can therefore be concluded that the level of uncertainty associated with this enumeration is high. A re-evaluation of the prioritized threats is required if the level of uncertainty associated with the current results is to be reduced.

Data Sources for the Enumeration of Significant Drinking Water Quality Threats

The threats inventory was compiled using the data and information sources outlined below. All threats were recorded in a database provided by the MECP/OE.

EcoLog Environmental Risk Information Services Ltd. (EcoLog ERIS) is a national database service, which provides specific environmental and real estate information for locations across Canada. A review of all available provincial, federal and private environmental databases was requested for the areas within a radius around the wells that included the outer edge of the WHPA-D. As a result, the search included data to the west of the Wellhead Protection Areas. The search included the following databases:

Federal Government Source Databases

- National PCB Inventory 1988-June 2004
- National Pollutant Release Inventory 1994-2004
- Environmental Issues Inventory System 1992-2001
- Federal Convictions 1988-January 2002

- Contaminated Sites on Federal Land June 2000-2005
- Environmental Effects Monitoring 1992-2004
- Fisheries & Oceans Fuel Tanks 1964-September 2003
- Indian & Northern Affairs Fuel Tanks 1950-August 2003
- National Analysis of Trends in Emergencies System (NATES) 1974-1994
- National Defense & Canadian Forces Fuel Tanks Up to May 2001 National Defense & Canadian Forces Spills March 1999-February 2005
- National Defense & Canadian Forces Waste Disposal Sites 2001,2003
- National Environmental Emergencies System (NEES) 1974-2003
- Parks Canada Fuel Storage Tanks 1920-January 2005
- Transport Canada Fuel Storage Tanks 1970-May 2003

Provincial Government Source Databases

- Certificates of Approval 1985-September 2002
- Ontario Regulation 347 Waste Generators Summary 1986-2004
- Ontario Regulation 347 Waste Receivers Summary 1986-2004
- Private Fuel Storage Tanks 1989-1996
- Ontario Inventory of PCB Storage Sites 1987-April 2003
- Compliance and Convictions 1989-2002
- Waste Disposal Sites – MOE CA Inventory 1970-September 2002
- Waste Disposal Sites – MOE 1991
- Historical Approval Inventory Up to October 1990
- Occurrence Reporting Information System 1988-2002
- Pesticide Register 1988-August 2003
- Wastewater Discharger Registration Database 1990-1998
- Coal Gasification Plants 1987, 1988
- Non-Compliance Reports 1992(water only), 1994-2003
- Ministry Orders 1995-1996
- Aggregate Inventory Up to May 2005
- Abandoned Aggregate Inventory Up to September 2002
- Abandoned Mines Inventory System 1800-2005
- Record of Site Condition 1997-September 2001
- Ontario Oil and Gas Wells (1999-Oct 2004; 1800-May 2004 available for 14 select counties)
- Drill Holes 1886-2005
- Mineral Occurrences 1846-October 2004
- Environmental Registry 1994-July 2003

Private Sources Databases

- Retail Fuel Storage Tanks 1989-June 2005
- Canadian Pulp and Paper 1999, 2002, 2004, 2005
- Andersen's Waste Disposal Sites 1930-2004
- Scott's Manufacturing Directory 1992-2005
- Chemical Register 1992,1999-June 2005
- Canadian Mine Locations 1998-2005
- Oil and Gas Wells October 2001-2005

- Automobile Wrecking & Supplies 2001-June 2005
- Anderson's Storage Tanks 1915-1953
- ERIS Historical Searches, March 1999-2005

Items identified within the Drayton Wellhead Protection Area include one landfill site, the Drayton Water Supply System and two registered waste generators. The Occurrence Reporting Information System documented a sewage spill due to a force main break, however the location was not given (EcoLog ERIS, 2006a).

No items were identified by the search within the Moorefield Well Wellhead Protection Area (EcoLog ERIS, 2006b).

Municipal Parcel Assessment Codes

Data from the Municipal Property Assessment Corporation (MPAC) was obtained from the GRCA. This data classifies parcels by land use and is generally used by Municipalities for tax purposes. For this reason it is a fairly up to date and a reliable source of information to identify land uses on a parcel basis. The data obtained was used for land use classification where other data was not available and for servicing information such as whether the parcel has water or sanitary services. The MPAC data was also useful in identifying agricultural land types.

Aerial Photo Interpretation

Historical aerial photographs (1978 and 2000) were obtained from the University of Waterloo Map and Design Library and reviewed to identify land use changes and potential high-risk activities such as waste disposal sites within the Wellhead Protection Areas. Current aerial photography of the Wellhead Protection Areas was obtained from the GRCA Watershed Ortho-imagery (2006).

Site Reconnaissance and Inspection

A drive-by roadside inspection of the Wellhead Protection Areas was completed in 2006 to verify and compliment the dataset compiled during the records review portion of the assessment. The inspection consisted of a fence line/roadside documentation of the properties and their land uses included in the Wellhead Protection Area.

Sanitary Sewers

Drayton and Moorefield are serviced with sanitary sewers. The wastewater for Drayton and Moorefield is conveyed via sanitary sewers to storage lagoons at the Drayton Wastewater Pollution Control Plant southwest of Drayton. The plant is approved to handle 750 m³/day of wastewater (MOE, 2008a). The sewers and their connections that transport the wastewater are considered threats as there is the potential for leaks to occur.

According to the Certificate of Approval (4150-7JDP55), sanitary sewers within the Drayton Wellhead Protection Area are located on John Street, Wood Street, Robin Drive, Elm Street and Main Street (MOE, 2008a). There are no sanitary sewers within the Moorefield Wellhead Protection Area. The sewage pumping station and lagoons are located outside of both of the Wellhead Protection Areas.

Septic Systems

Within the Wellhead Protection Areas, septic systems are assumed to be used at all rural homes and buildings outside of the serviced areas. Septic systems that are not properly maintained can contribute to pathogen and chemical contamination in ground water. To identify properties with septic systems MPAC data was used to identify properties that had a building on it and were not municipally serviced. These parcels were assumed to have a septic system.

Significant Drinking Water Quality Threats in the Drayton Wellhead Protection Areas

The lands within the Drayton Wellhead Protection Areas are used dominantly for agricultural activities with some residential and municipal uses on the north edge of the town of Drayton. Within WHPA-B there is residential housing, a large municipal park and fairgrounds, a church, the Municipal works yard, a school bus yard, an auto body shop, a manufacturer of fabricated metal products and a commercial business. The municipal works yard contained two underground storage tanks, one unmarked above ground storage tank and a large empty storage dome for sand.

The remainder of the Wellhead Protection Area consisted of agricultural and natural lands. Several livestock operations for chickens, swine and beef were observed during the inspection. Sizes of farms ranged from small barns to large intensive livestock operations. Cash crops such as soy, corn and grains were commonly planted on the fields in the zone. Rural residential properties were observed within WHPA-D. It is assumed that these homes have septic systems and water wells. Some private above-ground storage tanks (ASTs) for propane or other heating fuel were observed at these homes. No quarries or gravel pits were noted within the Wellhead Protection Area during the site inspection. The Bosworth landfill is located within the WHPA-D but is no longer in operation.

As per the Technical Rules (MOE, 2009b), the enumeration of significant threats is required for the completion of the Assessment Report. Table 6-16 summarizes the significant drinking water quality threats identified in the Drayton Wellhead Protection Areas in Drayton.

PDWT ¹ #	Threat Subcategory ²	Number of Activities	Vulnerable Area
1	Waste Disposal Site- Storage of Hazardous Waste at Disposal Sites	4	WHPA-A
2	Sewage System or Sewage Works- Septic Onsite Sewage Systems	1	WHPA-A
	Sewage System or Sewage Works- Sanitary Sewers and related pipes	1	WHPA-A
15	Handling and Storage of Fuel	1	WHPA-A
16	Handling and Storage of Dense Non-Aqueous Phase Liquids	7	WHPA-A WHPA-B
17	Handling and Storage of Organic Solvents	4	WHPA-A
Total Number of Activities		18	
Total Number of Properties		7	

Table 6-16: Significant Drinking Water Threats in the Drayton Wellhead Protection Areas

PDWT ¹ #	Threat Subcategory ²	Number of Activities	Vulnerable Area
1: Prescribed Drinking Water Threat Number refers to the prescribed drinking water threat listed in O.Reg 287/07s.1.1.(1).			
2: Where applicable, waste, sewage, and livestock threat numbers are reported by sub-threat; fuel and DNAPL by Prescribed Drinking Water Threat category.			
Note: Storm sewer piping is not considered to be part of a storm water management facility.			

Significant Drinking Water Quality Threats in the Moorefield Wellhead Protection Areas

A drinking water quality threat is defined as a chemical or pathogen contaminant that poses a potential risk to the drinking water sources (MOE, 2006a). Threats are considered to be of two main types; threats related to current land use practices (activities) and threats related to pre-existing circumstances (conditions). Both of these threat types are described in the following sections.

Significant threats to the Moorefield groundwater supply were assessed through the development of a desktop land use inventory.

A site inspection of the Moorefield Wellhead Protection Areas confirmed that the majority of land use is agricultural. The Moorefield Water Supply wells are located within the Town of Moorefield municipal lot, which also contains municipal office buildings, a fire department building, a maintenance garage and a salt storage building. Surrounding the wells is land used for cash crops such as hay, soy and corn. Within the Wellhead Protection Areas, there are a total of five residential and/or farm properties.

~~As per the Technical Rules (MOE, 2009b), the enumeration of significant threats is required for the completion of the Assessment Report. Table 6-17 summarizes the significant threats identified in the Moorefield Wellhead Protection Areas in the Township of Mapleton.~~

Table 6-17: Significant Drinking Water Threats in the Moorefield Wellhead Protection Areas

PDWT ¹ #	Threat Subcategory ²	Number of Activities	Vulnerable Area
1	Waste Disposal Site- Storage of Hazardous Waste at Disposal Sites	1	WHPA-A
2	Sewage System or Sewage Works- Sanitary Sewers and related pipes	1	WHPA-A
3	Application of Agricultural Source Material to Land	2	WHPA-A
10	Application of Pesticides to Land	2	WHPA-A
15	Handling and Storage of Fuel	1	WHPA-A
16	Handling and Storage of DNAPLs	1	WHPA-A
17	Handling and Storage of Organic Solvents	1	WHPA-A
Total Number of Activities		9	

Table 6-17: Significant Drinking Water Threats in the Moorefield Wellhead Protection Areas			
PDWT¹ #	Threat Subcategory²	Number of Activities	Vulnerable Area
Total Number of Properties		3	
<p><i>1: Prescribed Drinking Water Threat Number refers to the prescribed drinking water threat listed in O.Reg 287/07s.1.1.(1).</i></p> <p><i>2: Where applicable, waste, sewage, and livestock threat numbers are reported by sub-threat; fuel and DNAPL by Prescribed Drinking Water Threat category.</i></p> <p><i>Note: Storm sewer piping is not considered to be part of a storm water management facility.</i></p>			

Limitations and Uncertainty for the Enumeration of Significant Drinking Water Supply Threats for the Drayton and Moorefield Well Supply Systems

In this study a number of databases were used to create the threats inventory database. All databases have an error associated with them, whether it applies to the spatial or attribute information. The accuracy of the databases used depends on the source, the age of the information and the scale at which the spatial information was recorded. In this study, to decrease some of the error in the database information a field reconnaissance was completed to confirm the data when possible.

The determination of land use activities used a series of assumptions which have an uncertainty associated to them. For this enumeration, it was assumed that any possible threats associated with an activity were present and that all potential chemicals were present. The circumstances and quantity for each threat were assigned based on available knowledge such as typical storage practices, typical chemical quantities and typical waste disposal practices for that particular land use activity.

Based on the uncertainty involved in the assumptions and data used, the uncertainty for threats enumeration has been classified as high, but this level of uncertainty is expected in desk top study. With regards to the location of the threats, however, there is low uncertainty as most locations were field verified.

6.3 Township of Centre Wellington

6.3.1 Centre Wellington Well Supply

Two municipal groundwater systems are located within the Township of Centre Wellington: the Village of Elora and the Town of Fergus. Both Elora and Fergus obtain their water supply from municipal wells located within the village and town but the systems are connected. The serviced area is shown on **Map 6-23**. Together the two water systems are referred to as the Centre Wellington Well Supply, as presented in **Table 6-18**. The number of residents using municipal water is estimated to be **20,600** ~~12,893 in Fergus and 5,202 in Elora~~. The Township of Centre Wellington owns and operates the water supply system.

Table 6-18: Municipal Residential Drinking Water System Information for the Township of Centre Wellington in the Grand River Source Protection Area (Centre Wellington Well Supply)

DWS Number	DWS Name	Operating Authority	GW or SW	System Classification ¹	Number of Users served ²
220000086	Centre Wellington Well Supply	Township of Centre Wellington	GW	Large Municipal Residential	18,095 20,600

¹ as defined by O. Reg. 170/03 (Drinking Water Systems) made under the *Safe Drinking Water Act, 2002*.
² Centre Wellington Well Supply **2008-2018** Annual System Reports (O.Reg 170/03)

Elora Well Supply

The water supply system for Elora consists of three bedrock wells referred to as E1, E3 and E4 (**Table 6-19**). Well E2 is no longer used due to water quality issues (iron) and potential interference with other municipal wells. As such, E2 has been decommissioned in accordance with Ontario Regulation 903.

Table 6-19: Municipal Production Wells in the Elora Well Supply

Well	Well Field	Depth of Well (m)	Depth of Casing (m)	Purpose	Status
E1	Elora	130	19.8	Production	In Regular Use
E2	Elora	N/A	N/A	Production	Decommissioned
E3	Elora	122	29.2	Production	In Regular Use
E4	Elora	128	25	Production	In Regular Use

The water takings allowed for each well is governed by Permit to Take Water No. 2823-7QEH3C. A summary of the permitted taking and ~~the average takings over the period 2006–2008~~ **the rates used to delineate Elora WHPAs** are summarized in **Table 6-20**~~Error! Reference source not found.~~

Table 6-20: Municipal Production Wells Pumping in the Elora Well Supply

Well	Permit to Take Water (L/day)	Rate Used to Delineate WHPA (L/day)
E1	1,740,960	1,501 20,000
E3	1,963,000	900 84,000
E4	1,227,000	1,200 27,000

~~Only well E1 pumps close to the permitted capacity. Pumping rates at E3 are restricted due to potential interference effects on nearby private wells.~~

~~There is a monitoring well (61 m deep with casing to 26 m) near E4 used for monitoring purposes.~~

Fergus Well Supply

The water supply system for Fergus consists of six bedrock wells referred to as F1, F2, F4, F5, F6 and F7 (Table 6-21). Well F3 is no longer used due to potential interference with other municipal wells and reduced capacity. As such, F3 has been decommissioned in accordance with Ontario Regulation 903.

Table 6-21: Municipal Production Wells in the Fergus Well Supply

Well	Well Field	Depth of Well (m)	Depth of Casing (m)	Purpose	Status
F1	Fergus	79.6	19.9	Production	In Regular Use
F2	Fergus	76.5	3.6	Production	Well Not in Use
F3	Fergus	N/A	N/A	Production	Decommissioned
F4	Fergus	129.5	80.5	Production	In Regular Use
F5	Fergus	124.4	31.1	Production	In Regular Use
F6	Fergus	122.5	33.4	Production	In Regular Use
F7	Fergus	138.7	47.2	Production	In Regular Use

Well F2 in Fergus has been identified as GUDI (Groundwater Under the Direct Influence of surface water) and there is a potential for surface water from the Grand River to migrate to the well. It should be noted that Well F2 has not been used for municipal supply since June 2003 as a result of water quality concerns associated with the GUDI status of the well and limited pumping rates imposed on this well due to interference with nearby private wells (Stantec, 2010).

The water taking allowed for each well is governed by Permit to Take Water No. 2823-7QEH3C. A summary of the permitted taking and ~~the rates used to delineate Fergus WHPAs the average takings over the period 2006—2008~~ are summarized in ~~Table 6-22~~**Error! Reference source not found.**

Table 6-22: Municipal Production Wells Pumping in the Fergus Well Supply

Well	Permit to Take Water (L/day)	Rate Used to Delineate Wellhead Protection Area (L/day)
F1	1,832,947	974,000 1,300,000
F2	490,140	630 400,000
F4	1,963,911	1,113 200,000
F5	1,963,872	736,000 1,000,000
F6	1,963,872	870,000 1,300,000
F7	1,962,000	1,961,000 1,600,000

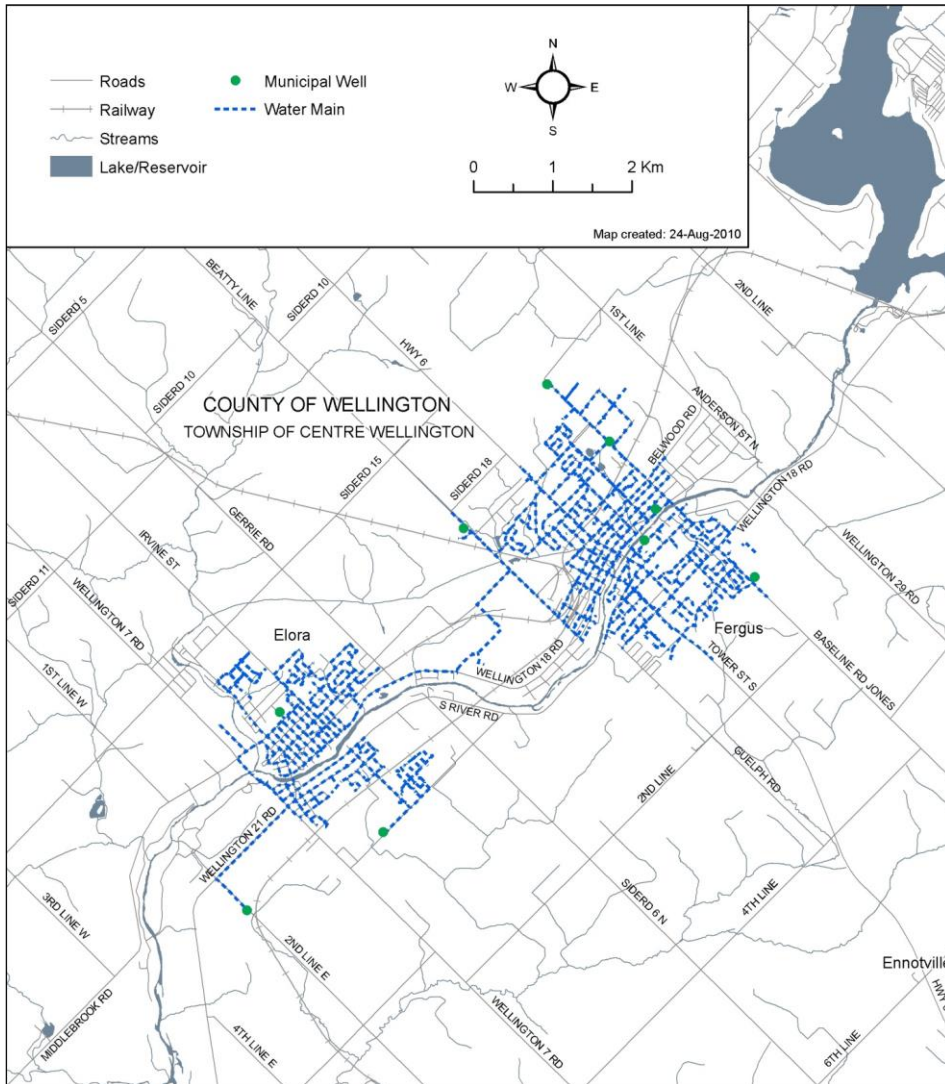
~~Well F4 pumps close to the permitted capacity. Pumping rates at some of the other wells (F2) are restricted due to potential interference effects on nearby private wells, water quality deterioration in some wells (F2, F6) when pumped at higher rates and incapability of some wells (F5) to produce water at higher rates.~~

~~There is a sentry well (29 m deep with casing to 2 m) near F1 that is used for monitoring purposes.~~

Table 6-23 summarizes the average annual and monthly pumping rates for all wells in the Centre Wellington Well Supply.

Well or Intake	Annual Avg. Taking ¹ (m ³ /d)	Monthly Total Average Taking ¹ (m ³ /d)											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Elora Well System													
	316,707 ¹⁰ ₉₂	33,828 ¹⁴⁰⁴	32,236 ¹⁴⁵²	27,459 ¹⁹⁴³	20,506 ¹²⁹⁵	24,730 ¹³³³	122,94 ²¹⁷⁰	25,802 ¹⁴⁹⁵	30,920 ¹⁴⁴⁷	26,544 ¹²⁶⁹	23,278 ⁶⁶¹	23,096 ⁶⁶	56,225 ³⁶⁶
E1	264,474 ²¹ ₉	22,198 ¹⁶⁰	26,743 ³¹²	10,924 ⁹²⁶	21,064 ¹⁷⁷	20,888 ²²⁸	21,442 ²³⁷	24,732 ⁸³	22,859 ²²⁰	21,929 ¹³⁴	19,285 ²³⁷	20,413 ⁴⁷⁶	17,99 ⁵²⁵⁶
E3	92,092 ²⁹⁴ ₉	8,916 ⁷ ₉	9,954 ⁶⁴	7,333 ⁶⁴	7,670 ⁸⁹	11,490 ³⁵	13,313 ²⁰⁶	10,957 ⁷⁷	7,220 ²	6,798 ⁴⁷	7,360 ²⁹	2,984 ⁴²	7,953 ⁶⁹⁷
E4	Fergus Well System												
	266,322 ⁶⁷ ₂	18,694 ⁷⁶⁹ ₄₁₁	20,757 ⁵¹⁴ ₄₈₂	24,769 ⁵³³ ₃₉₈	27,160 ⁵⁹⁰ ₈₁₁	33,234 ⁷⁹⁸ ₉₅₂	32,371 ⁸⁵⁷ ₉₉₄₉	26,925 ⁵⁹⁰ ₈₁₁	17,703 ⁷⁹⁸ ₉₅₂	17,318 ⁸¹¹ ₇₉₈	16,198 ⁹⁵² ₈₅₇	13,754 ⁸⁵⁷ ₉₉₄₉	17,43 ⁹⁹⁴⁹
F1	373,135 ¹⁴ ₉₇	27,601 ¹⁴⁵⁵	25,944 ¹⁴⁵²	27,219 ¹³⁰⁵	19,652 ¹⁴³⁴	20,615 ¹⁴⁰⁴	26,522 ¹⁴³⁶	34,055 ¹⁴³⁵	35,520 ¹⁴³²	39,203 ¹³⁹⁶	40,491 ¹⁴⁷⁹	38,014 ¹²⁸¹	38,30 ⁰¹³⁷⁵
F4	135,800 ⁴⁰ ₂	10,044 ⁴⁰¹	7,280 ⁴⁷	5,571 ⁴²	11,481 ⁴⁹³	11,134 ⁴¹¹	15,598 ⁴¹¹	18,165 ²³³	14,998 ²⁵⁸	13,720 ³⁸⁴	9,956 ⁵¹	5,390 ⁸⁵	12,46 ⁴⁴⁰⁸
F5	188,777 ³ ₈₃	28,19 ³³⁶¹	18,66 ⁸³¹⁴	18,48 ⁷³⁸⁶	8,143 ³⁶⁶	8,014 ³⁸⁵	19,68 ⁹³⁸⁷	10,88 ¹²⁷⁴	21,61 ⁵³⁶³	11,27 ¹⁴⁸³	10,40 ⁶³⁹³	17,78 ⁰³⁸⁴	15,62 ⁹⁵⁰⁵
F6	224,916 ³ ₂₈	16,32 ³²¹⁷	14,54 ⁷⁵⁶⁹	17,61 ⁷⁵⁴⁴	21,60 ⁰⁵²³	24,89 ⁹⁵²⁷	15,65 ⁰⁶¹⁸	25,74 ⁰⁵⁹³	20,91 ³¹³⁰	25,27 ²¹⁴⁹	17,45 ⁶⁷⁹	17,42 ⁰⁰	7,449 ⁰
F7	¹ source: Centre Wellington annual summary reports, based on 2018 ⁰⁸ monitoring data												

Map 6-23: Centre Wellington Well Supply Serviced Areas



6.3.2 Vulnerability Analysis

Delineation of Wellhead Protection Areas

The delineation of Wellhead Protection Areas (WHPAs) represents the foundation of a municipal groundwater protection strategy. Wellhead Protection Areas associated with the municipal water supply represent the areas within the aquifer that contribute groundwater to the well over a specific time period. According to the *Clean Water Act, 2006 Technical Rules* (November 2009), four Wellhead Protection Areas are required, one a proximity zone and the three others time-related capture zones:

- WHPA A — 100 m radius from wellhead
- WHPA B — 2-year Time of Travel (TOT) capture zone
- WHPA C — 5-year Time of Travel capture zone
- WHPA D — 25-year Time of Travel capture zone

In addition, two other capture zones may be added to a wellhead protection area when a well obtains groundwater that is under the direct influence of surface water (is a GUDI well).

- WHPA E — The time required for an operator to respond to a spill event (e.g. a 2-hour Time of Travel), in accordance with the rules of delineating an Intake Protection Zone 2.
- WHPA F — Encompasses any sources of issues identified with the well if the source of the issue is located outside of WHPAs A, B, C, D or E, in accordance with the rules of delineating an Intake Protection Zone 3.

Modelling Approach for the Centre Wellington Well Supply

The numerical modelling completed for this current study utilized the FEFLOW groundwater flow model developed for the Centre Wellington Tier 3 Assessment (Matrix 2018a). In the area of Centre Wellington, the Tier 3 model was calibrated to long-term average water levels, to a baseflow estimate at Irvine Creek, and to transient conditions observed during a shutdown/pumping test over a period of 6 weeks in 2012. The Tier 3 model is the most current tool available to delineate capture zones for Centre Wellington's municipal wells. The Tier 3 model version used incorporates estimated current pumping for non-municipal wells, existing land use, and long term average climate and groundwater recharge.

The capture zones and WHPAs delineated for this study are based on a Base Case scenario model and three alternative uncertainty scenarios developed as part of a sensitivity analysis.

Base Case Scenario

The calibrated Centre Wellington Tier 3 FEFLOW model is referred to as the Base Case scenario. The municipal pumping rates assigned for WHPA delineation are consistent with the wellfield capacity estimates being developed for the "Centre Wellington's Water Supply Master Plan" project (AECOM 2018). The final pumping rates applied in the Base Case model are provided in Error! Reference source not found. and Error! Reference source not found.. Effective porosity was assigned as 0.2 for the overburden, 0.03 for bedrock aquifers and 0.01 for bedrock aquitards. These values are consistent with those used for similar geologic units for the neighbouring City of Guelph and Township of Guelph/Eramosa Tier 3 Assessment (Matrix, 2017b).

Sensitivity Scenarios

A sensitivity analysis was completed to estimate the effects of model parameter uncertainty on the size and shape of the predicted capture zones. Some groundwater flow model input parameters have greater uncertainty than others. The sensitivity analysis involved adjusting the calibrated Base Case model parameters and evaluating the change in particle tracking results used to delineate the capture zones.

The first sensitivity scenario tested a decrease in the effective porosity of the bedrock production aquifer from 0.03 to 0.01. A reduction in porosity leads to greater velocities and longer pathlines and time-of-travel capture zones. Sensitivity Scenario 2 included the lower porosity of Scenario 1 and also included increasing the production bedrock aquifer conductivity values by a factor of 1.5. The magnitude of this increase was considered appropriate to maintain a reasonable calibration, and the value was based on insights gained when calibrating the Tier 3 model (Matrix 2018a). Sensitivity Scenario 3 also included the lower porosity of Scenario 1 and included decreasing the confining bedrock aquitard conductivity values by 20%. The magnitude of this decrease was considered appropriate to maintain a reasonable calibration, and the value was based on insights gained when calibrating the Tier 3 model (Matrix 2018a).

Virtual particles can be released in a groundwater flow model and tracked forward or backward in time through the subsurface for various time intervals. The computed pathlines travelled by these particles are projected to the ground surface and plotted on a plan view map. Time-of-travel capture zones are subsequently created by drawing polygons around the well and the particle pathlines for specific time intervals. As such, capture zones represent the land areas beneath, which water and contaminants located at and below ground surface may migrate toward a well within a specified period.

~~A groundwater flow model was developed to identify time of travel (TOT) capture zones for the municipal well fields as part of the County of Wellington Groundwater Protection Study (Golder, 2006). The model was constructed using the three dimensional model MODFLOW. The numerical model code, MODFLOW, is a well documented and widely used numerical model that is based on the finite difference method for simulation of groundwater flow system.~~

~~The Wellington County Groundwater Protection Study Model was used to delineate the Wellhead Protection Areas for the Centre Wellington Well Supply based on the pumping rates described below.~~

~~The pumping rates used to determine the Wellhead Protection Area are based on the allocated quantity of water. The allocated quantity of water is the lesser of:~~

- ~~• The maximum annual quantity of water that can lawfully be taken under the Permit to Take Water; or~~
- ~~• The quantity of water that would have to be taken annually to meet committed demand of the system.~~

~~The pumping rates used in developing the Wellhead Protection Areas are based on a forecast of anticipated future groundwater use as determined in the Wellington County Groundwater Protection Study through discussions with Wellington County staff and Centre Wellington Water Works staff. The pumping rates give consideration to local population growth statistics as contained in the County of Wellington Official Plan; operational constraints within each system; and potential servicing of currently un-serviced areas.~~

It should be noted that Centre Wellington is currently undertaking a Master Water Supply Plan. When this plan is completed, the forecast pumping rates may need to be revised to reflect the future growth for the area and anticipated pumping.

To develop the time of travel capture zones, groundwater particles were released at the pumping wells in the model and backward tracked (using MODPATH) towards their source of recharge. At each well location, particles were released in all hydrostratigraphic units "open" to the wellbore. The time related pathlines that are subsequently generated by the model from this analysis are then overlain and a single time of travel capture zone drawn around the "family" of pathlines generated at each well. To check the capture areas generated from the backward tracking analysis (and in some cases to refine the time of travel outline produced) a series of forward tracking simulations were also completed. The resulting capture zone from this process represents the two-dimensional projection of the particle outlines to ground surface. Note that the capture zone developed in this manner does not imply that a contaminant, spilled or released at surface, would reach the water supply well within the specified 2-year, 5-year or 25-year travel times. While in some cases the aquifer (and water table) may be near ground surface and so the travel time down to the water table may be relatively short, for confined and deeper aquifers (i.e., typical of those found in Elora and Fergus), the travel times from the point of contaminant release within the capture zone may be considerably longer and/or the contaminant may never reach the pumping well(s).

The use of the MODFLOW groundwater model infers that the groundwater flow systems within the Township of Centre Wellington can be simulated as an "equivalent porous media" at the scale of the time related capture zones under consideration. Under this assumption, the rate of groundwater flow towards a pumping well occurs as a function of the hydraulic gradient, the hydraulic conductivity of the aquifer, and the effective porosity of the aquifer. The use of equivalent porous media models is standard practice for sand and gravel (overburden) aquifers. The equivalent porous medium assumption has also been commonly applied for sedimentary bedrock aquifers of the type found in the Township of Centre Wellington. While groundwater flow (and solute transport) in these aquifers occurs primarily in the fractures and solution cavities, the use of an equivalent porous medium can still provide a reasonable approximation of the time of travel related capture zones of a bedrock supply well (in particular for longer travel times) provided the scale of observation is much greater than the scale of individual fractures and solution cavities, and consideration is given to the selection of a reasonable "effective" porosity. The effective porosity of the bedrock aquifer was assumed to be 1% and 5% in developing the WHPAs with 1% being used in the less permeable bedrock zones. This is considered to be a reasonably conservative estimate of effective porosity to use for the time of travel calculations and is consistent with typical values used in these calculations for other groundwater studies completed for similar aquifers within the province.

The capture zones developed from the numerical modelling approach described above are considered to represent reasonable "theoretical" estimates based on the available data. However, it should be recognized that following this approach, there will not be a unique solution to the model calibration process and therefore, there is inherently some uncertainty associated with the (subsequent) capture zones forecast by the calibrated groundwater model. These uncertainties stem (in part) from limitations in the available subsurface information and can be related to variability in the aquifer properties (e.g., hydraulic conductivity; porosity) or uncertainties with the conceptual model (e.g., groundwater surface water interactions; location of flow boundaries; recharge rates; continuity in aquitards; direction of regional groundwater flow).

To account for some of the uncertainty in the capture zones developed for the Township of Centre Wellington, a factor of safety is applied that effectively increases the spatial coverage of each time of travel related capture zone. The factor of safety is comprised of two components: in the first instance, using the pumping well as the reference point, the width and length of the capture zone is increased by 20% to account for some uncertainty in the hydraulic characteristics of the aquifer system supplying water to the well; secondly, and again using the pumping well as the reference point, the orientation of the capture zone is adjusted by 5 degrees (plus and minus) along its centreline which accounts for some uncertainty in the regional flow direction by increasing the width of the capture zone at increasing distances from the pumping well. The factor of safety approach to uncertainty described above is considered to provide a practical way to account for uncertainty in the scientific methods being used to generate the capture zones, and reflects the concept that the available data is typically concentrated around the pumping well and that the uncertainty in the hydrogeological understanding increases at increasing distances from the supply wells.

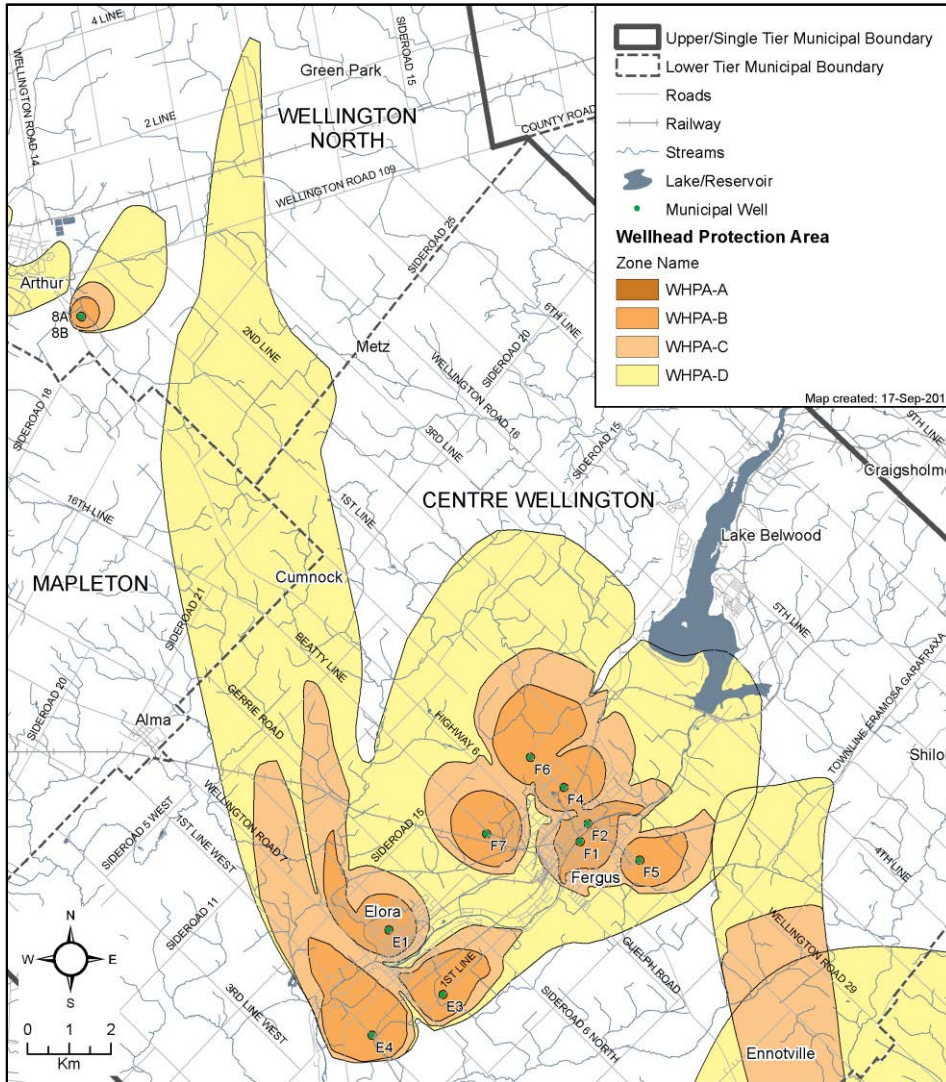
Delineation of Centre Wellington Wellhead Protection Areas

WHPA-A through WHPA-D were delineated for the nine Centre Wellington wells as seen in **Map 6-24**; the 25-year capture zones for the Elora wells merge together and extend approximately 15 km to the north in the direction (upgradient) of regional groundwater flow in the bedrock. The 25-year capture zones for the wells south of the Grand River extend northward beneath the Grand River. The land use overlying much of the 25-year capture zones is rural agricultural, although the entire urban area of Elora also lies within the capture zones.

The Elora WHPAs are elongated and extend towards the north (e.g., Well E1) and portions of others (i.e., Well E3) extend to the east. The WHPA-D extends approximately 25 km upgradient to the north. The Fergus WHPAs are more radial compared to the Elora WHPAs, with the WHPA-D extending approximately 7 km to the northeast.

As seen in **Map 7-26** the 25-year capture zones for most of the Fergus wells merge together and extend approximately 16 km to the north in the direction (upgradient) of regional groundwater flow in the bedrock. The 25-year capture zone for Fergus Well 5, located south of the Grand River, extends eastward for approximately 5 km. The land use overlying much of the 25-year capture zones is rural agricultural, although most of the urban area of Fergus also lies within the capture zones. Due to the close proximity of the wells there is some overlap of the Elora and Fergus Wellhead Protection Areas.

Map 6-24: Fergus and Elora Wells Wellhead Protection Areas



Map 6-25: ~~Fergus Wells Wellhead Protection Areas~~

Delineation of WHPA-E for Centre Wellington – Fergus, Well F2

Well F2 in Fergus has been identified as GUDI ~~and because~~ there is a potential for surface water from the Grand River to migrate to the well. Consequently, WHPA-E was delineated for this well. Well F2 is located near the Grand River in Fergus approximately 4.3 km downstream of the Shand Dam. The location of F2 relative to the Grand River is shown on **Map 6-25**.

~~The Assessment Report Technical Rules state that WHPA-E is to be delineated in accordance with the rules for delineating an IPZ-2, as though the intake for the system were located at the point of interaction between surface and groundwater (if known) or a point within the waterbody closest to the well.~~ WHPA-E delineation for the F2 well in Fergus was based on a 2-hour time of travel under estimated high flow conditions and included appropriate setbacks on land, according to the Technical Rules. As the exact point of interaction between the Grand River and Well F2 is not known, WHPA-E was delineated from a point within the river adjacent to the well. A 2-hour response time, the minimum required by the Technical Rules, was deemed appropriate given the established protocol to quickly shut down the well in response to a spill and the fact that this supply well has not been used since June 2003.

The 2-hour time of travel in the Grand River upstream of the Well F2 was based on a statistical analysis of continuous flow monitoring data combined with dye tracer studies carried out at bankfull or near bankfull flow conditions. Continuous flow records for the Grand River were available from the Water Survey of Canada and Grand River Conservation Authority for the period from 1984 to 2009 and were used to calculate the 95th percentile of flow. Experience has shown that 95th percentile flow and bankfull conditions are not substantially different for natural watercourses. The 95th percentile flow was estimated to be 32 m³/s.

A dye tracer study was carried out on April 28, 2009 at flows similar to the calculated 95th percentile flow and field observations indicated that water levels were at or near the top of bank (i.e. bankfull flow conditions). The results of the dye tracer study were used to calibrate a hydraulic model, which was used to scale up the time of travel to 95th percentile flow conditions. Under 95th percentile high flow conditions, it was estimated that the time of travel from the Shand Dam to Well F2 would be 100 minutes. This is 20 minutes less than the required 2 hour time of travel, therefore a semi-circular area within the reservoir upstream of the Dam was included in WHPA-E. The radius of the semi-circular area was conservatively estimated based on the minimum depth of water and the volume of water discharged from the reservoir at the 95th percentile flow for 20 minutes.

In accordance with the Technical Rules, WHPA-E also includes a setback on land to include the Conservation Authority Regulation Limit or 120 m, whichever is greater. Transport pathways were also included and accounted for in the delineation of WHPA-E. Several small tributaries, ditches and stormsewer outfalls that flow into the Grand River between Well F2 and the Shand Dam were identified. The WHPA-E was extended to incorporate portions of these pathways that may contribute water to the assumed intake point within a 2-hour time of travel as shown on **Map 6-25**. Detailed information on the areas draining to stormsewers was not available, therefore, it was conservatively assumed that all developed urban area draining toward the Grand River upstream of the assumed intake point was included in WHPA-E.

The technical study to delineate WHPA-E for Well F2 in Fergus is further described in the report *Wellhead Protection Area E Delineation and Vulnerability Scoring: Municipal Supply Well F2, Township of Centre Wellington* by Stantec Consulting Ltd. (2010).

Delineation of WHPA-F for Centre Wellington – Fergus, Well F2

WHPA-F was not delineated for the F2 well in Fergus as there were no Issues identified for this well. It should be noted that Well F2 has not been used for municipal supply since June 2003 as a result of water quality concerns associated with the GUDI status of the well and limited pumping rates imposed on this well due to interference with nearby private wells.

Intrinsic Vulnerability Scoring in Wellhead Protection Areas

Groundwater intrinsic vulnerability mapping for the Fergus and Elora wellfields was previously completed by EarthFX Inc. (2008) using the SAAT method. Golder (2010a) reviewed the vulnerability mapping and made adjustments based on hydrogeological knowledge at the WHPA scale. The intrinsic vulnerability was further refined in the Centre Wellington area by GRCA staff in May 2019. Smoothing (refinements) of the intrinsic vulnerability was done in areas where the existing vulnerability scoring was too complex to be implementable. This was done using the smooth line tool in ArcGIS (Polynomial Approximation with Exponential Kernel), with a 400m smoothing tolerance. Further manual adjustment was then made in a few minor areas to remove any tight loops created by the tool. The Elora and Fergus unadjusted and adjusted intrinsic vulnerability mapping is shown on **Map 6-26** and **Map 6-27**.

Following their delineation, the intrinsic vulnerability of the aquifer within each Wellhead Protection Area is assessed using one of the methods approved under the Clean Water Act Technical Rules. The resulting maps rank aquifer vulnerability as high, medium or low.

One method of assessing groundwater vulnerability is the surface to aquifer advection time (SAAT). The SAAT approach is described as “a direct estimate of the vertical travel time from the ground surface (or near ground surface) to the top of the aquifer (or top of the water table in and unconfined aquifer)”. The intrinsic vulnerability derived from the SAAT method is expressed in units of time.

The SAAT time of travel has two components: 1) the unsaturated zone arrival time (UZAT); and 2) the water table to aquifer arrival time (WAAT). The UZAT is the time of travel from the surface to the water table and the WAAT is the time of travel from the water table to the aquifer of interest. The SAAT and UZAT are the same for unconfined aquifers. SAAT aquifer vulnerability mapping was completed for most of the Grand River Watershed as a separate project (Earthfx, 2008). A complete methodology is presented in the 2008 Earthfx report. This SAAT aquifer vulnerability mapping was used as the basis for the vulnerability scoring, although some Wellhead Protection Area scale adjustments to this mapping were made to account for local conditions in the Elora and Fergus Wellhead Protection Areas, as described later in this section.

The SAAT travel times were converted into aquifer vulnerability values based on Technical Rule IV.1 (38) as follows:

High Aquifer Vulnerability — SAAT less than 5 years;

Medium Aquifer Vulnerability — SAAT between 5 years and 25 years; and

Low Aquifer Vulnerability — SAAT greater than 25 years.

The watershed scale SAAT mapping was reviewed and adjusted at the Wellhead Protection Area scale through comparison of existing ISI mapping, surficial quaternary geology mapping (including bedrock outcrop locations) and cross sections throughout the Wellhead Protection Areas. The review and adjustments to the SAAT vulnerability mapping are further detailed in the draft technical memorandum Review and Refinement of the Grand River Conservation Authority's SAAT Vulnerability Mapping at the Wellhead Protection Area Scale (Golder, 2010b).

Identification of Transport Pathways and Vulnerability Adjustment

Following a review of the ~~intrinsic~~^{initial} vulnerability scoring maps, an assessment of transport pathways was undertaken to determine whether adjustments to the vulnerability assessment were warranted. Technical Rules 39 – 41 address the general process of how transport pathways would increase vulnerability. Transport pathways for groundwater based drinking water systems include: wells (~~existing and abandoned~~^{current, unused, or abandoned}), pits and quarries, mines, construction activities or deep excavations, storm water infiltration, septic systems, and ~~sanitary sewer~~^{buried municipal} infrastructure.

The Technical Rules (MOECC, 2017) indicate that consideration should be given to the cumulative impact of any potential transport pathways; the impact of any discrete pathway should not be viewed in isolation. Therefore, following the assessment of risk for each feature, a density analysis was completed to determine where clusters of high risk pathways existed. A 50 m buffer was created around each of the high-risk pathways identified.

~~To evaluate the transport pathways, a review of water well records and previous pathway assessment (Blackport Hydrogeology Inc. and Triton Engineering Services, 2008) was conducted to identify transport pathways, but no on-site inspection of wells took place.~~

Uncertainty of the Identification of Transport Pathways

~~The transport pathway identification is a desktop analysis and involved only minor field verification or site visits to validate the information.~~

Adjusted Vulnerability to Account for Transport Pathways

~~At the completion of the transport pathways assessment, the Technical Rules allow investigators to modify the vulnerability scoring if there is a concern that the identified transport pathways within the Wellhead Protection Areas may increase the vulnerability of the aquifer beyond that represented by the intrinsic vulnerability. Modification of the vulnerability score is performed by increasing the vulnerability of the underlying aquifer vulnerability map from either a low to moderate value or moderate to high value. An initial aquifer vulnerability value of high cannot be increased.~~

Adjusted Vulnerability Scoring for the Centre Wellington Wellhead Protection Areas

Several data sources were reviewed to assess the relative risk of transport pathways to cross-cut natural protection over the municipal production aquifers in the Fergus and Elora WHPAs. Wells, buried municipal infrastructure, and septic systems were interpreted to warrant an update to vulnerability mapping. A total of 1,381 wells, 13.8 km of buried infrastructure, four lift stations, and 94 septic systems were identified as high-risk pathways. Where a high density of these pathways was identified, updates to the existing vulnerability mapping were recommended. These areas of transport pathway area of influence are identified on **Map 6-28**.

Following the adjustment of the vulnerability mapping based on the transport pathways assessment, vulnerability scoring was completed for Centre Wellington. The WHPAs for each well were overlain on the adjusted vulnerability mapping and scores were assigned. Final vulnerability scoring for the Fergus and Elora wellfields is shown on **Map 6-29**.

~~There have been no confirmed private well pathways, and as such, no increases to vulnerability due to the presence of private wells have been included. As well, no adjustments to the vulnerability were made due to septic systems and buried utilities as they most likely do not act~~

as significant transport pathways due to their shallow nature in relation to the deeper municipal aquifer and do not breach the lower permeable sediments. As no adjustments were made to the vulnerability scoring, the final vulnerability scoring maps were prepared to provide an indication of the relative vulnerability of the aquifer within the Wellhead Protection Areas. Due to the proximity of the wells, the WHPAs are shown together for all of Centre Wellington on **Map 7-29** and on a smaller scale for the urban areas of Elora and Fergus on **Map 7-31**.

Vulnerability Uncertainty Assessment

The uncertainty analysis factors considered in this assessment follow Part I.4, Rule 14 of the Technical Rules (MOECC, 2017) and are detailed in **Table 6-24**.

Uncertainty Assessment Factor	Uncertainty Designations	Description
14(1) The distribution, variability, quality, and relevance of data used in the preparation of the assessment report	Low	Good coverage of Ontario Ministry of Environment, Conservation and Parks (MECP) water well record data surrounding the Study Area as well as high-quality data local to the well fields and regionally. Water levels from multiple periods. Averaging of multiple water levels at individual wells was completed to best reflect most recent conditions.
14(2) The ability of the methods and models used to accurately reflect the flow processes in the hydrological system	Low	The groundwater flow model has been shown to reflect groundwater flow processes by representing water levels under long-term average and pumping conditions.
14(3) The quality assurance and quality control procedures applied	Low	Each step of the model development process relied on data that had been collected and/or reviewed by professional engineers or geoscientists. The development of the model was fully documented (Matrix 2018a) and that document was reviewed by leading academics and industry professionals for the purposes of fulfilling the requirements of the Act.
14(4) The extent and level of calibration and validation achieved for models used or calculations or general assessments completed	Low	The original Centre Wellington Tier Three model is a product of both steady-state and transient calibration efforts and the final parameters derived are both consistent with field observations and those that would be expected based on the conceptual model.
14(5) The accuracy to which the groundwater vulnerability categories effectively assess the relative vulnerability of the underlying hydrogeological features	High	The groundwater vulnerability mapping is based on the SAAT methodology completed by EarthFX (2008) and Golder (2010a); however, the hydrogeologic conceptual model of the Study Area was reworked as part of the Centre Wellington Tier Three Assessment (Matrix 2017a). The vulnerability mapping was not refined to reflect the current conceptual model. Further, an assessment of the differences between the current conceptual model, and the one that the 2008 vulnerability mapping is based on, has not been completed to verify whether the groundwater vulnerability categories still effectively assess the relative vulnerability of the underlying hydrogeological features.

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Uncertainty in the delineation of the WHPAs was addressed through the simulation of multiple scenarios. The scenarios for WHPA delineation produced similarly shaped capture zones, which were all encompassed in the final WHPA delineation. Further, the reliability of the delineated WHPAs is supported by the reasonability of the calibrated model. The groundwater flow model is calibrated using model parameters that reflect hydraulic field tests and have values that are within expected ranges for the various hydrogeological units.

This results in a low uncertainty for the capture zone delineation. There is a low uncertainty rating associated with the time-of-travel delineation; however, there is a high uncertainty rating associated with the vulnerability mapping, which was not updated or reassessed using the current conceptual model (Matrix, 2017a). As a result, an uncertainty rating of high is assigned to the assessment of vulnerability of each WHPA. This high uncertainty is identified as a data gap and updates to the vulnerability mapping should be considered in the future.

Vulnerability Scoring in WHPA-E

Vulnerability analysis of WHPA-E includes consideration for both the area vulnerability and the source vulnerability as described in the Technical Rules. The two factors are multiplied to generate a vulnerability score for WHPA-E.

The area vulnerability factor for a WHPA-E is prescribed to be the same as IPZ 2, i.e. between 7 and 9. The source vulnerability factor for Well F2 has been assessed on the basis of Type C intake (i.e. assuming the well is hydraulically connected to an in-land river) and therefore was assumed to be in the range of 0.9 to 1.0.

The area vulnerability factor for Well F2 was assigned a value of 7 based on the following:

- Land area within WHPA-E is largely rural and undeveloped. While there is an area of low density residential, institutional and industrial development within WHPA-E, only 3 relatively small systems direct stormwater directly to the Grand River upstream of the well.
- There are only two minor road crossings of the Grand River within WHPA-E.
- Transport pathways that were identified for WHPA-E contribute relatively little flow compared to the Grand River.

These factors, taken together, suggest a low vulnerability of the source to contamination from spills, and, therefore, the lowest area vulnerability factor (7) was assigned to WHPA-E for Well F2.

According to the Technical Rules, the source vulnerability factor for a surface water intake takes into consideration the depth of the intake from the water surface, the distance from land and historical water quality concerns. For a WHPA-E, the first two factors do not apply as there is no particular relevance to a GUDI well that is likely drawing surface water from a distributed area, rather than a point and only a small portion of the water getting to the well originates from surface water.

There were no historical water quality concerns raised for Well F2 during the technical study. In addition, groundwater wells are known to be less vulnerable than surface water intakes to spills and other adverse conditions by virtue of the time delay between the surface water feature to the well, in-situ filtration through the soil and dilution of the surface water by groundwater from the rest of the well capture zone. For these reasons, the source vulnerability factor for Well F2 was assigned the lowest value, i.e. 0.9.

Combining the area and source vulnerability scores, the overall vulnerability score for the Well F2 WHPA-E is 6.3 (see Table 6-25).

Location	Intake Protection Zone	Area Vulnerability Factor	Source Vulnerability Factor	Vulnerability Score
Well F2	WHPA-E	7	0.9	6.3

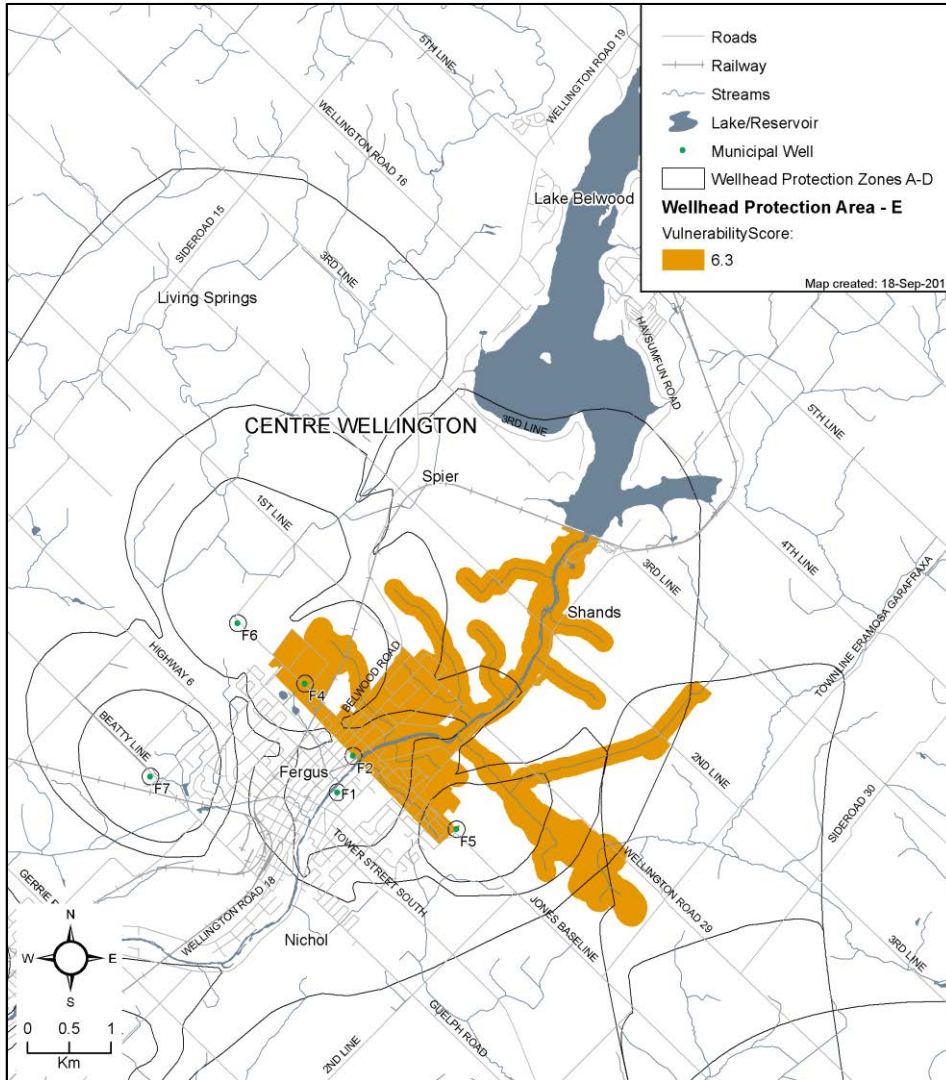
Peer Review

A peer review of the report Township of Centre Wellington, Draft Source Protection Vulnerability, Issues and Threats Assessment Report completed by Golder Associates, March 2010, was completed by Brian Luinstra of Luinstra Earth Sciences. The overall impressions of the report by the peer reviewer are as follows:

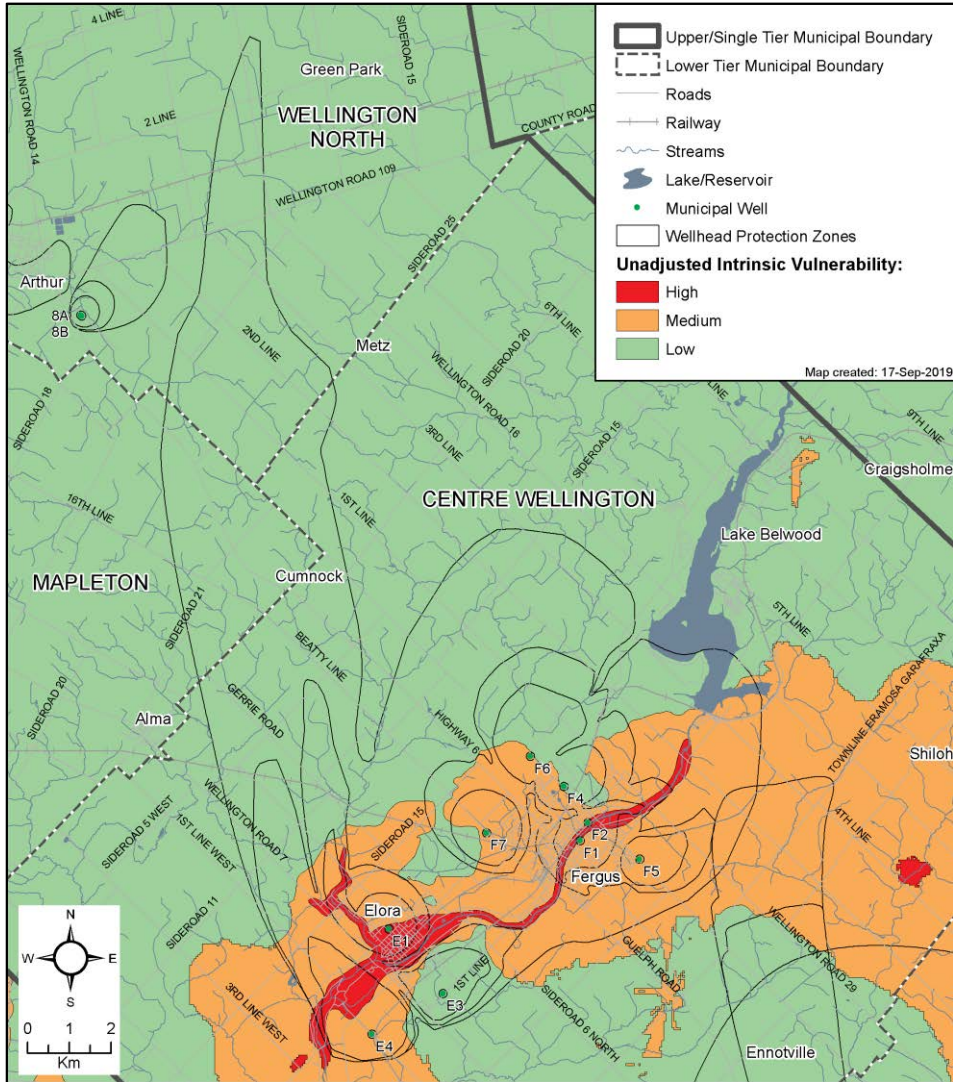
"In the Peer Reviewer's professional opinion, the overall results appear reasonable and are consistent with the requirements outlined in the Ontario Ministry of Environment Technical Rules for completion of the Assessment Report under the Clean Water Act, 2006. The overall approach to the developing vulnerability scores, evaluating Issues and assessing threats are consistent with the Technical Rules.

Responses to the peer review comments were incorporated into the final report. These responses to the peer review comments enhanced the overall defensibility of the report but did not impact the outcome of the Wellhead Protection Areas.

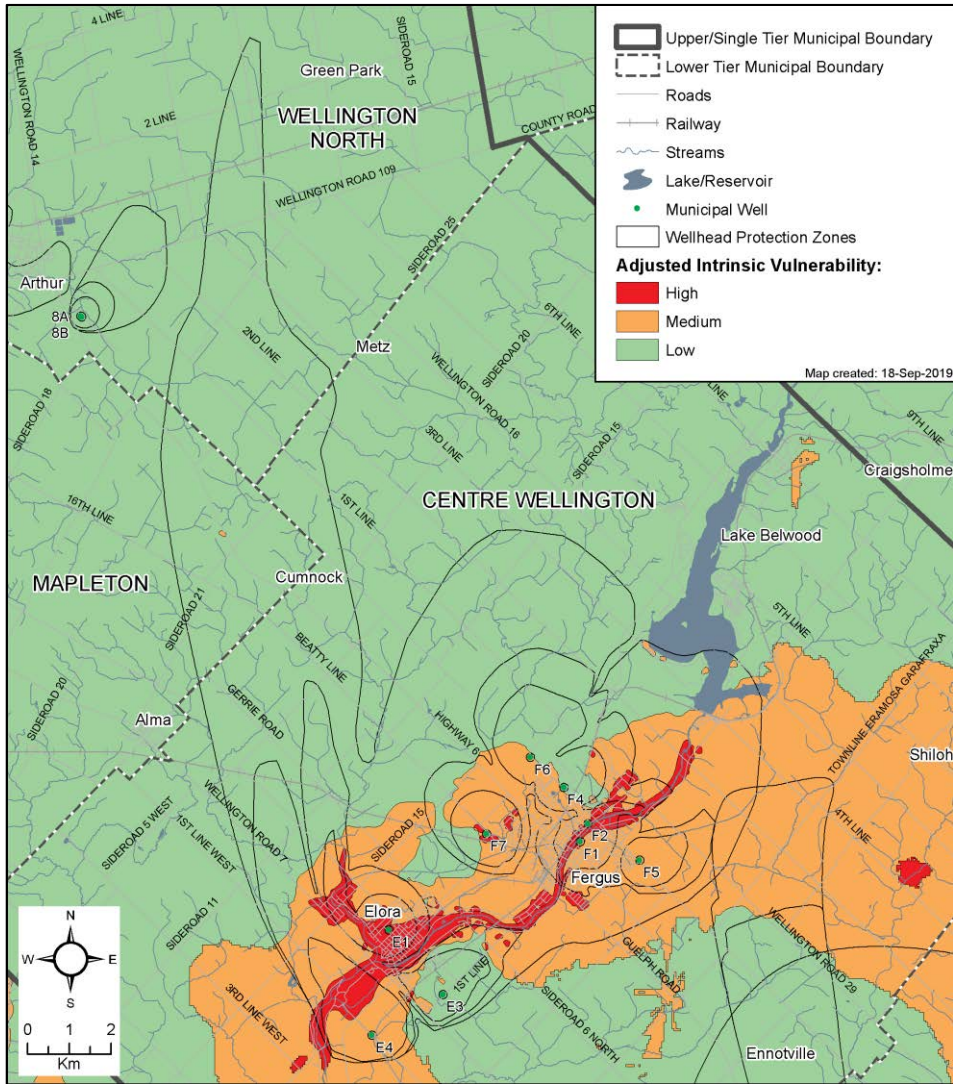
Map 6-25: Centre Wellington Well Supply Wellhead Protection Area E Delineation (Fergus Well F2)



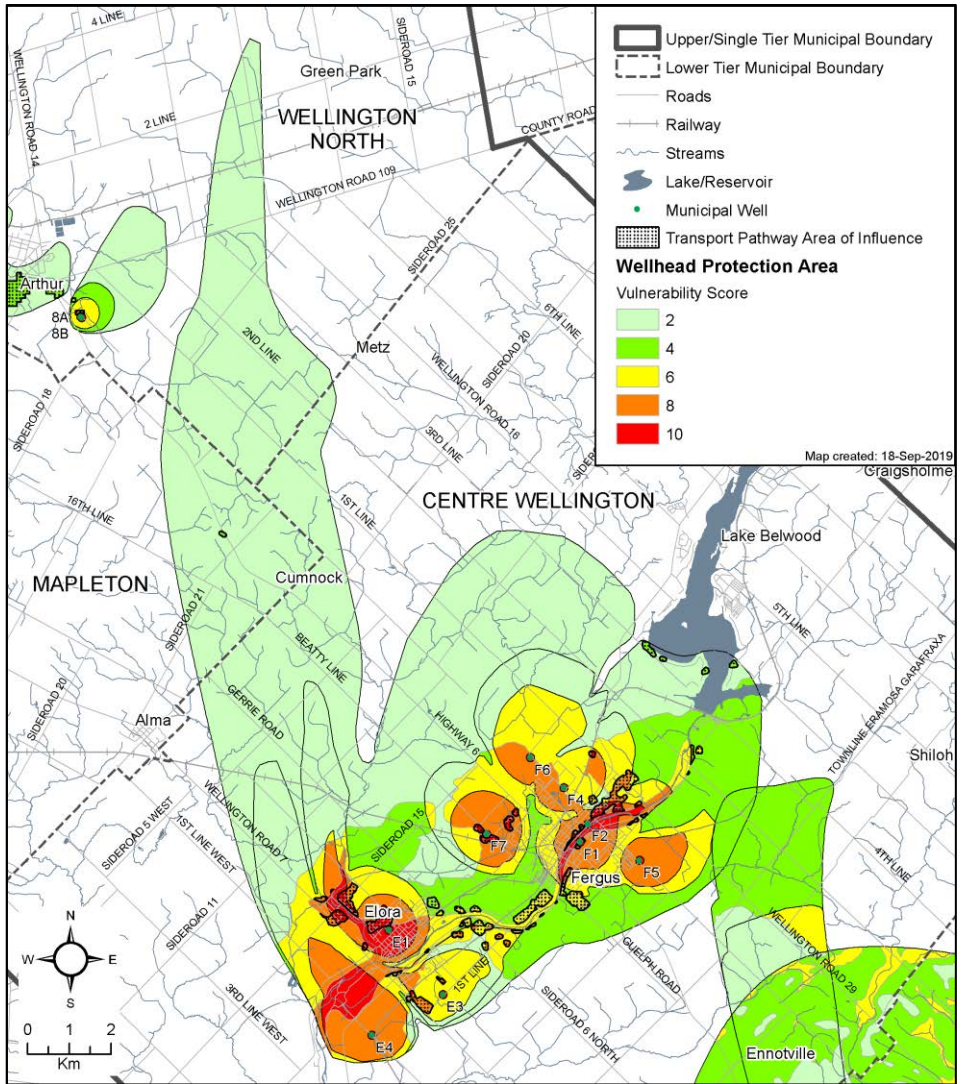
Map 6-26 Centre Wellington Well Supply Unadjusted Intrinsic Vulnerability
(Overview)



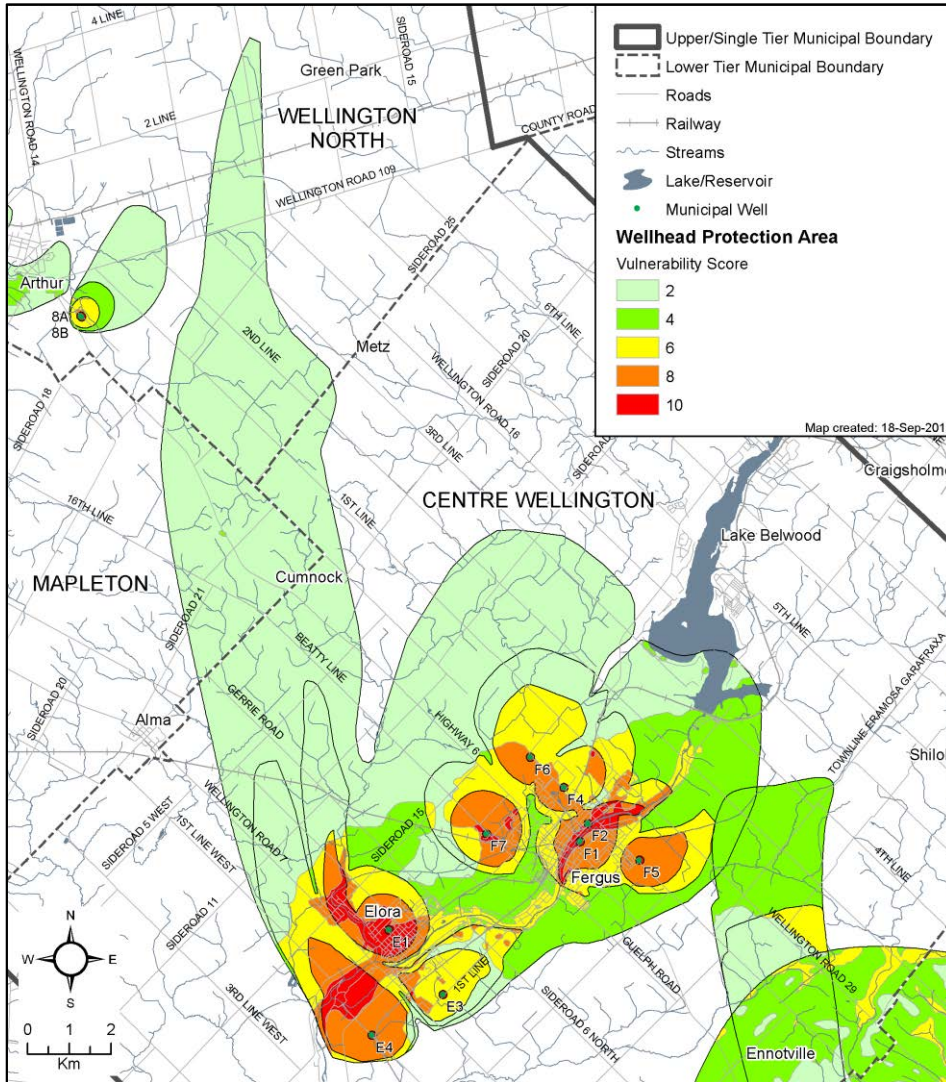
Map 6-27: Centre Wellington Well Supply Wellhead Protection Area Adjusted Intrinsic Vulnerability (Overview)



Map 6-28 Centre Wellington Transport Pathways Area of Influence



Map 6-29: Centre Wellington Wellhead Protection Area Final Vulnerability



WHPA-E Peer Review

The vulnerability assessment of Fergus Well F2 was carried out by Stantec Ltd. on behalf of the Grand River Conservation Authority and Township of Centre Wellington. Some technical and peer review for the surface water vulnerability assessment was provided by CRCA during the study. External peer review was provided by Dr. Hugh Whitely, University of Guelph. Peer review comments were stated to be minor points for clarification. Uncertainty for the Wellhead Delineation and Vulnerability Scoring

An uncertainty assessment associated with the development of Wellhead Protection Areas and vulnerability mapping is required in order to assess the level of confidence in the results and determine the need for additional data collection and/or analysis as part of future assessments.

Hydrogeological investigations and groundwater modelling are dynamic and inexact sciences. A groundwater model uses science and mathematics to draw together the available data into a mathematical or computer based representation of the essential features of an existing hydrogeological system. The validity and accuracy of the model depends on the amount of data available relative to the degree of complexity of the geologic formations, the site geochemistry, the fate and transport of the dissolved compounds, and on the quality and degree of accuracy of the data entered. Therefore, every groundwater model is a simplification of reality and the model described in this report is not an exception.

It should also be recognized that because the supply wells are completed in the bedrock aquifer, there is a fair amount of uncertainty over the times of travel and the effective area of capture. In a general sense, there would be greater uncertainty for bedrock systems than overburden systems due to the effect of the fractured rock and the assumptions with effective porosity.

For the Centre Wellington area, in addition to the regional studies that have been conducted, local hydrogeological studies have also been completed. Also, numerous water well records exist for private wells located within and around the Wellhead Protection Areas. After filtering out the lower quality water well records, the remaining water well records can provide information to fill in the gaps of the detailed studies. The Wellhead Protection Areas were delineated using a numerical model that had been calibrated reasonably well with the field data as described previously. In addition, a factor of safety was applied in delineating the Wellhead Protection Areas to help address in part the uncertainty in the hydraulic parameters assigned and potential regional uncertainty in the flow direction.

The SAAT mapping was initially conducted at a watershed scale to provide a consistent mathematical approach to the vulnerability aspect of the scoring. For Elora and Fergus, these results were further reviewed at a Wellhead Protection Area scale and changes applied to improve the results and reduce uncertainty in the SAAT mapping. The vulnerability scoring used in the threats assessment is based on both the Wellhead Protection Area delineation and the SAAT vulnerability mapping and, therefore, the overall uncertainty is related to the combined uncertainty of these two tasks.

Efforts have been made to reduce the uncertainty in the hydrogeological mapping products, following the guidance outlined in the Technical Rules. However, the following missing information adds to the uncertainty of this assessment: there is no site specific information on the effective porosity of the bedrock; there are relatively few high quality monitoring wells within and surrounding the capture zone to confirm the local groundwater flow direction; and the influence on the nature of the fracturing and distribution of water bearing zones within the bedrock are not explicitly mapped.

~~Notwithstanding the above, the vulnerability scoring reflects the best estimate of the actual conditions at Elora and Fergus. The Wellhead Protection Areas, SAAT vulnerability and resulting vulnerability scoring for Elora and Fergus are, therefore, estimated to have a low uncertainty rating.~~

Uncertainty for the WHPA-E Delineation and Vulnerability Scoring

The methods used to delineate WHPA-E zones were generally consistent with MOE guidance and the Technical Rules. The dye tracer fieldwork and resultant confirmation of excellent calibration of the hydraulic model of the Grand River for the design flow regime provides confidence that this aspect of the upstream system is generally well understood.

There is some uncertainty in the use of statistical flow analyses, performed on the historical flow data sets, to define the “design” flow. While efforts were made to ensure that all flow data included in the analysis were accurate, it is not possible to eliminate all sources of error. Some uncertainty exists in the data sets in the form of minor gauge malfunctions and/or the effect of ice and vegetation on water levels and flows. Generally speaking, however, the Fergus Shand Dam flow gauge data set was found to be of sufficiently high quality and duration to minimize concerns in this regard.

Observations of bankfull or near bankfull flood stage during the dye tracer fieldwork, when flows from the reservoir were known to be 25 m³/s, provide further confidence in the use of the 95% flow, determined through statistical analysis to be 32 m³/s, as representative of design flow.

In the absence of detailed studies being completed on every transport pathway within WHPA-E, it is inherent that numerous assumptions must be incorporated into the completion of the delineation work. While these assumptions were conservative to ensure that any errors were on the side of caution, this approach increased uncertainty in the validity of resultant protection zones in these areas and may result in the inclusion of areas in WHPA-E that may not impact on Well F2.

A typical example of the conservative approach applied within the WHPA-E delineation includes the assumption that small wetlands within the zone provide zero detention time to contaminant inputs. This assumption is obviously conservative as it must take some finite time for inflows to these areas to travel to the associated outlet. However, in the absence of field evidence to support the inclusion of a finite detention time provided by these elements, professional judgement dictated the conservative approach.

Despite potential uncertainty and conservative assumptions associated with transport pathways, in most instances the secondary transport pathways are sufficiently short that, even if the analysis does contain uncertainty, there can be a high degree of confidence that the resultant WHPA-E delineation limits would not require revision. In other words, there is a relatively high degree of confidence that the resultant “area of concern” envelopes all contributing drainage areas within a two-hour travel distance.

The exception to this confidence lies with the assumed extents and general configuration of storm sewer systems that were assumed immediately upstream of the intake location. Although most of the hydrology and hydraulics are considered to be generally well understood, the uncertainty pertaining to those portions of the protection area within the urbanized limits requires that the Well F2 WHPA-E delineation be assigned an uncertainty of high. Further assessment and field work required to reduce this high uncertainty is not recommended at this time due to the low

vulnerability of WHPA-E, the lack of significant threats and the fact that the well is not currently used for municipal supply.

The general characteristics of the WHPA-E for Well F2 suggest that the vulnerability score is consistent with the relative vulnerability of the hydrological features. For these reasons, the Study Team has a relatively high degree of confidence in the WHPA-E vulnerability scores for Well F2 and has ranked the uncertainty as low. The associated overall uncertainty assessment is summarized on **Table 6-26**.

Location	Delineation Uncertainty	Vulnerability Uncertainty
Fergus Well F2 WHPA-E	High	Low

Managed Lands within the Centre Wellington Wellhead Protection Areas

Managed Lands are lands to which nutrients are applied. Managed lands can be categorized into two groups: agricultural managed land and non-agricultural managed land. Agricultural managed land includes areas of cropland, fallow, and improved pasture that may receive nutrients. Non-agricultural managed land includes golf courses, sports fields, lawns and other built-up grassed areas that may receive nutrients (primarily commercial fertilizer). Detailed methods on managed lands calculations are described in Chapter 3 of this Assessment Report. ~~Determining the location and percentage of managed lands, the location of agricultural managed lands, and the calculation of livestock density were used to determine whether the application of agricultural source material (ASM), non-agricultural source material (NASM), and fertilizer were significant threats within the Wellhead Protection Areas.~~

~~To calculate the percentage of managed lands, Technical Rule 16(9) was used (MOE, 2009b). Mapping the percentage of managed lands area is not required where the vulnerability score for an area is less than the vulnerability score necessary for the activity to be considered a significant threat. Based on this statement in the Technical Rule 16 (9)s, the percentage of managed lands were only calculated where the vulnerability score in each Wellhead Protection Area WHPA was greater than 4.~~

Managed lands calculations for Elora and Fergus were completed in WHPA-A to WHPA-D where the vulnerability was 6 or higher. **Table 6-27** provides the results of the calculations and **Map 6-30** and show the ranges of managed lands percentage for ~~Elora and Fergus respectively~~ the Centre Wellington WHPAs.

Table 6-27: Percent Managed Lands in the Centre Wellington Wellhead Protection Areas

Township	Location	Well	WHPA-A	WHPA-B	WHPA-C	WHPA-D
Centre Wellington Centre Wellington	Elora	E1	57.69% 32%	54.41% 60%	59.69% 82%	38.2% 25%
		E3	49.20% 32%	58.53% 64%	64%	25%
		E4	76.78% 87%	57.01% 77%	41%	25%
	Fergus	F1	20.71% 5%	47.99% 41%	58.49% 90%	34%
		F2	41.41% 25%	41%	90%	34%
		F4	11.32% 0%	41%	90%	34%
		F6	39.24% 25%	74%	82%	34%
		F5	48.95% 47%	68.76% 52%	88%	31%
		F6	60.47% 34%	56.69% 57%	64%	34%
		F7				

Note that the managed lands percentage was only calculated in WHPA-D where the vulnerability score was greater than 4, i.e., 6 or more.

The percentage of managed lands within each WHPA-E was estimated according to the Technical Rules. The percentage of managed land within WHPA-E for well F2 is shown on Map 6-33.

Livestock Density within the Centre Wellington Wellhead Protection Areas

Technical Rule 16 also requires the mapping of livestock density. Livestock density is defined as the number of nutrient units over a given area, and is expressed by dividing the nutrient units by the number of acres in the agricultural managed land area or the livestock grazing area depending on the threat being assessed. Detailed methods on livestock density calculations are described in Chapter 3 of this Assessment Report.

The calculation of livestock density involves the following steps: estimate the number of each category of animal present; convert the numbers of each animal present into nutrient units (to allow for all animals to be compared on an equivalent unit of measure); and sum the total nutrient units of all animals present and divide by the agricultural managed land within the same area. For this study, properties with an agricultural property code (200 series MPAC codes) were reviewed using the GRCA 2006 orthoimagery to help in determining the detailed livestock density estimates. The maximum livestock density of an area was based on the assumption that all existing barns are in use to full capacity based on their size.

Nutrient units are calculated for an entire property; however, nutrient units on a property that crosses a Wellhead Protection Area boundary are to be prorated for the area within that Wellhead Protection Area zone. The nutrient units were prorated based on the percent of the parcel that is located within the vulnerable zone. Similarly to the managed lands mapping, the livestock density mapping was completed for the entire WHPA-A, WHPA-B and WHPA-C zones and only within the WHPA-D zones with a vulnerability score of six.

Table 6-28 summarizes the livestock density results in nutrient units/acre (NU/acre) in the Elora and Fergus Wellhead Protection Areas WHPAs. Map 6-31 and shows the livestock density results for Elora and Fergus respectively, the Centre Wellington WHPAs.

Table 6-28: Livestock Density (NU/acre) in the Centre Wellington Wellhead Protection Areas

Township	Location	Well	WHPA-A	WHPA-B	WHPA-C	WHPA-D
Centre Wellington	Elora	E1	0.00	0.16	0.76	0.32
		E3	0.24	0.04	0.16	0.32
		E4	0.15	0.48	1.16	0.32
	Fergus	F1	0.00	0.28	0.31	2.25
		F2	0.00	0.12	1.03	2.25
		F4	0.00	0.12	1.03	0.39
		F5	0.55	0.45	0.12	0.11
		F5	0.44	0.46	2.05	2.25
		F6	0.44	0.46	2.05	2.25
		F7	0.00	0.01	0.34	2.25

A coding of 0 indicates that there were no agricultural livestock barns to contribute nutrients and therefore the value for livestock density is 0.

Similarly, the livestock density within each WHPA-E was estimated according to the Technical Rules. Livestock density within WHPA-E for well F2 is shown on **Map 6-34**. The vulnerability scores for these WHPAs are less than the vulnerability score necessary for the related activities to be considered significant threats, according to the Ministry of Environment's Table of Drinking Water Threats.

Uncertainty of the Livestock Density within the Wellhead Protection Areas

The **MECP** livestock density circumstance is calculated/averaged over the entire protection zone and does not represent the livestock density at an individual property. The degree of threat posed by nutrient application at the scale of an individual property would need to be established from field visits and additional information from land owners, such as that collected as part of the development of nutrient management plans. The data on actual farming practices is currently based on assumptions.

Percent Impervious Surface Area within the Centre Wellington Wellhead Protection Areas

To determine whether the application of road salt poses a threat in the Centre Wellington, the percentage of impervious surface where road salt can be applied per square kilometre was calculated as per Technical Rules 16(11) and 17. The 1km X 1km method, described in Chapter 3 was used for Centre Wellington wellfield. The application of road salt can only be a threat in areas with a vulnerability score of 6 or greater under the threats-based approach; therefore the percent impervious calculation was only completed in areas with a score of 6 or greater.

~~To calculate the percent impervious surface, information on land cover classification from the Southern Ontario Land Resource Information system (SOLRIS) was used. This provided land use information, including road and highway transportation routes, as continuous 15x15 metre grid cells across the entire Source Protection Area. All the cells that represent highways and other impervious surfaces used for vehicular traffic were re-coded with a cell value of 1 and all other land cover classifications were given a value of 0, to identify impervious surface areas.~~

~~Then, a focal sum moving window average was applied using the Spatial Analyst module of the ArcGIS software. For each 15x15 metre cell, the total number of neighbouring grid cells coded as impervious, within a 1x1 kilometre search area, was calculated. This total was then converted into the percentage of impervious surface by land area, using the area of each cell (225 sq. m) and the area of the moving window (1 sq. km). This provides a 1x1 kilometre moving window~~

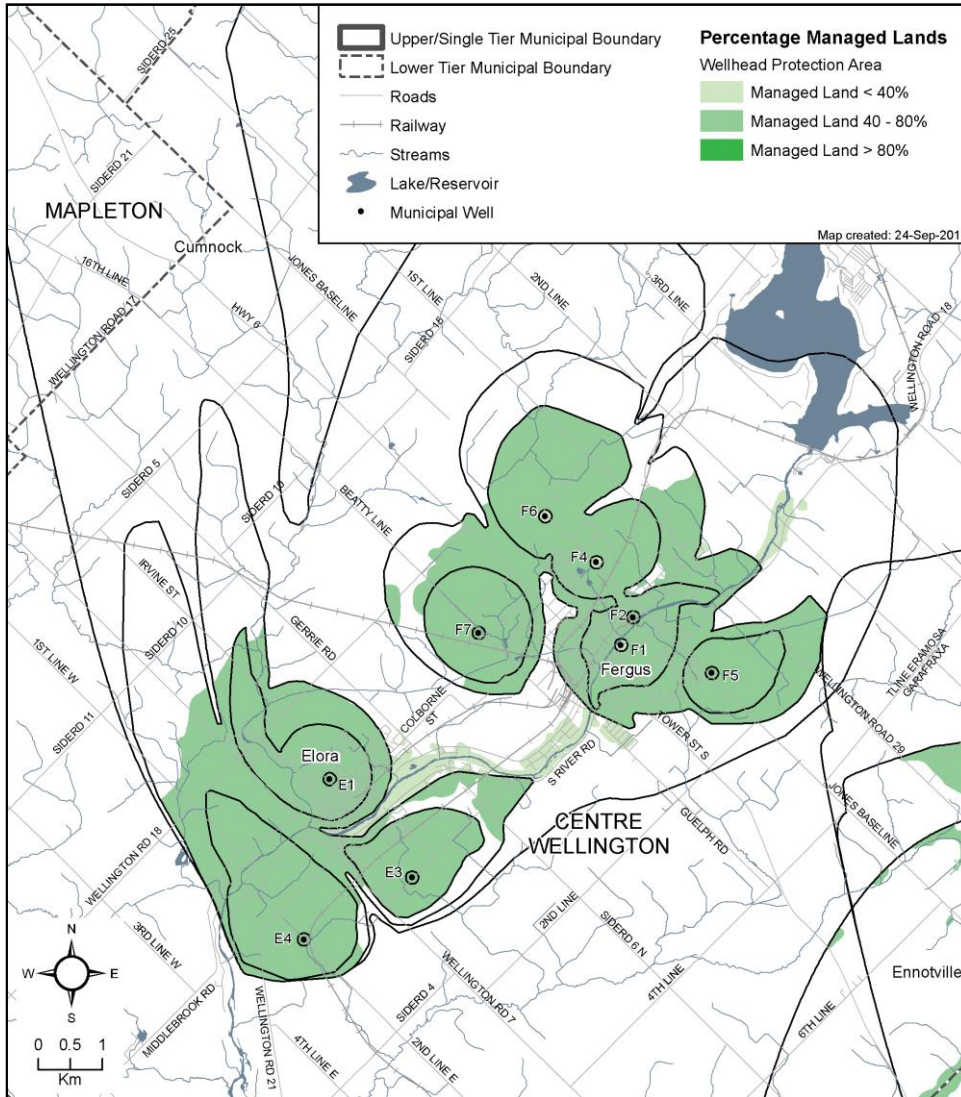
~~calculation of percent impervious surface, represented in 15x15 metre spatial increments. This dataset was calculated for the entire Source Protection Area, but was clipped to show these results only in the Wellhead Protection Areas and Intake Protection Zones. The analysis is more representative of road density and is better than the method described in the Technical Rules. As per Technical Rule 15.1, the Director has confirmed his agreement with the departure. The Director's letter of confirmation can be found in **Appendix B**.~~

The application of road salt can only be a threat in areas with a vulnerability score of 6 or greater; therefore the percent impervious calculation was only completed in areas with a vulnerability score of 6 or greater.

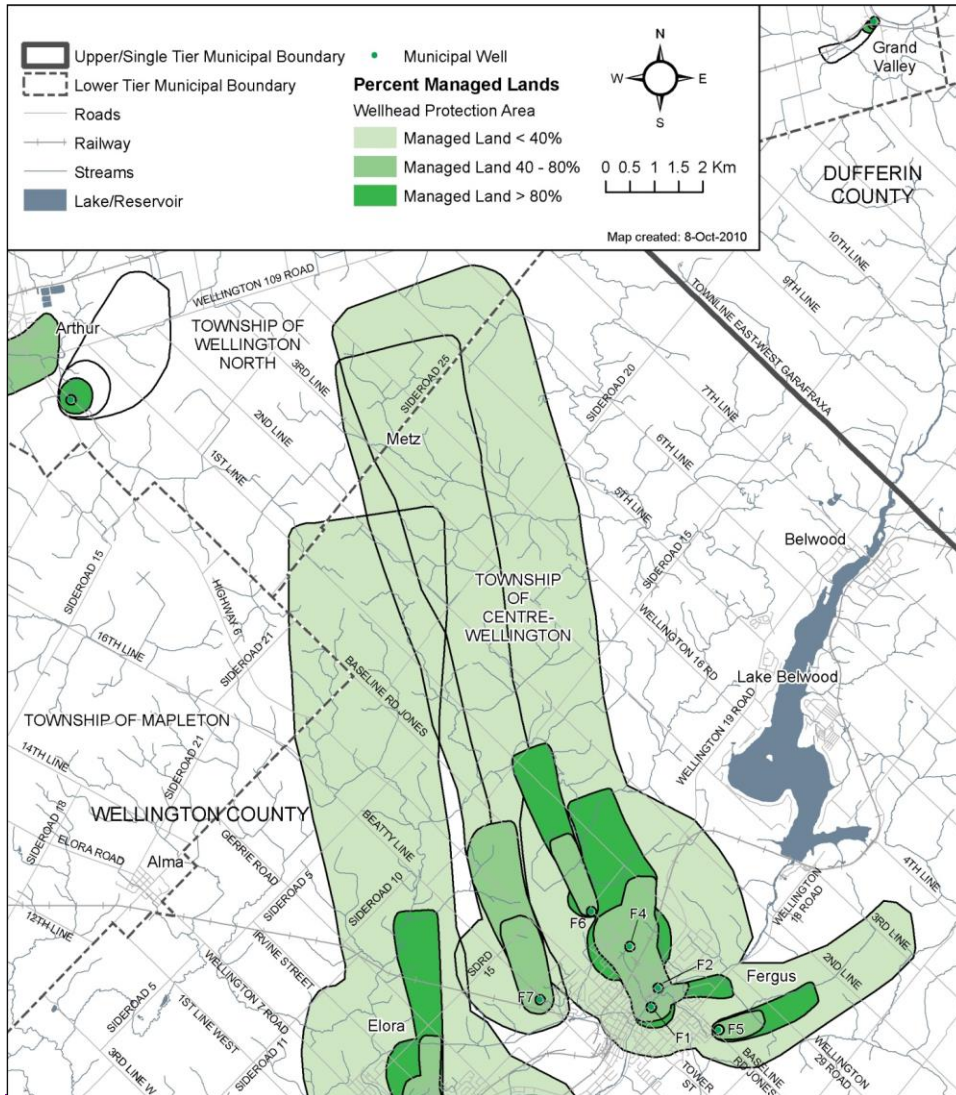
Map 6-32 and show the summary of the percent imperviousness within the Centre Wellington Wellhead Protection Areas respectively.

The percentage of impervious surface area where road salt can be applied within the Fergus WHPA-E is shown on **Map 6-35**. The vulnerability scores for this WHPA is less than the vulnerability score necessary for the related activities to be considered significant threats, according to the ~~Ministry of Environment's~~ **MECP's** Table of Drinking Water Threats.

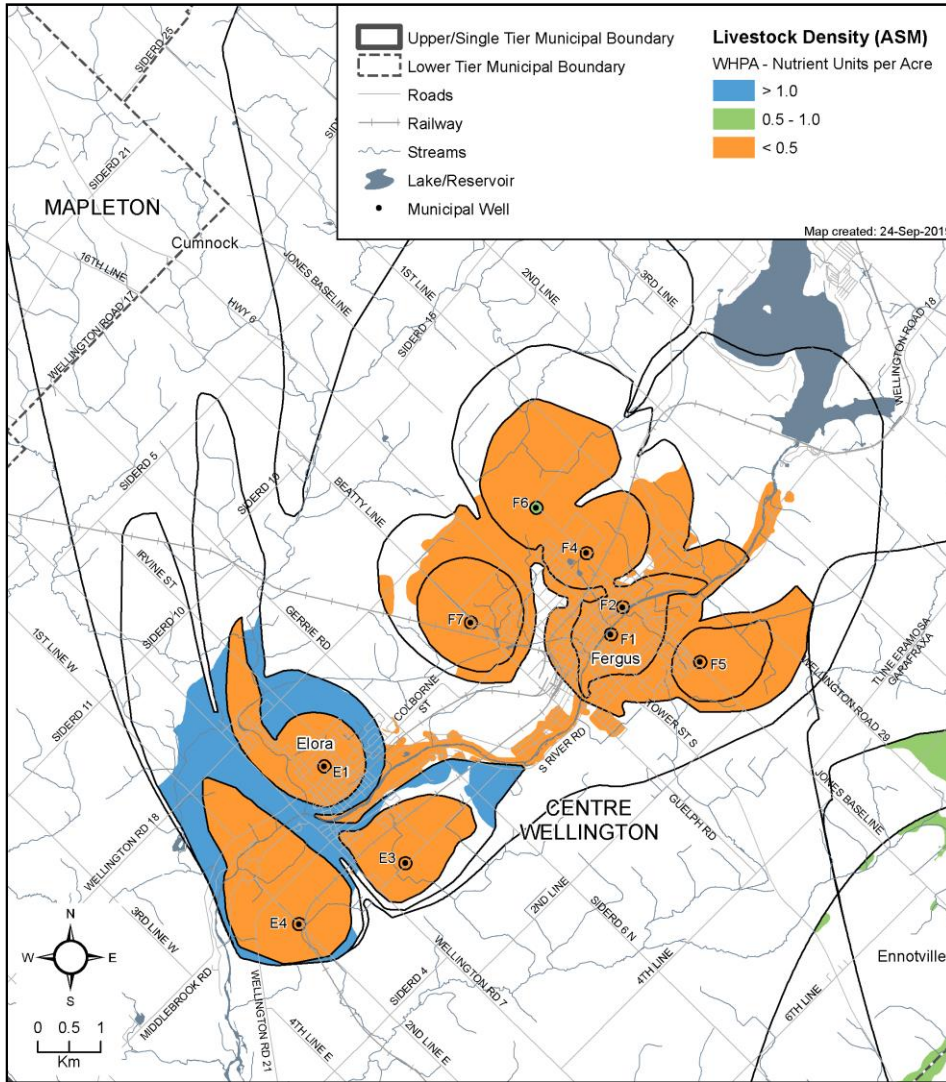
Map 6-30: Centre-Wellington Well Supply Percent Managed Lands



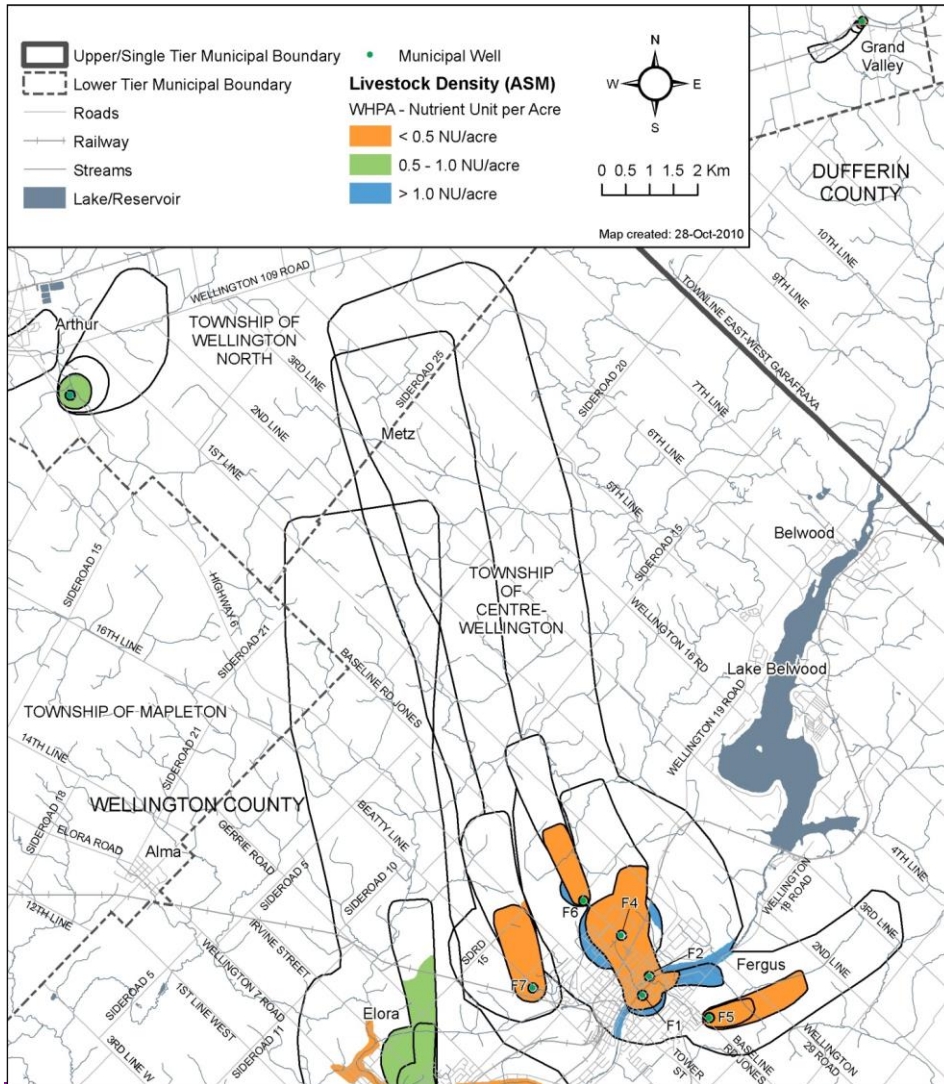
Map 6-31: Fergus Well Supply Percent Managed Lands



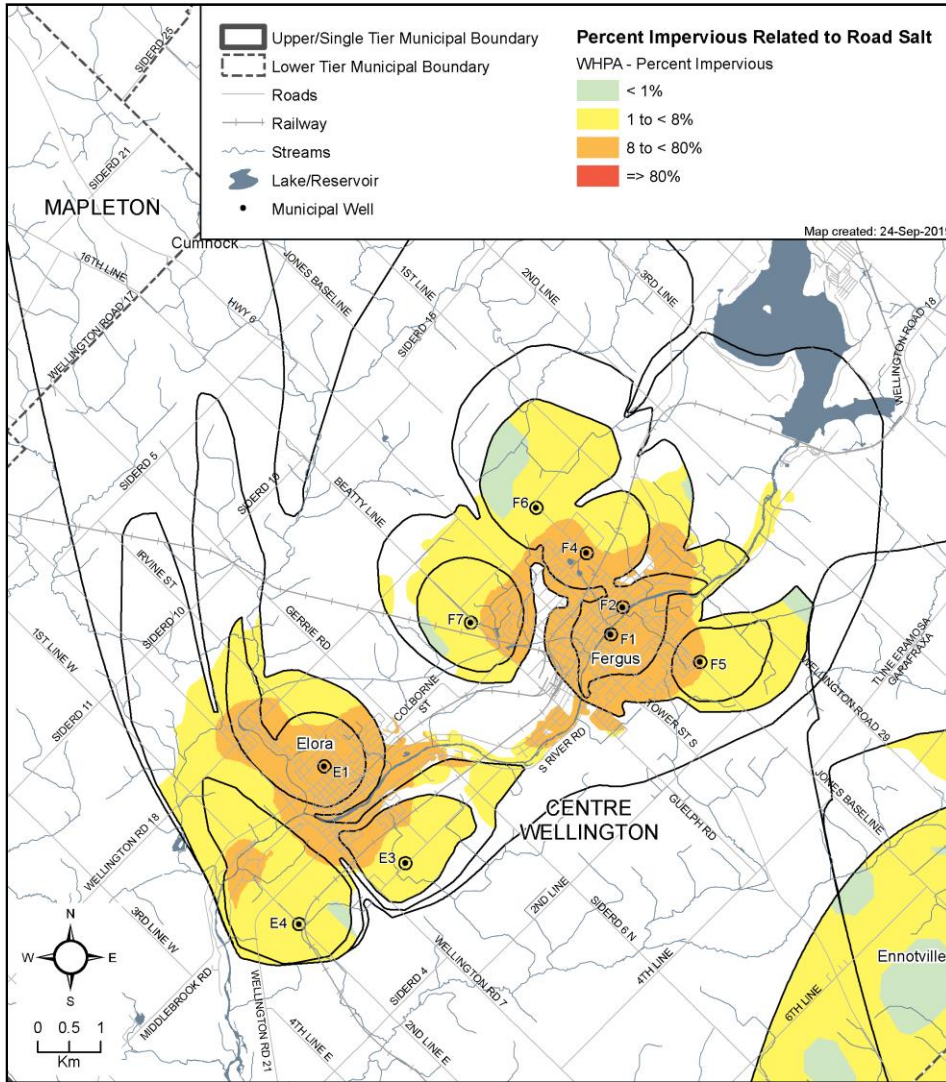
Map 6-31: Elora Centre-Wellington Well Supply Livestock Density



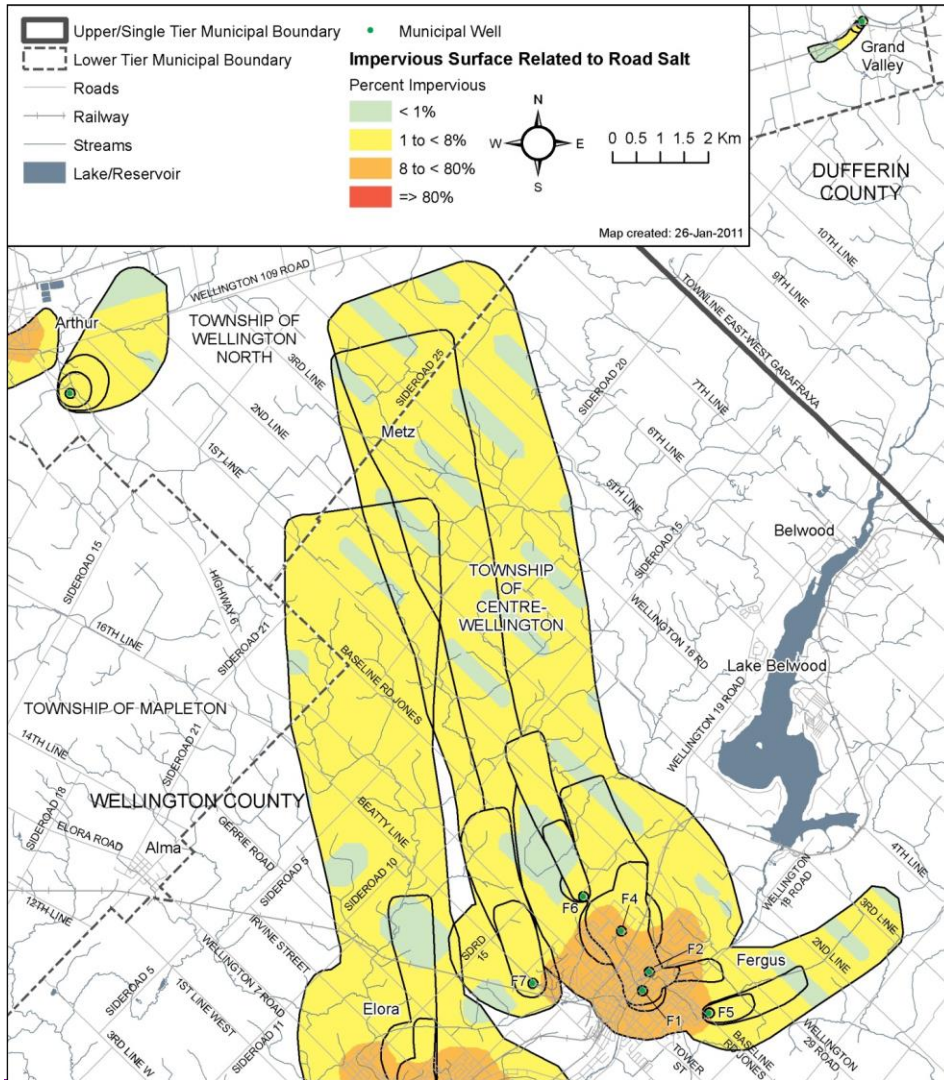
Map 6-33: Fergus Well Supply Livestock Density



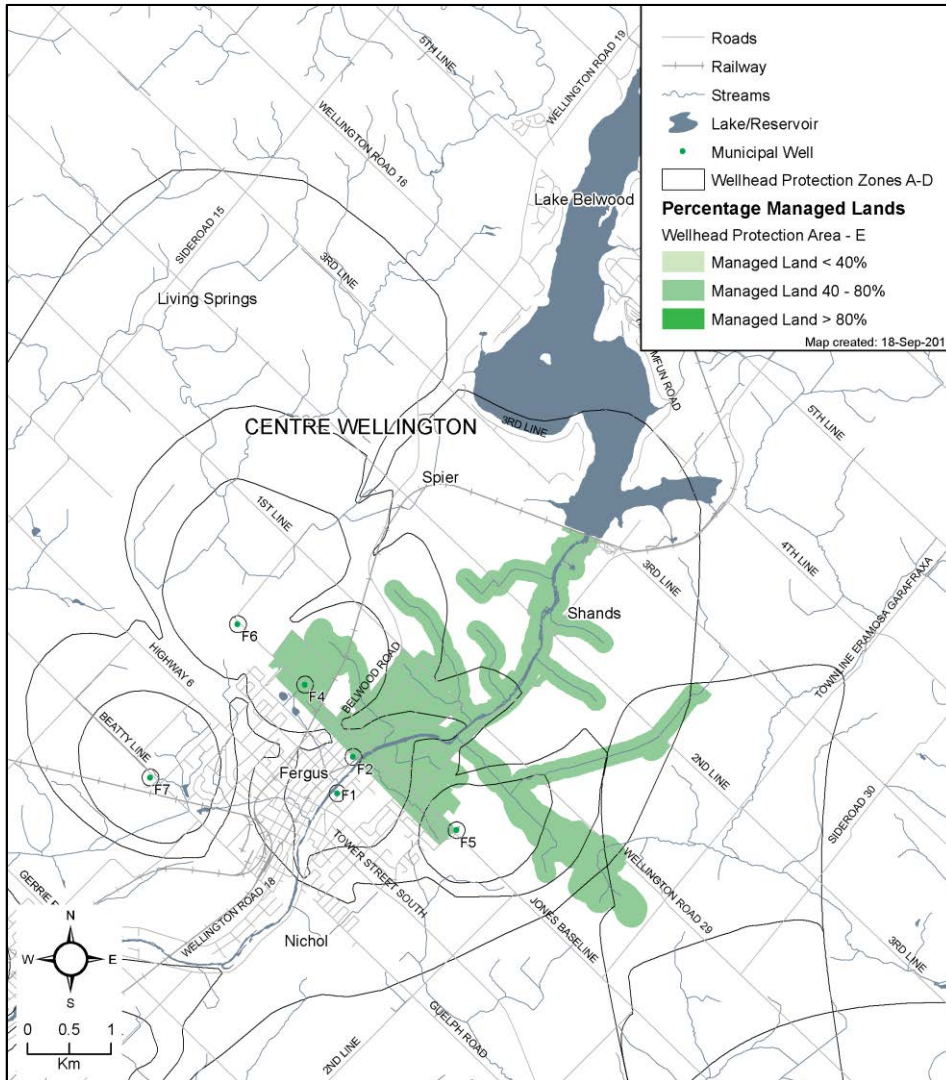
Map 6-32: Elora-Centre-Wellington Well Supply Percent Impervious Surfaces



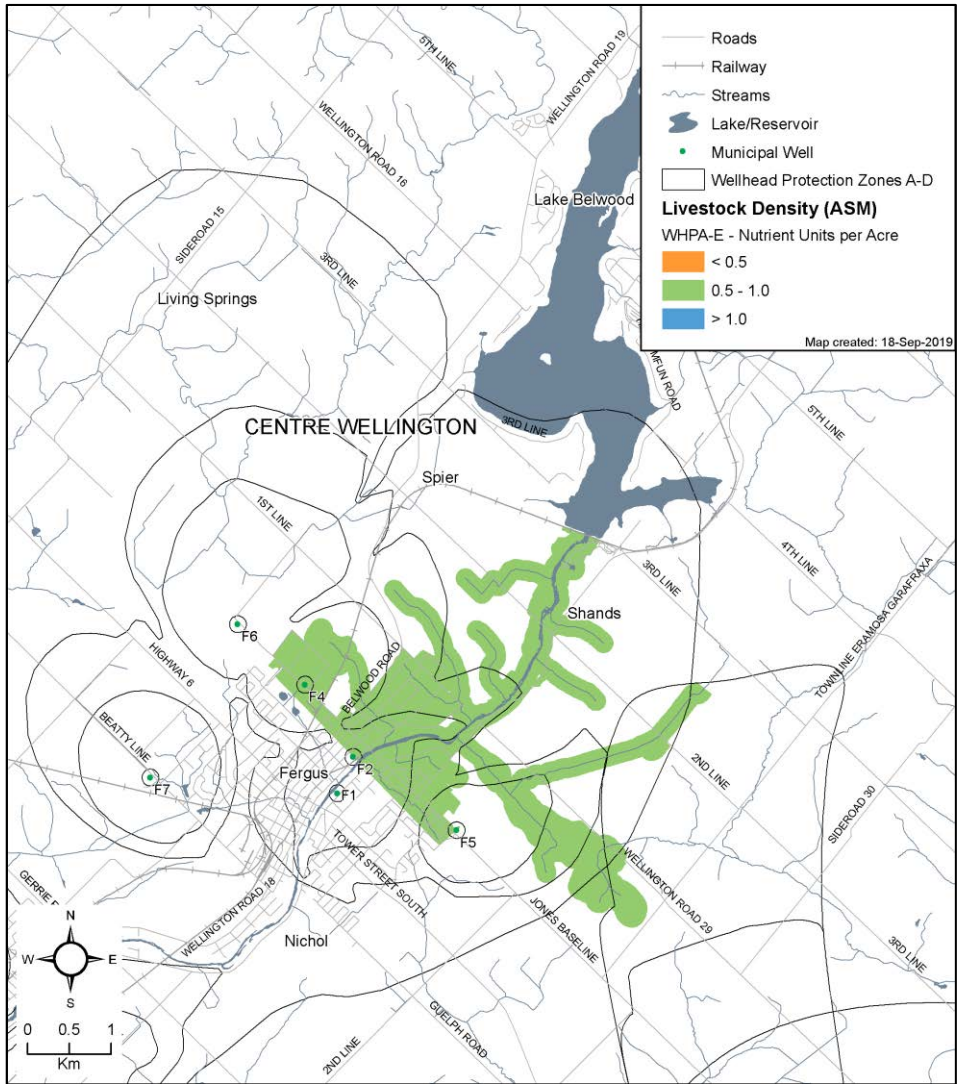
Map 6-35: Fergus Well Supply Percent Impervious Surfaces



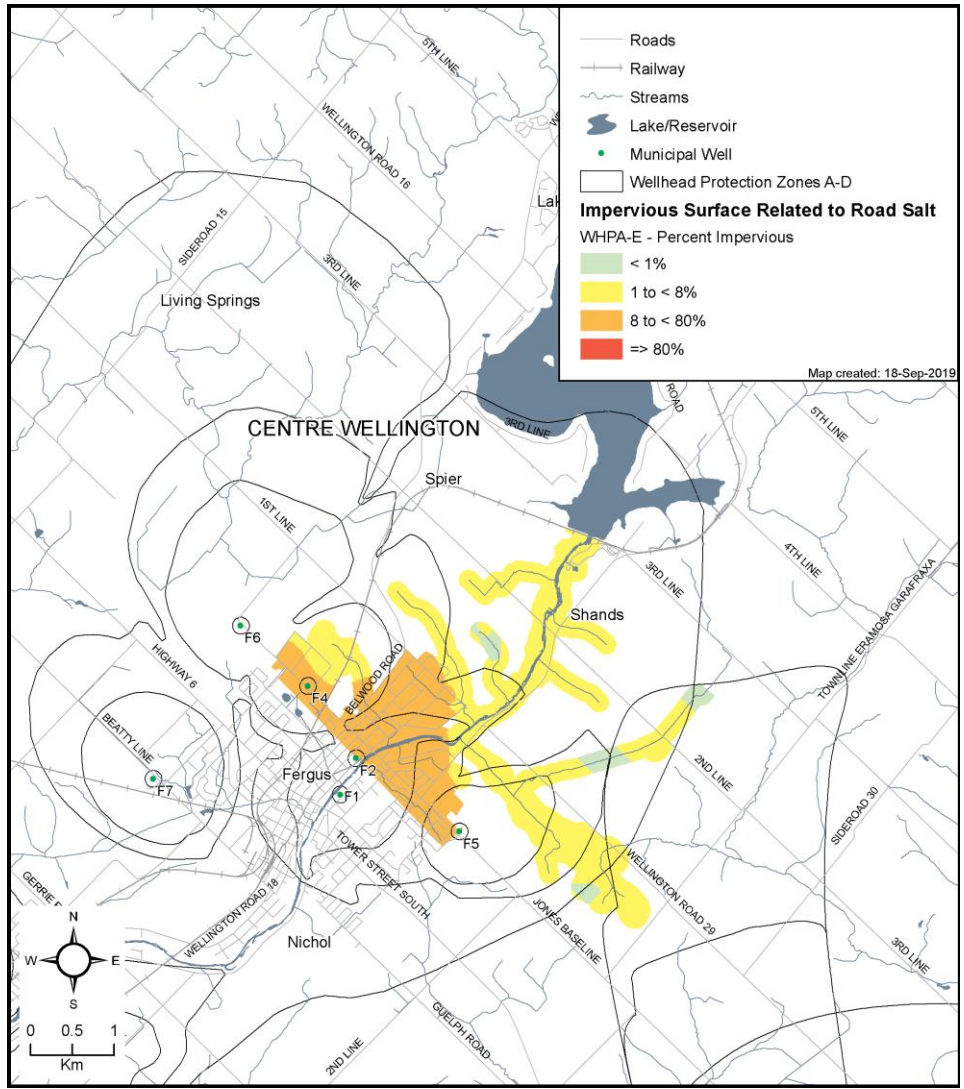
Map 6-33: Centre Wellington Well Supply WHPA-E Percent Managed Lands (Fergus, Well F2)



Map 6-34: Centre Wellington Well Supply WHPA-E Livestock Density (Fergus, Well F2)



Map 6-35: Centre Wellington Well Supply WHPA-E Percent Impervious Surfaces (Fergus, Well F2)



6.3.3 Drinking Water Threats Assessment

The Ontario Clean Water Act, 2006, defines a Drinking Water Threat as “an activity or condition that adversely affects or has the potential to adversely affect the quality or quantity of any water that is or may be used as a source of drinking water, and includes an activity or condition that is prescribed by the regulation as a drinking water threat.” A Prescribed Drinking Water Threats table in Chapter 3 of this Assessment Report lists all possible drinking water threats.

Identification of Significant, Moderate and Low Drinking Water Quality Threats for the Centre Wellington Well Supply

The identification of a land use activity as a significant, moderate, or low drinking water threat depends on its risk score, determined by considering the circumstances of the activity and the type and vulnerability score of any underlying protection zones, as set out in the Tables of Drinking Water Threats available through www.sourcewater.ca. Information on drinking water threats is also accessible through the Source Water Protection Threats Tool: <http://swpip.ca>. ~~For local threats, the risk score is calculated as per the Director's Approval Letter, as shown in Appendix C.~~ The information above can be used with the vulnerability scores shown in Map 6-27 and Map 6-29 to help the public determine where certain activities are or would be significant, moderate and low drinking water threats.

Table 6-29 and Table 6-30 provide a summary of the threat levels possible in the Centre Wellington Well Supply for Chemical, Dense Non-Aqueous Phase Liquid (DNAPL), and Pathogens. A checkmark indicates that the threat classification level is possible for the indicated threat type under the corresponding vulnerable area / vulnerable score; a blank cell indicates that it is not. The colours shown for each vulnerability score correspond to those shown in Map 6-27 and Map 6-29.

Threat Type	Vulnerable Area	Vulnerability Score	Threat Classification Level		
			Significant 80+	Moderate 60 to <80	Low >40 to <60
Chemicals	WHPA-A/B	10	✓	✓	✓
	WHPA-B/C	8	✓	✓	✓
	WHPA-B/C/D	6		✓	✓
	WHPA-C/D	2 & 4			
Handling / Storage of DNAPLs	WHPA-A/B/C	Any Score	✓		
	WHPA-D	6		✓	✓
	WHPA-D	2 & 4			
Pathogens	WHPA-A/B	10	✓	✓	
	WHPA-B	8		✓	✓
	WHPA-B	6			✓
	WHPA-C/D	Any Score			

Table 6-30: Identification of Drinking Water Quality Threats in the Fergus Wellhead Protection Areas

Threat Type	Vulnerable Area	Vulnerability Score	Threat Classification Level		
			Significant 80+	Moderate 60 to <80	Low >40 to <60
Chemicals	WHPA-A/B	10	✓	✓	✓
	WHPA-B/C	8	✓	✓	✓
	WHPA-B/C/D	6		✓	✓
	WHPA-C/D	2 & 4			
	WHPA-E	6.3		✓	✓
Handling / Storage of DNAPLs	WHPA-A/B/C	Any Score	✓		
	WHPA-D	6		✓	✓
	WHPA-D	2 & 4			
	WHPA-E	6.3			✓
Pathogens	WHPA-A/B	10	✓	✓	
	WHPA-B	8		✓	✓
	WHPA-B	6			✓
	WHPA-C/D	Any Score			
	WHPA-E	6.3		✓	✓

6.3.4 Conditions Evaluation

Conditions are contamination that already exist and are a result of past activities that could affect the quality of drinking water. To identify a Condition, Part XI.3, Rule 126 of the Technical Rules (MOECC, 2009b2017), lists the following criteria for drinking water sources, which is outlined in Chapter 3 of this Assessment Report.:

- The presence of a non-aqueous phase liquid in groundwater in a highly vulnerable aquifer, significant groundwater recharge area or wellhead protection area.
- The presence of a single mass of more than 100 litres of one or more dense non-aqueous phase liquids in surface water in a surface water intake protection zone.
- The presence of a contaminant in groundwater in a highly vulnerable area, significant groundwater recharge area or a wellhead protection area, if the contaminant is listed in Table 2 of the Soil, Groundwater and Sediment Standards and is present at a concentration that exceeds the potable groundwater standard set out for the contaminant in that Table.
- The presence of a contaminant in surface soil in a surface water intake protection zone if, the contaminant is listed in Table 4 of the Soil, Ground Water and Sediment Standards is present at a concentration that exceeds the surface soil standard for industrial/commercial/community property use set out for the contaminant in that Table; and

The presence of a contaminant in sediment, if the contaminant is listed in Table 1 of the Soil, Ground Water and Sediment Standards and is present at a concentration that exceed the sediment standard set out for the contaminant in that Table.

The ~~above listed~~ criteria were used to evaluate potentially contaminated sites within the Elora and Fergus WHPAs to determine if such a Condition was present at a given site.

Data Sources for the Conditions Evaluation

Conditions Evaluation for the Centre Wellington Well Supply

The results of the condition site assessment presented in the Approved Grand River Assessment Report (August 2012) indicated that no condition sites were identified within the Township of Centre Wellington. For the Township of Centre Wellington, sixteen (16) potential condition sites were identified in the Approved Assessment Report, however, there was a lack of information pertaining to contaminant concentrations and off-site migration at the time that prevented identification of condition sites under Technical Rule 126. This lack of information was identified as a data gap or uncertainty for the Centre Wellington portion of the Assessment Report and no condition sites were identified.

Since the approval of the Assessment Report ~~in 2012~~, additional information has been obtained from Ministry of the Environment files, municipal files, and some responsible parties pertaining to condition sites within the Township of Centre Wellington. As a result, the available documents, reports and data pertaining to nineteen (19) potential condition sites were reviewed ~~in 2015~~ to determine whether any of the sites met the technical rules as a condition or significant drinking water threat condition site. ~~In 2015, six (6) sites were identified as condition sites while two (2) sites were identified as significant drinking water threat condition sites. In 2019, a review of available data and reports was completed to reassess the condition and / or significant drinking water threat condition status of the nineteen (19) sites and any additional sites identified since 2015. This review was completed primarily because of the redelineation of the wellhead protection areas.~~

During the 2019 review, nineteen (19) potential condition sites were reviewed, all were sites previously identified in 2015. There were no additional sites identified. ~~Three~~ ~~Eleven (344)~~ of the nineteen (19) sites ~~reviewed~~ were not located within a municipal well head protection area and therefore are not considered condition sites under Technical Rule 126. The remaining ~~sixteen~~ ~~eight (168)~~ sites were located within municipal well head protection areas for either Elora, Fergus or Hamilton Drive wells. Fourteen (14) sites had sufficient information to be considered condition sites under Rule 126 while two (2) had insufficient information and therefore were not considered condition sites. ~~Based in Fergus with vulnerability scores of 8 or 10 and therefore, depending on the site specific information related to contamination may be condition sites under Rule 126. Based on the documentation available at this time, six (6) sites within the Fergus WHPAs are considered condition sites under Technical Rule 126 and~~ there is sufficient evidence to identify ~~four (4) of the fourteen (14) two (2) of the six (6)~~ sites as significant drinking water threat condition sites under technical rule 140 or 141. ~~Three~~ ~~The two~~ significant drinking water threat condition sites are located in Fergus and one significant drinking water threat condition site is located in Elora. The site in Elora and two of the sites in Fergus are related to petroleum hydrocarbon contamination and there is evidence of off-site contamination. The remaining site located in Fergus is related to trichloroethylene contamination and there is evidence of off-site contamination.

In 2015, two sites in Fergus were identified as significant drinking water threat condition sites and one of these sites is still identified as such in 2019. The remaining site is identified as a moderate drinking water threat condition site in 2019 due to a change in the wellhead protection areas and a reduction in the vulnerability scoring related to the site.

6.3.5 Drinking Water Issues Evaluation

The objective of the Issues evaluation is to identify drinking water Issues where the existing or trending concentration of a parameter or pathogen at an intake, well or monitoring well would result in the deterioration of the quality of water for use as a source of drinking water. The parameter or pathogen must be listed in Schedule 1, 2 or 3 of the Ontario Drinking Water Quality Standards (ODWQS) or Table 4 of the Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines (Technical Rules XI.1 (114 – 117)). Elevated concentrations of selected parameters that are naturally occurring or where effective treatment is in place are not considered drinking water Issues.

~~Once a drinking water Issue is identified, the objective is to identify all sources and threats that may contribute to the Issue within an Issue Contributing Area and manage these threats appropriately. If at this time the Issue Contributing Area can not be identified or the Issue can not be linked to threats then a work plan must be provided to assess the possible link.~~

~~If an Issue is identified for an intake, well or monitoring well, then all threats related to a particular Issue within the Issue Contributing Areas are as significant drinking water threats, regardless of the vulnerability.~~

Drinking Water Issues Evaluation for the Centre Wellington Well Supply

Potential Issues were evaluated through a review of raw water data from each of the production wells provided by Centre Wellington ~~Public Works~~ Environmental Services from 2005, 2007, 2009 and 2011 to 2019 and 2009 and from treated water chemistry data for the parameters listed in Schedule 23 and 24 of Ontario Regulation 170/03 for 2006, 2007 and 2009, where available. The ~~Public Works~~ municipality also supplied nitrate concentrations from 2003 to 2019.

In addition, historical summaries of water quality were reviewed from previous reports including Threats Assessment and Issues Evaluation (Blackport Hydrogeology Inc. and Triton Engineering Services Limited, 2008) and Water Resource Characterization Groundwater Management Study (Blackport Hydrogeology Inc., 2002b) and Investigation of Chloride in Drinking Water (Golder Associates Ltd., 2018). The raw water quality data available for the review were compared to the Ontario Drinking Water Quality Standards and the Technical Support Document to identify parameters approaching or exceeding a standard.

The microbiological data for the raw water from the municipal wells was obtained through a review of the 2015, 2016, 2017 and 2018 Annual Drinking Water Reports for Centre Wellington. ~~provided by Centre Wellington Public Works was reviewed for 2008 and from comments provided in previous reports, such as Threats Assessment and Issues Evaluation (Blackport Hydrogeology Inc. and Triton Engineering Services Limited, 2008).~~ The raw water quality data available for the review were compared to the Ontario Drinking Water Quality Standards to identify parameters approaching or exceeding a standard.

The Issues evaluation for Centre Wellington focused on the water quality parameter groupings outlined in the Ontario Drinking Water Quality Standards (ODWQS) identified in Ontario Regulation 169/03 under the *Safe Water Drinking Act* and the related technical support document. These parameters include: a) Pathogens, b) Schedule 1 Parameters, c) Schedule 2 and 3 parameters and, d) Table 4 parameters.

Parameters have been screened for closer investigation where any of the following criteria have been met:

- Consistent presence of microbiological parameters;
- The parameter has a health related Maximum Acceptable Concentration (MAC) associated with it and the concentration in the raw or treated water exceeds half of the MAC level (with the exception of fluoride); and
- The parameter does not have a health related MAC but the concentration observed exceeds the objective or guideline associated with the ODWS.

Water quality parameters meeting the screening threshold above were further reviewed to determine whether to identify them as Issues. The considerations included:

- Whether the concentration is at or trending towards a health related MAC;
- The frequency with which the parameter meets the screening threshold;
- Capabilities of the treatment facility;
- The ability of the parameter to interfere with/upset the treatment process;
- Whether the parameter is related to issues raised by the public; and
- Importance of the well to the overall supply.

In the Grand River Assessment Report (2012), chloride was identified as having an increasing trend in Elora Well E3, however, was not identified as a drinking water issue per the Technical Rules under the *Clean Water Act* in the Approved Grand River Assessment Report. Since the approval of the Assessment Report in 2012, additional chloride data has been collected for all municipal wells in Elora and Fergus, except Well F2, and historical data incorporated into the data set. In 2014, the Township commissioned Golder Associates to review the sodium and chloride data at Elora and Fergus wells to recommend what further action was required including whether there was sufficient evidence to identify a drinking water issue as per the Technical Rules under the *Clean Water Act*. In 2015, a drinking water issue under Rule 115.1 for Well E3 in Elora and Well F1 in Fergus was declared. Declaration of an issue under this Technical Rule required further monitoring of the issue but did not require delineation of an issues contributing area. Therefore, the 2015 Assessment Report did not delineate an issues contributing area for these wells, however, the municipality was required to complete further monitoring. Following the continued municipal monitoring of the issue, Further, in 2018, Golder Associates completed a study on chloride concentrations at the Fergus and Elora wells which recommended, as it pertains to Issues, the following:

- the continuation of chloride investigations at production wells F1, F6, F7, and E3 with quarterly sampling of chloride, sodium, nitrate, sulphate, iron and manganese; and,
- the development of a chloride Issue Contributing Area for well F1 and E3.

Elora Drinking Water Issues Evaluation

~~A review of the water quality data for Elora did not identify any Issues under Rule 114 with the drinking water sources. The review of the water quality data for Elora did identify a drinking water issue under Rule 115.1 for Well E3.~~ The 2018 Golder Associates review of the water quality data for the Elora-Fergus Wellfield identified a chloride Issue for drinking water source E3 under Rule 114. The chloride Issue Contributing Area is mapped on

Map 6-36.

Well E1, in the north part of Elora, ~~has generally has good water quality, with~~ sodium and chloride concentrations below 20 mg/L and nitrate concentrations less than ~~2-0.1 mg/L or non-detect~~. The Ontario drinking water quality standard for nitrate is 10 mg/L, the aesthetic objective for chloride, sulphate and iron are 250, 500 and 0.3 mg/L, respectively. Sulphate concentrations are below ~~3400 mg/L~~ and are naturally occurring. Aluminum was detected at 0.5 mg/L in one sample in 2009 which is above the operational guideline of 0.1 mg/L. When re-sampled, aluminum was detected at 0.06 mg/L. ~~Previous All~~ measurements of aluminum ~~in 2005 and 2007 to 2019~~ were below the detection limit. Zinc concentrations ~~appear to be increasing since 2005 but are~~ well below the aesthetic objective of 5 mg/L ~~and in almost all cases below the detection limit of~~. The 2014 review confirmed the above findings related to sodium and chloride concentrations (Golder, 2014).

Well E3, in the south part of Elora, currently ~~has good~~ meets ODWQS for all health related ~~parameters. water quality,~~ sodium concentrations ~~are below~~ range from 5 to 50 mg/L, nitrate concentrations are below 1.32 mg/L and sulphate concentrations ~~are below~~ range from ~~31 to 28340 mg/L~~. Sulphate concentrations have shown a sharp increase in 2011, 2015 and 2017 with values ranging from 278 to 283 mg/L, while sulphate concentrations in 2005 to 2009 and 2013 range from 30 to 34 mg/L. Sulphate concentrations are higher with higher pumping rates at E3 (Golder, 2018).

~~The 2014 review, however, indicated that c~~chloride concentrations range from 0.54 to 16552 mg/L for Well E3 and appear to be increasing although variable. ~~The chloride concentration in July 2014 (152 mg/L) was over 50% of the aesthetic objective while in June 2014, the chloride concentration was 20 mg/L. The source of this variation is not clear currently and further study is required. The~~ chloride concentrations measured during some of the sampling events from 2013 onward were greater than 50% of the Aesthetic Objective of 250 mg/L. As detailed in ~~the figure~~ Figure 7-1 below, the well E3 chloride data shows an increasing trend that approaches the 50 percent of Ontario Drinking Water Aesthetic Objective of 250 mg/L ~~within fifteen years (2030)~~ (Golder, ~~2014~~2018).

According to the Golder 2018 report, groundwater at well E3 is derived mainly from the bedrock aquifer and receives chloride from a surface (anthropogenic) source, which results in decreased chloride when it is pumped at a high rate. Due to the fact that the chloride is from an anthropogenic source and concentrations at the well have been above 50% of the AO and are on an increasing trend, chloride should be considered and Issue at well E3 (Golder, 2018).

~~It is recommended that the chloride concentrations at Well E3 be described a drinking water issue per Technical Rule 115.1 under Section 15 (2) (f) of the Clean Water Act, 2006. Under this Technical Rule, An~~ Issues Contributing Area is not delineated for Elora Well E3 and therefore ~~there can be no~~ significant threat activities are identified which are associated with the ~~c~~Chloride issue. ~~The chloride Issue Contributing Area at Elora Well E3 is shown on~~

Map 6-36.

The only applicable policies would relate to the monitoring of the chloride issue. Since the chloride concentrations are variable, although apparently increasing, this issue approach allows the Township time to complete further sampling and study into the trends, timing and fate / transport mechanisms for chloride at well E3.

Well E4, also located in the south part of Elora, has good currently meets ODWQS for all health related parameters water quality. There appears to be little groundwater impacts from surface sources of contamination. Chloride concentrations are below 10 mg/L, sodium concentrations are below 20 mg/L, nitrate concentrations are below 1 mg/L and sulphate concentrations are below 250-300 mg/L. Again, sulphate is naturally occurring in the area. It should be noted that zinc and iron concentrations increased in 2009 compared to previous and current concentrations; however, both are below the aesthetic objective.

The 2014 review confirmed the above findings related to sodium and chloride concentrations (Golder, 2014). Review of microbiological data for the Elora wells collected weekly indicates that no *E. coli* was detected in the three municipal wells in 2008. Total coliforms were detected once in 2008 and 2018 in Well E4 and Well E1, respectively, at a concentration of 1 CFU/100 mL. The absence of any *E. coli* detections, the minimal detections of total coliforms in the raw water samples collected from the municipal wells and no previous issues indicate that microbial water quality is not an Issue. However, it is important to monitor and ensure that the pathogen loading in the Wellhead Protection Area (WHPA) is minimized or eliminated in accordance with the principles of source water protection.

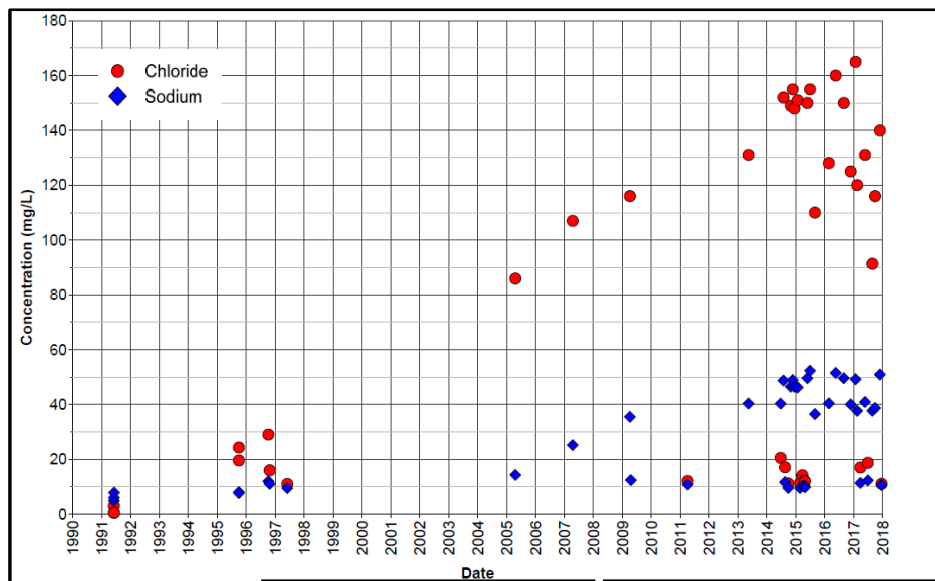


Figure 7-1: Sodium and Chloride Concentrations at Well E3, Elora, Township of Centre Wellington.

Fergus Drinking Water Issues Evaluation

A review of the water quality data for the Fergus Wellfield identified chloride and trichloroethylene Issues for drinking water source F1 under Rule 114. The cChloride and tTrichloroethylene Issue Contributing Area is mapped on

Map 6-36.

No Issues under Rule 114 were identified with the drinking water sources for the Fergus wells. The presence of trichloroethylene (TCE) was noted at Well F1 as described below.

Well F1, with the exception of TCE and chloride, generally has good water quality. Fergus well F1 has slightly elevated chloride concentrations that range up to 160 mg/L, but are below 80 mg/L, sodium concentrations are slightly above 20 range from 14 to 60 up to 93 mg/L, nitrate concentrations are less than 1.52 mg/L and sulphate concentrations are elevated and are generally below range from 500-481 to 670 mg/L. (Golder, 2010d).

The 2014 2018 Golder review indicated that chloride concentrations range from 21 to 128-40 mg/L for Well F1 and appear to be increasing, but vary significantly show variation. The chloride concentrations remain below measured during a sampling event in 2019 was above the 50% of the Ontario Drinking Water Aesthetic Objective (AO) of 250 mg/L. The source of this variation is not clear currently and further study is required (Golder, 2014).

Groundwater at well F1 appears to be derived mainly from the overburden and shallow bedrock and receives chloride from a surface (anthropogenic) source, which results in increased chloride in the well when it is pumped at a high rate (Golder, 2018). Due to the fact that the chloride is from an anthropogenic source and concentrations at the well have been above 50% of the AO and are potentially on an increasing trend, chloride should be considered an Issue at well F1.

Well F1 has historically contained elevated concentrations of TCE (Golder, 2010d). Since 2000, measured TCE concentrations have ranged from less than 1 µg/L to 32 µg/L. For comparison purposes, the Ontario Drinking Water Standard has recently been updated and the criterion is 5 µg/L. TCE concentrations have averaged about 15 µg/L from 2001 to 2003, decreasing to 12 µg/L from 2004 to 2006, and decreasing again to an average concentration of 6.6 µg/L from 2007 to 2009. Recent TCE concentrations from 2016 to 2018 range from 0.76 µg/L to 11.7 µg/L, with an average concentration of 7.6 µg/L. In 2009, the concentrations ranged from 1.6 µg/L to 13.8 µg/L averaging 5.9 µg/L, which is a little above the applicable criterion (5 µg/L). The well operates with an air stripper and seems to function well, as the Township indicates that water quality results for TCE are at or below detection limits and the water continues to be used for public water supply. TCE concentrations have been declining and are occasionally below the maximum allowable concentration (MAC) of 5 µg/L; however, overall TCE concentrations remain above the MAC of 5 µg/L. Based on these exceedances and the absence of a known TCE source, Centre Wellington has now identified TCE at Well F1 as an issue under Technical Rule 114, such that TCE management policies under the Clean Water Act (Government of Ontario 2017) can be implemented.

The occurrence of TCE at F1 was investigated in 1990 after TCE was discovered in two private wells in September 1989. The report indicated that there may be numerous sources of TCE, with the sources occurring at various depths. In general, most of the sources are in close proximity and it is assumed that pumping F1 would contain them. With respect to the TCE at F1, Blackport Hydrogeology Inc. (2002c) indicates that the source of contamination was not verified. Further, Blackport Hydrogeology Inc. and Triton Engineering Services Limited (2008) concluded that the source of TCE is likely distant from the well as the elevated concentrations of TCE were found in a deeper zone of the open bedrock well.

In addition to F1 operating with an air stripper since 1991, treatment was added to two bedrock wells at a private site in about 1993 where water from these two wells has been pumped and

treated continuously since that time with the treated water being discharged into a local storm water drain. All of these wells essentially act as containment wells to minimize the potential for further spreading of the TCE. The Township submits annual water quality and pumping reports to the MECPOE for Well F1 consistent with the Drinking Water Regulations.

~~All available data indicates that the TCE treatment system is performing as designed and has done so for more than 10 years. Triton Engineering Services indicates that the system was originally designed to treat 1137 L/min with a raw water concentration of 100 µg/L. With an average taking from 2006 to 2008 of 537 L/min and the maximum raw water TCE concentration measured during that time at less than 20 µg/L, it appears that excess treatment capacity is available. Triton Engineering Services also indicate that there have been no incidences of the system being, or coming close to being, overwhelmed and that the system has been operating well within the design objectives since it was put into operation. Since the concentrations in the raw water appear to be decreasing to below the drinking water standard and the air stripper is effective in reducing the concentrations to below the drinking water standard, it is anticipated that the treatment system is sufficient in addressing this concern and no additional management plan is warranted at this time. It should be noted that the existing management plan should be formalized.~~

~~Well F2, located north of the Grand River in Fergus, is not currently in use for water supply purposes and historical data appears to be sparse. Summaries of water quality from previous studies indicate that the water quality is generally good. It appears that chloride concentrations are less than 90 mg/L, sodium concentrations are slightly above 20 mg/L, nitrate concentrations are less than 1 mg/L, sulphate concentrations are less than 200 mg/L and iron concentrations are around 0.1 mg/L. Blackport (2002c) indicates that iron concentrations become elevated if the well is pumped at a high rate.~~

Well F4, located in the northern part of Fergus, generally has good water quality with has elevated concentrations of iron. The iron concentrations in well F4 are greater than 0.6 mg/L, which is greater than the aesthetic objective of 0.3 mg/L. The iron is naturally occurring. Treatment is in place at F4 to filter out the iron to less than 0.3 mg/L prior to delivery into the distribution system. Chloride concentrations are generally less than 30 mg/L, sodium concentrations are slightly above 20 mg/L, nitrate concentrations are less than 0.3 mg/L and sulphate concentrations are less than 400 mg/L. ~~The 2014 review confirmed the above findings related to sodium and chloride concentrations (Golder, 2014).~~

Well F5, located in the southern limits of Fergus, has good quality water. Chloride and sodium concentrations are less than 20 mg/L, nitrate concentrations are less than 0.6 mg/L and sulphate concentrations are generally less than 100 mg/L. In 2009, aluminum concentrations may be increasing at well F5 and were first recorded an above the operational guideline of 0.1 mg/L in 2009; however concentrations have since been below the operational guideline. ~~The 2014 review confirmed the above findings related to sodium and chloride concentrations (Golder, 2014).~~

Well F6, located north of Fergus contains elevated levels of sulphate greater than the aesthetic objective of 500 mg/L. The sulphate is naturally occurring and is believed to be elevated at well F6 due to the influence of deeper flow systems within the well. ~~Chloride concentrations are less than 100 mg/L, Sodium concentrations are slightly above 20 mg/L, and nitrate concentrations have not been detected. It should be noted that the chloride concentration~~ Chloride concentration were around 40 mg/L up to the mid-2008 and since 2009, concentrations have been variable ranging from 10 to 88 mg/L. The concentrations are below 50% of the Ontario Drinking Water Aesthetic Objective of 250 mg/L. An investigation by Golder (2018) determined that high pumping

at well F6 resulted in decreased chloride concentrations and that surficial recharge dominates at the high pumping. The low sulphate concentrations at high pumping indicates that a bedrock (natural) source of chloride at well F6 (Golder, 2018). ~~increased in 2009 compared to previous concentrations measured, but is below the aesthetic objective.~~ Iron concentrations are variable and exceeded the ~~aesthetic~~ Aesthetic Objective of 0.3 mg/L in 2009, 2011 and 2015. Iron is naturally occurring in the groundwater system. ~~The 2014 review indicated that chloride concentrations range from 10 to 88 mg/L for Well F6 and appear to be increasing but vary significantly. Concentrations remain below 50% of the Ontario Drinking Water Aesthetic Objective of 250 mg/L. The source of this variation is not clear currently and further study is required (Golder, 2014).~~

Well F7 ~~is~~ located on the western side of Fergus, ~~has good water quality. Chloride concentrations are less than 28mg/L.~~ Sodium concentrations are occasionally slightly above 20 mg/L, nitrate has not been detected and sulphate concentrations ~~are less than~~ range from ~~45~~100 mg/L to 317 mg/L. ~~The 2014 review confirmed the above findings related to sodium and chloride concentrations (Golder, 2014).~~ Chloride concentrations measured at well F7 range from 7 to 29 mg/L. There is no long term historical record of water quality at F7, however, the available data indicates that chloride concentrations are low and variable with no apparent increasing trend. The concentrations are below 50% of the Ontario Drinking Water Aesthetic Objective of 250 mg/L. An investigator by Golder (2018) determined that high pumping at well F7 resulted in increased chloride concentrations and that a bedrock water source dominates at the high pumping. The higher sulphate concentrations at high pumping indicates that a bedrock (natural) source of chloride at well F6 (Golder, 2018)

Review of microbiological data for the Fergus wells (F1, F4, F5, F6, F7) collected weekly indicates that no *E. coli* was detected ~~in 2008~~ from 2015 to 2018. Total coliforms were ~~only detected three~~ a total of seven times ~~in 2008~~ from 2015 to 2018 ~~at F1 at concentrations of 1 CFU/100 mL.~~ and once resampled to detection of total coliforms were present. No samples were collected from F2 as it was not in use.

GUDI assessments have also been conducted at Wells F1 and F2 as they are located adjacent to the Grand River and have only a limited thickness of overburden above the bedrock. The studies concluded that Well F1 showed a low risk of contamination from surface sources but Well F2 was classified as GUDI. The absence of any *E. coli* detections and the minimal detections of total coliforms in the raw water samples collected from the municipal wells indicate that microbial water quality is not an Issue. However, it is important to monitor and ensure that the pathogen loading in the Wellhead Protection Areas is minimized or eliminated in accordance with the principles of source water protection.

Summary of Drinking Water Issues Evaluation

Chloride concentrations at Well E3 and F1 appear to be on an increasing trend with concentrations measured above 50% of the Ontario Drinking Water Aesthetic Objective of 250 mg/L. Measured chloride concentrations at wells E3 and F1 is from shallow sources and potential chloride sources exist within the capture zones; therefore, Issue Contributing Areas were delineated for Wells E3 and F1. TCE concentrations continue to remain near 50% of the MAC; therefore a TCE Issue Contributing Area was delineated for F1.

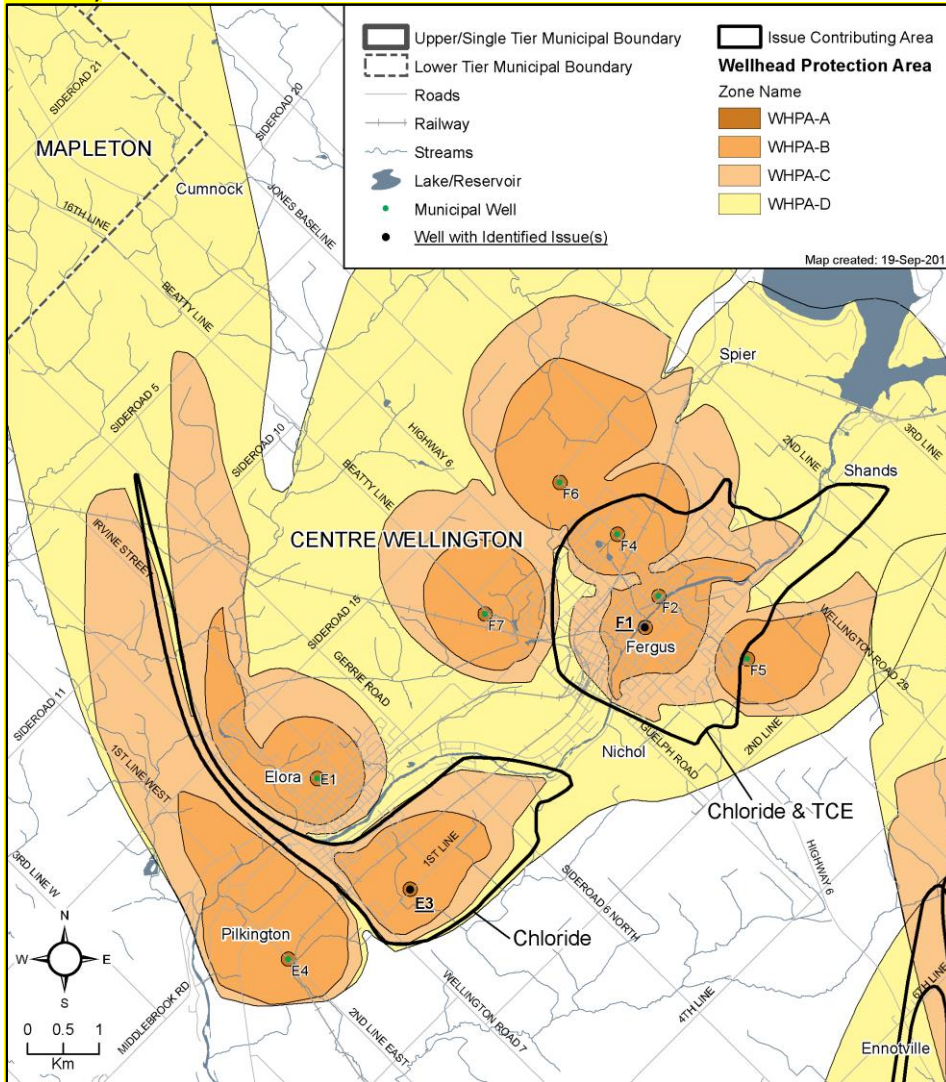
ICAs were delineated for Wells F1 and E3 using backward particle pathlines simulated using the Base Case model scenario, where the time-of-travel to each well is less than or equal to 25 years.

Delineation of the ICAs was done using the same method as described above in Section 6.3.2 for delineating the Centre Wellington WHPAs. A 25-year capture zone for each well, for each set of pumping rates, was delineated and then combined to create a single ICA for each well. The pumping rates used were both existing and future rates (Matrix, 2018). The Issue Contributing Areas are shown on

Map 6-36.

~~The review of the data for the Elora and Fergus wells indicated no issues under Rule 114 are present.~~

Map 6-36: Issue Contributing Areas for Elora E3 (Chloride) and Fergus F1 (Chloride and TCE)



6.3.6 Enumeration of Significant Drinking Water Quality Threats

The Technical Rules require an estimation of the number of locations at which an Activity is a significant drinking water threat and the number of locations at which a Condition resulting from past activity is a significant drinking water threat.

6.3.6.1 Initial Enumeration of Significant Drinking Water Threats

For the 2012 Assessment Report, the initial enumeration of land use activities that may be associated with prescribed drinking water threats was based on a review of multiple data sources, including public records, data provided through questionnaires completed by municipal officials, previous contaminant/historical land use information, and data collected during windshield surveys. No site specific information was collected. ~~As more site specific information becomes available during the source protection planning process, the presence of drinking water threats and their current level of management can be confirmed.~~

Drinking water threats as defined in the Ontario Clean Water Act (2006) were identified within the Centre Wellington Wellhead Protection Areas through an enumeration of land use activities that may be associated with Prescribed Drinking Water Threats (Ontario Regulation 287/07).

~~The main objective of the assessment was to identify significant threats. A significant threat to a source of drinking water has a high likelihood of rendering a current or future drinking water source impaired, unusable or unsustainable, combined with a potential route for the threat to enter the source water.~~

Data Sources for the Enumeration of Significant Drinking Water Threats

For the initial enumeration in the 2012 Assessment Report, the key data sources used to identify threats on properties within the Wellhead Protection Areas include the following:

- Municipal Property Assessment Corporation (MPAC) assessment information;
- Hazardous Waste Information Network (HWIN) database;
- Technical Safety and Standards Authority (TSSA) database;
- Discussions with Triton Engineering Services to identify current and historical land use activities;
- Review of previous threats inventory by Triton Engineering Services;
- Review of air photos; and
- Review of Schedule B of the Municipal Official Plan for the Township of Centre Wellington (2005).

The Township of Centre Wellington operates under both the County of Wellington Official Plan and the Township's Official Plan. The general policies apply to the entire Township and the land use of the County Official Plan applies to the rural areas. The Township Official Plan applies to the urban centres of Fergus and Elora. The Township provided copies of their Official Plan that was approved by the Ontario Municipal Board in May 2005 and a Consolidated Official Plan as of July 2008. The following provides some of the pertinent information directly from the Consolidated Official Plan as it relates to land uses and source water protection.

A review of these land uses within vulnerability zones of 10 (i.e., locations of significant chemical and pathogen threats) within the urban boundary indicates that all of the land uses, except Highway Commercial and Residential Transition Area, are present. In addition, all the land uses, except Residential Transition Area are present within WHPA-C, which are possible locations for DNAPL threats. The same threats that were associated with the various MPAC property codes can also be assumed for similar land use planning zones, for example, application of commercial fertilizer to recreational areas.

The completed threat enumeration has involved numerous assumptions regarding the threat types and circumstances associated with various property types based on current land use information and existing data sources. An inventory of potential future land uses and associated threats, constrained within the official plan, would involve additional assumptions. It should also be noted that the approvals process in Wellington County requires a site specific investigation and impact assessment associated with the proposed activities and the appropriate monitoring and mitigation plans. Therefore, before the County would approve any zoning change, or issuance of a building permit, these conditions of the Counties current groundwater management plan would need to be met.

Assumptions for the Enumeration of Significant Drinking Water Quality Threats

A standardized set of assumptions (**Table 6-31**) were made for each land use type and activity, a summary is provided below:

- All properties with identified agricultural managed lands were based on MPAC codes;
- Areas where pesticides were applied were determined by calculating the area of the parcel with agricultural managed lands;
- Assumptions with respect to type of facility, mass or material and storage;
- Assumed surrounding land uses;
- Only areas outside the municipal wastewater serviced areas and were identified as being on septic systems; and
- Assumed hazard scores based on property codes.

Table 6-31: Land Use Activity Assumptions for the Purpose of Enumerating Significant Drinking Water Quality Threats in the Centre Wellington Well Supply	
Scenario	Assumption
Agricultural property with residence and outbuildings	<ul style="list-style-type: none"> • Storage and handling of pesticides, fuel, commercial fertilizer, agricultural source material, septic system. • Application of pesticide, commercial fertilizer, agricultural source material.
Agricultural property with residence and outbuilding – buildings not in WHPA	<ul style="list-style-type: none"> • Circumstances related to storage and handling or septic systems are not applied. Those related to application are applied.
Agricultural property without farm buildings and structures	<ul style="list-style-type: none"> • Circumstances related to storage and handling or septic systems are not applied. Those related to application are applied.
Residence with no gas line	<ul style="list-style-type: none"> • Oil furnace

Scenario	Assumption
Organic solvent	<ul style="list-style-type: none"> Storage below grade in a quantity that would make it a significant threat
No sanitary sewer infrastructure	<ul style="list-style-type: none"> Septic system
Presence of any chemical	<ul style="list-style-type: none"> Storage is below grade
Multiple PINs associated with one Assessment Roll number	<ul style="list-style-type: none"> One threat point assigned to the entire assessed property.
Where an assessment line transects a property, but has one PIN	<ul style="list-style-type: none"> One threat point assigned to the entire property.
Lawn/turf	<ul style="list-style-type: none"> Potential application of commercial fertilizer (ID dependent on the percent of managed land and the application of NU to the surrounding properties)
Municipal well sites	<ul style="list-style-type: none"> Commercial fertilizer not applied unless the well is within a municipal park, in which case there is potential that fertilizer is applied.
All properties	<ul style="list-style-type: none"> If buildings and structures are located outside the vulnerable area – circumstance IDs associated with storage and handling are not applied
Septic system	<ul style="list-style-type: none"> In serviced villages where sanitary services are being phased in, but have not yet reached the mandatory connection date, it is assumed private septic systems are still present.
Sanitary sewers	<ul style="list-style-type: none"> A sanitary sewer is a linear feature. For the purposes of enumeration of threats, where a sanitary sewer is present one threat point is assigned to represent the sanitary sewer in each WHPA.
Storm sewer piping	<ul style="list-style-type: none"> Storm sewer piping is not considered to be part of a storm water management facility.

6.3.6.2 Enumeration of Significant Drinking Water Threats for 2019 Assessment Report

Since the initial enumeration of significant drinking water threats for the 2012 Assessment Report, a substantial amount of work has been completed by municipal Risk Management staff and consultants to verify threats at a site level. This work has included additional air photo analysis, site visits, windshield surveys, review of databases and site specific files / reports. The focus of this work is to complete verification of significant drinking water threats and where warranted negotiate risk management plans and to conduct inspections. This work has been focused within the wellhead protection areas delineated in the 2012 and 2015 Assessment Reports. New wellhead protection areas have now been delineated, however, there is overlap between the 2015 and the new wellhead protection areas.

For purposes of updating significant drinking water quality threats in the newly delineated wellhead protection areas, a review is being conducted of the existing database of verified threats, municipal servicing data and air photos. Results will be updated in the Assessment Report prior to public consultation. For purposes of identifying significant drinking water quality threats within

the Chloride Issues Contributing Area, all properties present within the Issues Contributing Area have been identified as significant drinking water quality threats.

Significant Drinking Water Quality Threats in the Elora Wellhead Protection Areas

The results of the Elora threat enumeration are presented by threat type. A summary of the threat ranking results for each Wellhead Protection Area, grouped by threat type, is presented in Table 6-32.

Table 6-32: Significant Drinking Water Quality Threats in the Elora Wellhead Protection Areas			
PDWT¹ #	Threat Subcategory²	Number of Activities	Vulnerable Area
1	Waste Disposal Site- Storage of Hazardous Waste at Disposal Sites	4	WHPA-A WHPA-B
2	Sewage System or Sewage Works- Septic-Onsite Sewage Systems	1	WHPA-A
	Sewage System or Sewage Works- Sanitary Sewers and related pipes	1	WHPA-A WHPA-B
3	Application of Agricultural Source Material to Land	3	WHPA-A
8	Application of Commercial Fertilizer	2	WHPA-A
10	Application of Pesticides to Land	3	WHPA-A
12	Application of Road Salt	793	ICA
13	Handling and Storage of Road Salt	793	ICA
14	Storage of Snow	793	ICA
16	Handling and Storage of DNAPLs	30	WHPA-A WHPA-B WHPA-C
17	Handling and Storage of Organic Solvents	4	WHPA-A WHPA-B
Total Number of Activities		48	
Total Number of Properties		34	
<p>1: Prescribed Drinking Water Threat Number refers to the prescribed drinking water threat listed in O.Reg 287/07s.1.1.(1).</p> <p>2: Where applicable, waste, sewage, and livestock threat numbers are reported by sub-threat; fuel and DNAPL by Prescribed Drinking Water Threat category.</p> <p>Note: Storm sewer piping is not considered to be part of a storm water management facility.</p>			

Significant Drinking Water Threats in the Fergus Wellhead Protection Areas

The results of the Fergus threat enumeration are presented by threat type. A summary of the threat ranking results for each Wellhead Protection Area, grouped by threat type, is presented in Table 6-33.

PDWT ¹ #	Threat Subcategory ²	Number of Activities	Vulnerable Area
1	Waste Disposal Site- Storage of Hazardous Waste at Disposal Sites	26	WHPA-A WHPA-B
2	Sewage System or Sewage Works- Onsite Sewage/Septic Systems	23	WHPA-A WHPA-B
	Sewage System or Sewage Works- Sanitary Sewers and related pipes	1	WHPA-A WHPA-B
3	Application of Agricultural Source Material to Land	2	WHPA-A
10	Application of Pesticides to Land	2	WHPA-A
12	Application of Road Salt	3863	ICA
13	Handling and Storage of Road Salt	3863	ICA
14	Storage of Snow	3863	ICA
14	Storage of Snow	1	WHPA-A
15	Handling and Storage of Fuel	1	WHPA-B
16	Handling and Storage of Dense Non-Aqueous Phase Liquids	79	WHPA-A WHPA-B WHPA-C
17	Handling and Storage of Organic Solvents	26	WHPA-A WHPA-B
Total Number of Activities		161	
Total Number of Properties		108	
<p>1: Prescribed Drinking Water Threat Number refers to the prescribed drinking water threat listed in O.Reg 287/07s.1.1.(1).</p> <p>2: Where applicable, waste, sewage, and livestock threat numbers are reported by sub-threat; fuel and DNAPL by Prescribed Drinking Water Threat category.</p> <p>Note: Storm sewer piping is not considered to be part of a storm water management facility.</p>			

According to the Ministry of the Environment's Table of Drinking Water Threats, there are no significant threats in WHPA-E zone for Well F2 based on the vulnerability scores.

Limitations and Uncertainty for the Enumeration of Significant Drinking Water Threats

- The threat assessment is a desktop scale analysis based on the assumptions used for the threat rankings. The assessment has involved only minor field verification or site visits to validate the information. The current assessment identifies significant water quality threats based on a number of assumptions and site visits to confirm actual site conditions and circumstances were not conducted. Site visits may be needed to confirm the actual site conditions and circumstances and in some cases to develop site specific response and risk management activities.
- The threat assessment has relied on a number of pre-existing data sources to complete the evaluation. In some cases the existing data sources are not current. Activities taking place on a given property may change from year to year or month to month.
- The MPAC property codes, used to identify the use of the property and the associated threats, do not always represent the current land use activity on the property. As such,

Commented [KD1]: This section will need to be updated once the threat enumeration is complete for the new areas. This section could get moved to the 2012 / 2015 enumeration section.

threats may be applied to a property where they do not exist or vice versa, threats may have been missed on a property where they do exist.

- To confirm whether the sites identified as potential Conditions meet the criteria to be a Condition threat, all documentation relating to the potential Conditions would need to be obtained from the MOE or other agencies and reviewed to understand the current status of these sites.
- The location of a threat Activity on a property was assumed to be over the most vulnerable portion of a property where more than one vulnerability score zone was present on the property.
- As noted in Section 6.3.2, the vulnerability score has not been updated to be consistent with the most recent geological understanding developed during the Tier 3 studies.
- The results of this assessment are to be used for development of source protection plans at the wellhead protection area scale of analysis only; and should not be used, and are not intended for use, at the scale of the individual property.

6.4 Township of Guelph-Eramosa

Two municipal groundwater systems are located within the Township of Guelph-Eramosa: Rockwood Water Supply and Hamilton Drive Water Supply. The area serviced by these two systems is shown on Map 6-37. The Guelph serviced area is also shown on this map to provide additional context. Table 6-34 and Table 6-35 summarize the municipal groundwater systems and the average monthly and annual pumping rates for both systems.

Table 6-34: Municipal Residential Drinking Water System Information for the Township of Guelph-Eramosa in the Grand River Source Protection Area (Rockwood and Hamilton Drive Water Supply Systems)

DWS Number	DWS Name	Operating Authority	GW or SW	System Classification ¹	Number of Users served ²
220005599	Rockwood Water Supply System	Ontario Clean Water Agency (OCWA) Guelph / Eramosa Township	GW	Large Municipal Residential System	3,970 1635
220009197	Hamilton Drive Water Supply System	Ontario Clean Water Agency (OCWA) Guelph / Eramosa Township	GW	Large Municipal Residential System	216 653

¹ as defined by O. Reg. 170/03 (Drinking Water Systems) made under the *Safe Drinking Water Act, 2002*.

² Based on Ontario Clean Water Agency 2008 Annual Summary Reports (2009a, 2009b) Watson & Associates Economists LTD. The Township of Guelph / Eramosa Water and Wastewater Rate Study (July 2015)

Table 6-35: Annual and Monthly Average Pumping Rates for Rockwood and Hamilton Drive Water Supply Systems

Well or Intake	Annual Avg. Taking ¹ (m ³ /d)	Monthly Average Taking ¹ (m ³ /d)											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rockwood													
Well 1	285.48 29 2.96	3.31 35	240.10	230.13	232.65	392.77	331.92	305.18	315.27	361.69 3	296.36 2	318.40 4	487.76
Well 2	216.87 23 8.05	279.64	3.89 15	174.39	284.90	237.49	325.94	303.58	277.76	333.69 2	292.67 1	230.56 4	165.42
TW3/02	410.94 38 0.55	422.52	418.40	370.23	355.13	382.15	335.65	448.92	341.52	355.54 2	421.16 2	401.89 3	417.01
Hamilton Drive													
Cross Creek	94.48 69.8 0	73.23 5	72.78 7	77.53 7	88.36 4	113.93	117.38	124.92	94.46 7	99.46 6	70.96	80.91	78.63
Huntington	90.48 73.0 8	78.56 8	73.86 4	47.31 6	86.49 6	97.54 8	111.05	113.95	105.94	98.44 9	84.27	81.16	85.22

¹ source: Based on Ontario Clean Water Agency Guelph / Eramosa Township 2008-2018 Annual Summary Reports (2009a, 2009b 2019)

Hydrogeological Setting

The Township of Guelph/Eramosa is located within the Speed/Eramosa River Subwatershed and the Hopewell Creek and Cross Creek catchments of the Grand River Drainage Basin. Land in the area generally slopes towards the Eramosa River and Speed River.

Overburden Geology

Overburden units deposited during the Quaternary Period (2 million years before present [ybp] to 10,000 ybp) detail a period of repeated ice advance and retreat of ice lobes that originated from the Erie-Ontario lake basin (Karrow 1967). Overburden deposits range in thickness from 10 to 30 m near Hamilton Drive and from less than 1 m to 15 m in Rockwood according to water well logs. These overburden deposits are largely fine-grained till and glaciolacustrine deposits. Due to the predominance of largely fine-grained overburden sediments, overburden has not been typically targeted as a source of municipal water supply in these areas (Matrix, 2018).

Coarse-grained materials in the area may form shallow overburden aquifers, as seen south of the City of Guelph, but these granular deposits are not laterally extensive. However, there is a potential connection between the surface and the deeper production zone of the middle Gasport Formation through overburden aquifers in buried bedrock valleys where the thickest overburden sediments are present. The bedrock valley infill tends to be coarser in nature; mainly sand with minor silt-rich beds and capped by finer grained sediments at surface near Rockwood (Burt and Webb 2013). Just north of Rockwood and southeast of Everton, the valley sand is interpreted to be partially overlain by coarser grained glaciofluvial outwash that outcrops at surface.

~~The quaternary geology of the Township consists primarily of Wentworth Till. Wentworth Till is described as sandy silt till that does not readily transmit water. Outwash deposits of sand and gravel occur as kames and eskers across the Township (Golder, 2006a). Ice contact stratified drift deposits and glaciofluvial deposits are located in the Rockwood area. The area of the Hamilton Water Supply System wells is dominantly Wentworth Till with some glaciofluvial deposits and sand deposits. Bedrock outcrops and organic deposits are found along the Speed River and Eramosa River.~~

~~The overburden thickness in the Township is generally less than 25 m. Overburden is thickest along glacial deposits ranging from 25 to 75 m (Golder, 2006a). The Rockwood area consists of minimal overburden cover that ranges from no overburden in the area of the Eramosa River to just over 6 m in the area of the production wells. At the Cross Creek area the overburden can be up to 21 m thick while at the Huntington site the overburden is only 3 m thick.~~

Bedrock Geology

Bedrock geology beneath the Study Area consists of Paleozoic limestone, dolostone, and shale formations that overlie deeply buried Precambrian crystalline basement rocks (Armstrong and Carter 2006). Bedrock formations dip regionally to the southwest and record deposition related to sea level changes in a shallow subtropical sea during the Paleozoic Era (approximately 440 to 420 million years ago).

~~The bedrock in the study area consists of the Silurian age dolostone of the Guelph and Gasport Formations. The bedrock in the Rockwood area consists of dolostone from the Gasport Formation. The bedrock in the area of the Cross Creek and Huntington Wells consists of brown or tan dolostone of the Guelph Formation and is encountered at depths between 3 m and 21 m below ground.~~

Hydrogeology

Bedrock aquifers in the Guelph Formation and Gasport Formation are the ~~principal~~ main source of groundwater in the Township. The spatial distribution and subsurface geometries of the major bedrock units are important in understanding patterns in the groundwater flow system and potential hydraulic connections between aquifer units.

The Guelph Formation is the shallowest bedrock unit, is characterized as an aquifer, and near Hamilton Drive ranges in thickness from 2 to 28 m and generally thins toward the south. Near Rockwood, this unit is only present west of the Eramosa River, west of Rockwood, and ranges in thickness from 2 to 15 m (Matrix, 2018).

The Reformatory Quarry Member of the Eramosa Formation lies beneath the Guelph Formation and is characterized as a weak aquitard. Near Hamilton Drive, the Reformatory Quarry Member ranges in thickness from 0 to 50 m. It is thickest in the west and near the municipal wells, thinning toward the east. In Rockwood, this unit is more prevalent in the vicinity and west of the municipal wells, and ranges in thickness from 0 to 19 m. The distribution of this unit is controlled by post-depositional erosion; its absence is most visible near buried bedrock channels (Matrix, 2018).

The Vinemount Member of the Eramosa Formation lies beneath the Reformatory Quarry Member and is characterized as a regional aquitard. Near Hamilton Drive, the Vinemount Member ranges in thickness from 1 to 9 m. The Vinemount Member plays a significant role in subsurface groundwater flow, separating upper and lower bedrock aquifers. In Rockwood, the Vinemount Member is shown to be eroded by channels and infilled with overburden sediments, suggesting potential hydraulic interaction of deep aquifers (e.g., Gasport Formation) with either the near-surface aquifers or surface water (e.g., Eramosa River) in topographic valleys (Matrix, 2018).

The Goat Island Formation, which thickens and thins in response to the absence or presence of reef mounds in the underlying Gasport Formation, ranges in thickness from 0 to 26 m near Hamilton Drive. In Rockwood, this unit is prevalent and ranges in thickness from 0 to 17 m. The presence of this unit is controlled by post-depositional erosion; its absence is most visible near buried bedrock channels (Matrix, 2018).

The Gasport Formation is one of the main source aquifers in the area of Rockwood and Hamilton Drive. The upper Gasport Formation ranges in thickness from 4 to 33 m in the Hamilton Drive area and 0 to 33 m in the Rockwood area, while the middle Gasport Formation is approximately 12 m thick across these areas. Coarse-grained fill sequences in these valleys suggest a potential hydraulic connection between the middle Gasport Formation and the near-surface aquifers. The lower Gasport Formation ranges in thickness from 4 to 13 m near Hamilton Drive and 0 to 26 m in Rockwood. The Gasport Formation horizons appear relatively constant in thickness, except where eroded by bedrock valleys and built up as reef mounds. In areas where the Vinemount Member has been eroded, the Gasport Formation may be hydraulically connected to the near-surface aquifer units and/or surface water features (Matrix, 2018).

The Cabot Head Formation acts as a regional aquitard and represents the bottom of the active groundwater flow system.

~~The aquifer in the Rockwood area has a maximum thickness of approximately 60 m. The permeability of the dolomite is due to the chemical dissolution of dolomite along fractures, reef structures and bedding planes, resulting in a large variety of openings within the bedrock. As a result the permeability of the bedrock aquifer can vary substantially. Municipal wells are often~~

drilled to the bottom of the formation (60 m at Rockwood Wells 1 and 2) in order to intercept as many water bearing fractures as possible. The aquifer is regarded as being unconfined as there are no overlying confining layers and areas of exposed bedrock occur frequently in the area of the wells.

Within the study area, highest recharge areas are associated with topographically elevated areas and permeable formations such as sand and gravel deposits in the vicinity of Eden Mills (Golder, 2006a). Most of the remainder of the Township is considered to be a recharge area, but with lower vertical gradients. Groundwater discharge within the town is associated with tributaries of the Eramosa River.

6.4.1 Rockwood Water Supply System

The Rockwood Water Supply System services a population of approximately 1,635~~3,970~~ people (2015~~98~~) in the Village of Rockwood, and consists of three municipal groundwater wells and two pumphouses: the Station Street Pumphouse and the Bernardi Pumphouse. A fourth well is not currently online but has been identified as a future municipal supply well. There are four municipal supply wells in the Town of Rockwood and two pumphouses (Station Street and Bernardi). The production zone of the middle Gasport Formation is the target bedrock supply aquifer in this area. Drinking water for Rockwood is currently supplied from three wells including Rockwood Well 1 (TW1-67), Well 2 (TW1-76), and Well 3 (TW3/02). A fourth Rockwood bedrock well (Well 4; TW2-14) was constructed in 2014, on a site previously identified as being suitable for a production well (i.e., site of TW2-02; Burnside 2015). Well 4 was permitted in 2015 as part of a consolidated Permit To Take Water (PTTW) for the four wells and Well 4 will eventually be put into production. Rockwood Well 1 and Well 2 are constructed approximately 60 m bgs into the fractured Gasport bedrock aquifer. Rockwood Well 3 and Well 4 are constructed approximately 50 m bgs and 62 m bgs, respectively into the Gasport bedrock aquifer.

Rockwood Wells 1 and 2 are designated Groundwater Under the Direct Influence of surface water (GUDI) "based on the karstic nature of the area, the proximity of the bedrock to the surface and the immediate response to pumping recorded in the shallow bedrock at a nearby monitoring well. These occurrences indicate that the wells likely respond directly to recharge over the bedrock outcrops." (Burnside, 2010). Rockwood Wells 3 and 4 are not designated as GUDI.

Rockwood Wells 1 and 2 are both inside the Station Street Pumphouse located west of Main Street and south of the Canadian National Railway Line. Rockwood Well 2 (also known as TW#1-67) was constructed in 1967 as a municipal source for the village. Rockwood Well 2 is a 300 millimetres (mm) diameter well drilled to a depth of 59.1 metres (m). A second well, Well 1 (also known as TW#1-76), was constructed in 1976. Rockwood Well 1 is a 250 mm diameter well that is 60.4 m deep and is completed as an open hole in the bedrock starting from 10 m. The overburden is approximately 6 m thick at both wells and consists of stony gravel with some clay. The bedrock is part of the heterogeneous, layered and fractured Gasport aquifer.

In March 2002, 150 mm and 200 mm diameter liners were installed in Rockwood Wells 1 and 2, respectively. The liner in Well 1 was installed to a depth of 36.5 m and the liner in Well 2 was installed to a depth of 38.4 m. The liners were installed to seal off shallow water producing intervals that caused cascading conditions from the open bedrock hole (Burnside, 2002b).

Rockwood Well TW3/02 (also known as the Bernardi Well and Well 3), is located approximately 5 m to the north of the Bernardi Pumphouse. The Bernardi Pumphouse is located southeast of the Eramosa River and adjacent to the Town boundary. Well 3 was drilled in 2002 as a 150 mm diameter test well and was reconstructed to a diameter of 250 mm in 2004 so it could be used as a supply well. At this site, overburden sediments were encountered from ground surface to 12.6 m below grade. Brown/ grey limestone bedrock was encountered between 12.6 and 66 m. Below 66

m, the well penetrated red shale to a depth of approximately 73 m. The bottom of the well below 50 m was sealed and a large fracture between 45.7 to 48.8 m was further developed to enhance the production from the well (Burnside, 2002c).

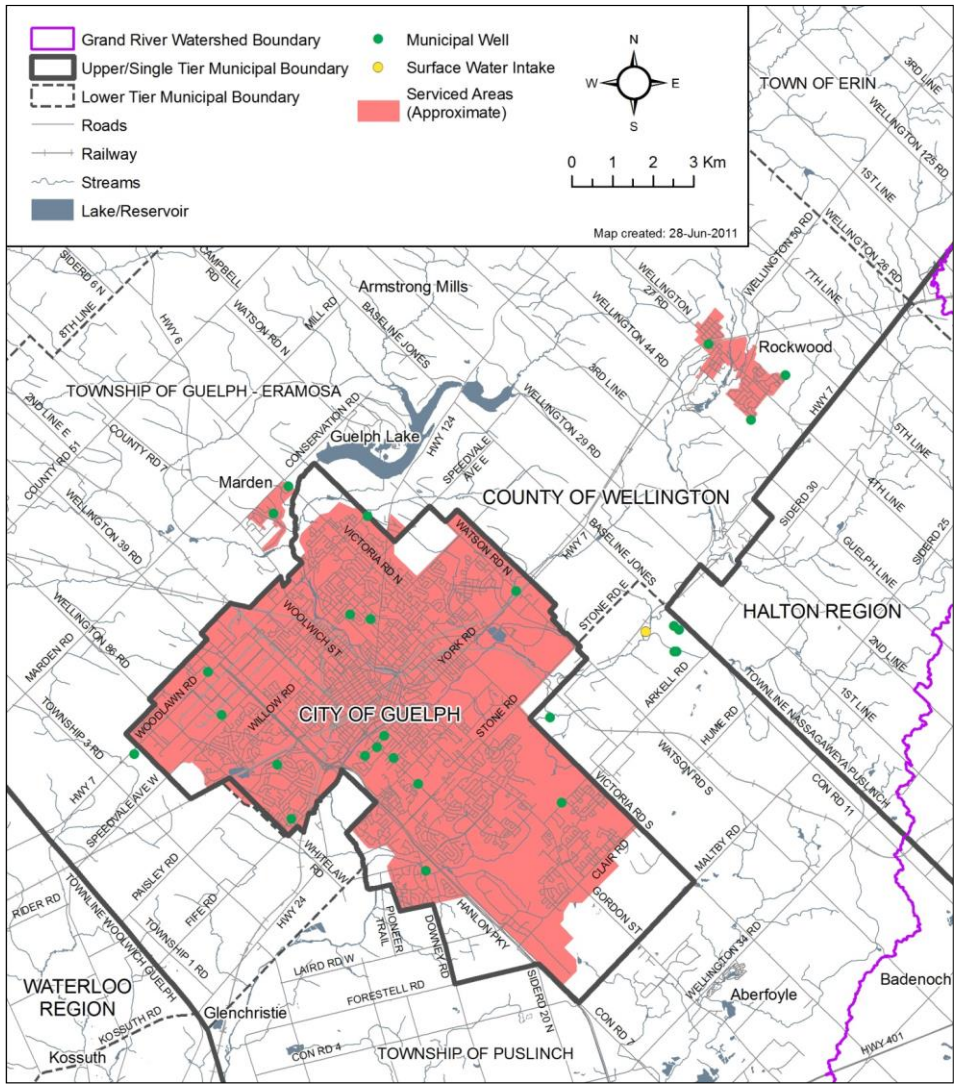
Rockwood Well TW2/02 (Well 4) is not currently online, but has been identified as a future municipal supply well. TW2/02 is located east of Highway 7 and south of the Eramosa River. This Well was drilled in 2002 as a 150 mm diameter test well to a depth of 68.58 m below grade. At this site, overburden sediments were encountered from ground surface to 12.6 m below grade. Brown/grey limestone bedrock was encountered between 12.6 and 62 m. Below 62 m, the well penetrated red and grey shale to a depth of approximately 68.58 m (Burnside, 2002c). The well was constructed at the same time as TW3/02 when the Village was looking for future water supply wells. Both wells were tested and TW3/02 was chosen for development, however, plans to use TW2/02 for future supply remain in place.

6.4.2 Hamilton Drive Water Supply System

The Hamilton Drive Water Supply System services a population of approximately 216653 people (2008) in a community located just north of the City of Guelph. The system services the geographical area bounded by Victoria Road to the east, Conservation Road to the north, Highway 6 to the west and the Speed River to the south. The Hamilton Drive Water Supply System consists of two municipal groundwater wells located at two pumphouses: the Cross Creek Pumphouse and the Huntington Pumphouse. The Cross Creek Well, also known as Cross Creek PW3, was drilled in 1990. The well was completed as a 250 mm diameter well with a steel casing to 21.3 m and a 200 mm steel casing to 39.6 metres. The well is an open bedrock hole in bedrock from 39.62 m to a depth of 99 m bgs within the Reformatory Quarry member of the Eramosa Formation. The bedrock is overlain by 21.3 m of clay overburden. The Huntington Well also known as Huntington Estates PW1, is drilled in 1986 and is a 200 mm well with an open hole in bedrock interval from 12.5 to 71.9 m below grade bgs. The well is completed in within the Guelph and middle Gasport Formations and is overlain by 3 m of till.

The Cross Creek and Huntington Estates Wells are not designated as GUDI.

Map 6-37: Guelph, Rockwood and Hamilton Drive Water Supply System Serviced Areas



6.4.3 Vulnerability Analysis

Delineation of Wellhead Protection Areas

The delineation of Wellhead Protection Areas represents the foundation of a municipal groundwater protection strategy. Wellhead Protection Areas associated with the municipal water supply represent the areas within the aquifer that contribute groundwater to the well over a specific time period. According to the *Clean Water Act Technical Rules* (November 2009), four Wellhead Protection Areas are required, one a proximity zone and the three others time related capture zones:

- WHPA A — 100 m radius from wellhead
- WHPA B — 2-year Time of Travel (TOT) capture zone
- WHPA C — 5-year Time of Travel capture zone
- WHPA D — 25-year Time of Travel capture zone

Modelling Approach for the Rockwood and Hamilton Drive Water Supply Systems

The numerical modelling completed for the Rockwood and Hamilton Drive study area used the FEFLOW groundwater flow model developed for the Guelph/Guelph-Eramosa Tier 3 Assessment (Matrix, 2017). In the area of Rockwood and Hamilton Drive, the Tier 3 model was calibrated to long-term average water levels, baseflow estimates, and to transient water level response data from constant rate pumping tests performed at Rockwood Wells 3 and 4. Transient verification simulations were also performed for the Hamilton Drive and Rockwood areas, and results showed that the model was able to represent the expected response of the shallow and deeper groundwater systems to varying recharge and pumping stress over a 5-year period (2008 to 2012; Matrix 2017).

The capture zones and WHPAs delineated for this study are based on a Base Case scenario model and three alternative uncertainty scenarios developed as part of a sensitivity analysis.

Base Case Scenario

The calibrated Guelph/Gueph-Eramosa Tier 3 FEFLOW model is referred to as the Base Case scenario. The pumping rates for the Rockwood wells (**Table 6-36**) represent future rates derived during the Tier 3 Assessment and were based on water use forecasts to reach build-out in 2026 (Matrix, 2017). The total future pumping rate derived for all of Hamilton Drive during the Tier 3 Assessment was 185 m³/day and was based on water consumption forecast estimates to 2020 (Matrix, 2017). This rate was assigned to both the Cross Creek and Huntington Estates wells for the current WHPA delineation work assuming that either well may have to accommodate the future demands of the subdivision community in the event that the other well goes offline for maintenance or other reasons.

Table 6-36: Water Takings from Municipal Production Wells in the Rockwood and Hamilton Drive Well Supply

Well	Permit to Take Water (m ³ /day)	Rate Used to Delineate WHPA (m ³ /day)
Rockwood 1	1,965	763
Rockwood 2	1,965	
Rockwood 3	1,310	572
Rockwood 4	1,310	572

Huntington Estates	812	185
Cross Creek	916	185

Sensitivity Scenarios

A sensitivity analysis was completed to estimate the effects of model parameter uncertainty on the size and shape of the predicted capture zones. Some groundwater flow model input parameters have greater uncertainty than others. The sensitivity analysis involved adjusting the calibrated Base Case model parameters and evaluating the change in particle tracking results used to delineate the capture zones. Specifics on the sensitivity scenarios are in the Matrix 2018 report 'Township of Guelph/Eramosa Wellhead Protection Area Delineation, Vulnerability Scoring, and Transport Pathways Assessment Report.'

Virtual particles can be released in a groundwater flow model and tracked forward or backward in time through the subsurface for various time intervals. The computed pathlines travelled by these particles are projected to the ground surface and plotted on a plan view map. Time-of-travel capture zones are subsequently created by drawing polygons around the well and the particle pathlines for specific time intervals. As such, capture zones represent the land areas beneath, which water and contaminants located at and below ground surface may migrate toward a well within a specified period. All particle tracks of the Base Case and sensitivity scenarios were rotated by +/- 5 degrees around each municipal well to account for some uncertainty in the groundwater flow direction.

The Township delineated Wellhead Protection Areas (WHPAs) for the municipal supply wells as part of their previous groundwater management study (Golder, 2006b). The Wellhead Protection Areas were delineated using the FEFLOW Guelph Puslinch Groundwater Model. The groundwater model was calibrated (using a regional parameterization approach) to groundwater elevations from over 4,500 water well information system (WWIS) locations and 302 higher quality monitoring wells, as well as base flow estimates from both long-term and non-permanent stream flow monitoring stations. The NRMS error for the calibration is reported as being 2.0% for all data combined which is considered to be within the acceptable limits of less than 10% for numerical models (Golder, 2006b).

The groundwater model used for the delineation of the Wellhead Protection Area was developed by Golder (2006b). The model assumes that the groundwater flow systems are equivalent porous media at the scale of the time related capture zones under consideration. While groundwater flow in bedrock aquifers occurs primarily in the fractures, the use of an equivalent porous medium approach can still provide a reasonable approximation of the Time of Travel related capture zones of a bedrock supply well provided the scale of observation is much greater than the scale of individual fractures, and consideration is given to the selection of a reasonable "effective" porosity. The effective porosity assumed for the travel time calculations was 5 percent (Golder, 2006b). The model was calibrated primarily through the adjustment of hydraulic conductivities in the hydrostratigraphic units in the model to match simulated hydraulic head distribution with observed groundwater elevations and groundwater discharge rates to streams in the study area. Minor adjustments were also completed to internal stream and model perimeter boundary conditions. The calibration targets for the model were regional steady state groundwater elevations and the water balance for the model as defined by the stream flow base estimates. Overall the normalized root mean squared (RMS) from the calibrated model based on 4,400 calibration locations was

~~2.9% (Golder, 2006b). This is well below the generally acceptable limit of 10% for NRMS error for groundwater models.~~

~~To develop time of travel capture zones groundwater particles were released at the pumping wells in the models and tracked backwards towards their source of origin (recharge). At each well location, particles were released in all hydrostratigraphic units "open" to the wellbore. The time-related pathlines that are subsequently generated by the model from this analysis are then overlain and a single time of travel capture zone drawn around the "family" of pathlines generated at each well. To check the capture areas generated from the backward tracking analysis (and in some cases to refine the time of travel outline produced) a series of forward particle tracking simulations were completed. The resulting capture zone from this process represents the two-dimensional (2-D) projection of the particle outlines to ground surface.~~

Delineation of the Rockwood and Hamilton Drive Wellhead Protection Areas

The Rockwood WHPAs ~~cover a total of 4,942 ha as~~ are shown on **Map 6-38**. In general, ~~the~~ WHPAs ~~of~~ for all Rockwood Wells ~~1 and 2~~ extends in a northerly direction. The "Y" shape at ~~Rockwood Well 1 and 2~~ is heavily influenced by the Eramosa River, where the pumping well captures groundwater flowing toward the well from both sides of the river. In the area of Rockwood Well 3 and 4, the refined hydrogeologic characterization, as part of the Tier 3 Assessment (Matrix 2017), suggests that the Vinemount aquitard is absent. The lack of a lower hydraulic conductivity confining layer in this area results in a capture zones that travel upwards into the overburden and do not extend as far in the upgradient direction.

~~The WHPA extends 3 km before bifurcating into two branches. The WHPA-D extends approximately 8 km away from the supply wells. The WHPA of Rockwood Well TW3/02 and TW2/02 both extend in north northeast (NNE) direction. The WHPA-C and WHPA-D of these wells overlap. The east side of the Rockwood wells 1 and 2 WHPA combines with the WHPA-D of Rockwood wells TW3/02 and TW2/02. The WHPA-D zone for Wells TW3/02 and TW2/02 extend approximately 16 km away from TW3/02 and crosses the Township boundary into Erin Township and into the Credit Valley Source Protection Area.~~

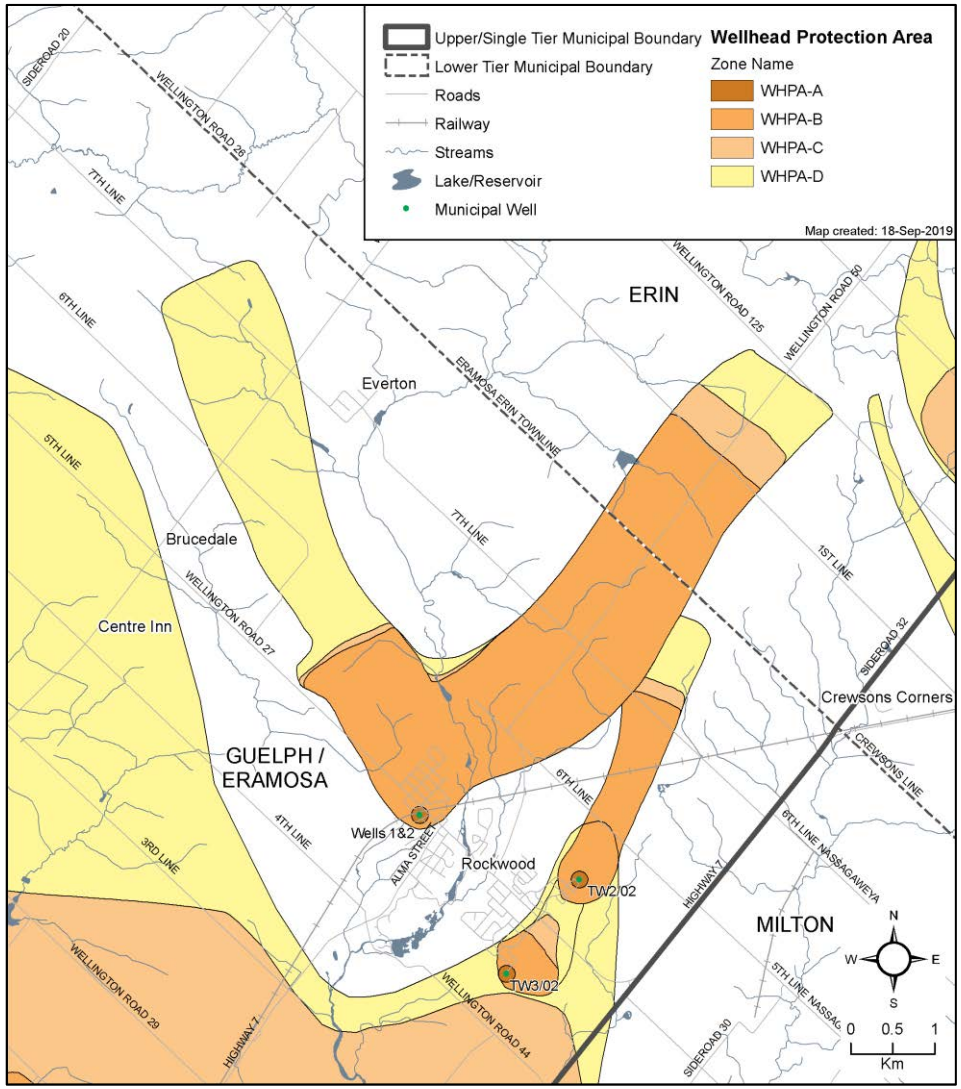
The Cross Creek and Huntington WHPAs extend in a north northwest (NNW) direction with their zones overlapping within the WHPA-D ~~B, C and D~~ as presented in **Map 6-39**. The WHPA-D for ~~both~~ Cross Creek ~~and Huntington~~ extends approximately ~~40-17~~ km from the supply wells ~~and the WHPA-D for Huntington extends approximately 7 km. The combined zones cover an area of 1,735 ha (Burnside, 2010b).~~

Delineation of WHPA-E and WHPA-F for the Rockwood Wellhead Protection Area

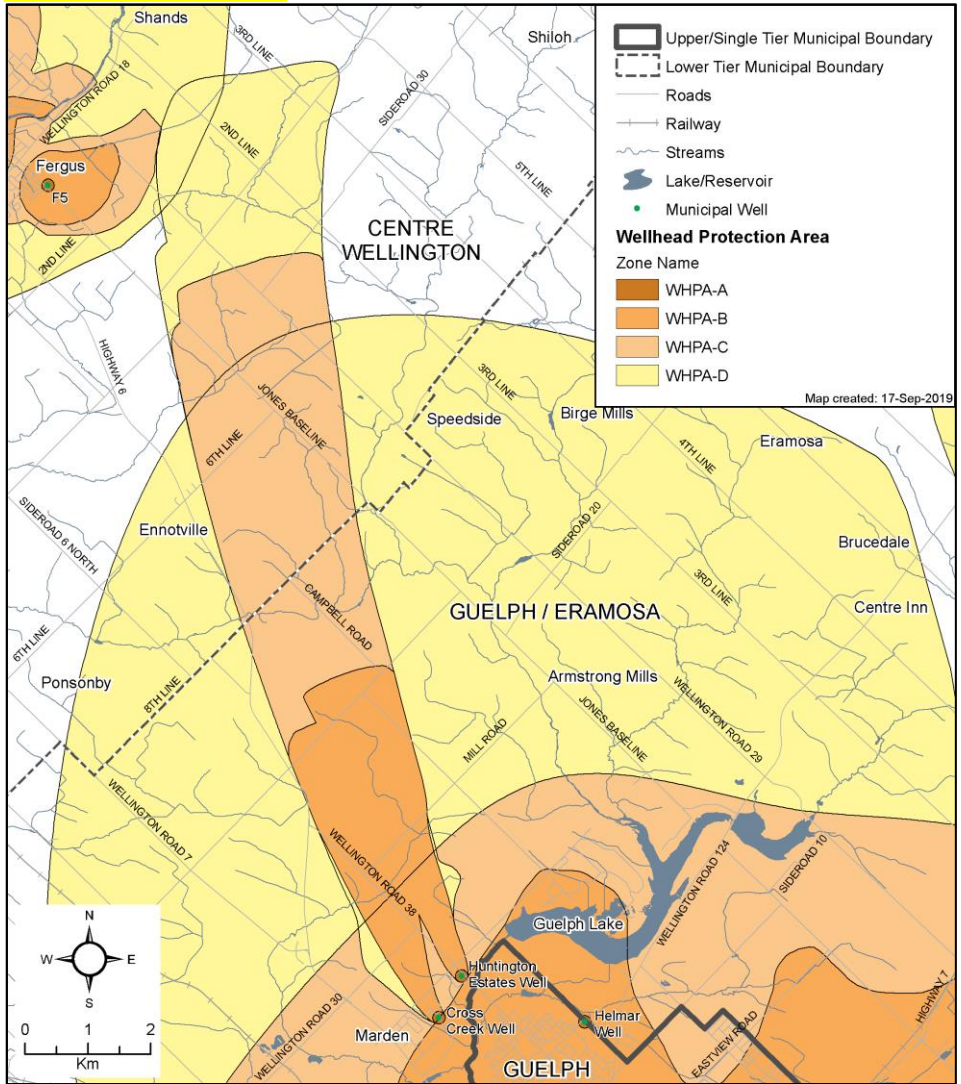
~~The Technical Rules: Assessment Report (Clean Water Act, 2006) requires that all wells that are identified as groundwater under direct influence of surface water (GUDI) delineate an additional protection zone that is representative of its surface water vulnerability, known as a WHPA-E. GUDI wells are identified in accordance with subsection 2 (2) of O. Reg. 170/03 (Drinking Water Systems) of the Safe Drinking Water Act, 2002.~~

Rockwood Wells 1 and 2 are classified as GUDI wells as a result of a study completed by Burnside in 2002. The wells are classified as GUDI due to the highly porous bedrock that outcrops at the surface in the vicinity of the well; however, there is no permanent surface water feature located in the vicinity of the wells that has been associated with the GUDI status. In light of the absence of a surface water body with which the GUDI status is linked it is not possible to delineate a WHPA-E that is compliant with Rule 47 (5) of the Technical Rules (MOECC, ~~2009b~~ 2017).

Map 6-38: Rockwood (Wells 1, and 2, TW2/023, and TW3/024) and Hamilton Drive (Hungington and Cross Creek Wells) Water Supply Wellhead Protection Areas



Map 6-39: Hamilton Drive (Hungington and Cross Creek Wells) Water Supply Wellhead Protection Areas



Uncertainty of the Delineation of the Rockwood and Hamilton Drive Wellhead Protection Areas

The delineation of the WHPAs was completed by Golder in the Wellington County Groundwater Protection Study, 2006 through the use of a FEFLOW groundwater model. The model was constructed and calibrated with available hydrogeological data and hydrogeological mapping products as described in Section 4.1 and the Wellington County Groundwater Protection Study Report (Golder, 2006a).

Uncertainties within the model are associated with limitations in the availability of subsurface information and can be related to projected variability in the aquifer properties (e.g. hydraulic conductivity; porosity) or uncertainties with the conceptual model (e.g. groundwater surface water interactions; location of flow boundaries; recharge rates; continuity in aquitards; direction of regional groundwater flow).

To account for some of these uncertainties Golder has applied a factor of safety to the WHPAs. The factor of safety has been applied to two components of the WHPAs: the width and length of the capture zones and the orientation of the capture zones. The width and length of the capture zones were increased by 20% to account for uncertainty in the hydraulic characteristics of the aquifer system. The orientation of the capture zone was adjusted by 5 degrees (plus and minus) along its centre line to account for some uncertainty in the regional flow direction by increasing the width of the capture zones at increasing distances from the pumping well. This reflects the concept that the available data is typically concentrated around the pumping well and that the uncertainty in the hydrogeological understanding increases at increasing distances from the supply wells (Golder, 2006a).

Based on known variations in hydraulic properties, the factor of safety approach is not considered to adequately address the issue of uncertainty. It is known that slight variations of aquifer properties may impact the shape and orientation of the capture zones. The safety factor, while attempting to cover some of this likely variation, does not give an indication of the likely impact of variations in actual model properties as there is no correlation between the factor of safety and the model parameters.

Although the calibration results were good, the lack of information on the impact of variations in model parameters on the resulting capture zones suggests that additional work needs to be completed to allow for a full evaluation of uncertainty.

Intrinsic Vulnerability Scoring in Wellhead Protection Areas

Groundwater intrinsic vulnerability mapping for the Rockwood and Hamilton Drive wellfields was previously completed by EarthFX Inc. (2008) using the SAAT method. Golder (2010a) reviewed the vulnerability mapping and made adjustments based on hydrogeological knowledge at the WHPA scale. The intrinsic vulnerability was further refined in the Centre Wellington area by GRCA staff in May 2019. Smoothing (refinements) of the intrinsic vulnerability was done in areas where the existing vulnerability scoring was too complex to be implementable. This was done using the smooth line tool in ArcGIS (Polynomial Approximation with Exponential Kernel), with a 400 m smoothing tolerance. Further manual adjustment was then made in a few minor areas to remove any tight loops created by the tool. The Rockwood and Hamilton Drive intrinsic vulnerability mapping is shown on **Map 6-41 and Map 6-44.**

Following their delineation, the intrinsic vulnerability of the aquifer within each Wellhead Protection Area is assessed using one of the methods approved under the *Clean Water Act* Technical Rules. The resulting maps rank aquifer vulnerability as high, medium or low.

Aquifer vulnerability mapping was completed within the GRCA watershed using the Surface to Aquifer Advection Time (SAAT) approach. The GRCA retained Earthfx to complete the vulnerability mapping using the SAAT method for most of the Grand River watershed (Earthfx, 2008).

The SAAT approach estimates the average time required by a water particle to travel from a point at the ground surface to the aquifer of concern. The SAAT is approximated by using the vertical component of the advective velocity integrated over the vertical distance and the average porosity. The travel times generated are categorized into groups being <5 years, 5 to 25 years and > 25 years.

Calculation of the SAAT, as conducted by Earthfx, was based on the use of empirical formulae provided by the MOE. These formulae provide methods for the computation of two separate components of the SAAT, the unsaturated zone advection time (UZAT) and the water table to aquifer advection time (WAAT). UZAT was computed based on values assumed for depth to water table, mobile water content and infiltration rate. For the assessment a depth to water map was generated using an interpolated water table map and the elevation of the land surface. Mobile water content was approximated based on the specific yield of each soil type and infiltration was approximated using a GAWSER recharge model in which infiltration was assumed to be equal to the recharge rate. In areas where several layers of varying materials were present, the calculations were done for each layer and then summed over the entire unsaturated portion of the sub-surface.

Where required, the WAAT component of the SAAT was also computed. It is noted by Earthfx that the WAAT was only computed in two instances; the first where the target aquifer was known to be confined and the second where no aquifer material was recognized. The factors included in the computation of the WAAT were aquifer porosity, thickness of the geologic layer, vertical hydraulic conductivity and the difference between the head in the confined aquifer and the water table. Hydraulic conductivities were estimated based on the geologic materials listed in the boreholes logs. Vertical hydraulic gradients were estimated by subtracting the interpolated potentiometric surface from the interpolated water table. The thickness of each layer above the target aquifer and the location of the top of the target aquifer were determined from the borehole logs.

The regional mapping produced by the Earthfx report was reviewed on a local scale in the vicinity of the water supply wells. The vulnerability mapping was refined based on the following considerations: locations of bedrock outcrops, surficial geology, overburden thickness, SAAT point values and hydrogeologic interpretations.

In the Township of Guelph/Eramosa adjustments to the regional SAAT mapping were applied to reflect bedrock outcrops as high vulnerability, areas of less than 3 m of overburden thickness as high vulnerability and local qualitative adjustments to refine the alignment with the local SAAT scores.

The SAAT travel times were grouped to create ratings which were then used to construct an aquifer vulnerability map of the study area. Time of travel

~~values less than 5 years are rated as High Vulnerability. Values between 5 and 25 years are Medium vulnerability. Any value greater than 25 years is classified as having a Low Vulnerability. The various vulnerability ratings based on the travel times is shown in Table 6-38. The intrinsic vulnerability for the Rockwood and Hamilton Drive well supply systems are shown on Map 6-43 and Map 6-49. Table 6-38:~~

~~SAAT Vulnerability Ratings~~

Time of Travel (years)	Vulnerability Rating
<5	High
5 to 25	Medium
>25	Low

~~At the completion of the vulnerability mapping and scoring, the Township of Guelph/Eramosa completed an assessment of transport pathways. The results of the transport pathway assessment were reviewed using professional judgment to determine whether to increase the vulnerability based on the presence of the pathways.~~

Identification of Transport Pathways and Vulnerability Adjustment

Following a review of the intrinsic vulnerability scoring maps, an assessment of transport pathways was undertaken to determine whether adjustments to the vulnerability assessment were warranted. Technical Rules 39 – 41 address the general process of how transport pathways would increase vulnerability. Transport pathways for groundwater based drinking water systems include: wells (current, unused, or abandoned), pits and quarries, mines, construction activities or deep excavations, storm water infiltration, septic systems, and buried municipal infrastructure.

The Technical Rules (MOECC, 2017) indicate that consideration should be given to the cumulative impact of any potential transport pathways; the impact of any discrete pathway should not be viewed in isolation. Therefore, following the assessment of risk for each feature, a density analysis was completed to determine where clusters of high risk pathways existed. A 50 m buffer was created around each of the high-risk pathways identified.

The transport pathways area of influence for the Rockwood and Hamilton Drive Wellhead Protection Areas, the is shown on **Map 6-42 and Map 6-46**, respectively.

Vulnerability Scoring for the Rockwood Wellhead Protection Areas

Several data sources were reviewed to assess the relative risk of transport pathways to cross-cut natural protection over the municipal production aquifers in the Rockwood and Hamilton Drive WHPAs. Other than wells, no transport pathways are interpreted to warrant an update to vulnerability mapping. A total of 332 high-risk wells were identified within the Rockwood and Hamilton Drive WHPAs. Where a high density of these wells are located outside of areas of high vulnerability and areas already adjusted for the presence of transport pathways (Burnside 2010), updates to the existing vulnerability mapping were made. This adjusted vulnerability mapping was carried forward and used for vulnerability scoring within the Rockwood and Hamilton Drive WHPAs.

Following the adjustment of the vulnerability mapping based on the transport pathways assessment, vulnerability scoring was completed for Rockwood and Hamilton Drive wellfields. The WHPAs for each well were overlain on the adjusted vulnerability mapping and scores were assigned. The corresponding final vulnerability mapping are shown on **Map 6-43 and Map 6-47**.

In Rockwood, the SAAT around Well TW2/02 was increased to high based on information from TW2/02's water well log. Overburden thickness and water well logs were reviewed to the east of Rockwood Wells TW3/02 and TW2/02 resulting in the extension of the medium vulnerability zone in this direction (Golder, 2010a).

The Rockwood Wellhead Protection Areas are located in areas dominantly classified as medium to high vulnerability with only the WHPA-D of Rockwood Wells TW3/02 and TW2/02 classified as low. Areas of high vulnerability are located in areas of bedrock outcrop and thin overburden. These areas tend to be located along the Eramosa River. The initial vulnerability scoring for Rockwood is shown on **Map 6-42** with an inset on **Map 6-47**.

Vulnerability Scoring for the Hamilton Drive Wellhead Protection Areas

For the Hamilton Drive area, areas of high vulnerability were mapped along Marden Creek and along the Speed River Valley south of Hamilton Drive (Golder, 2010a).

The Cross Creek and Huntington WHPAs are located in areas classified dominantly as medium vulnerability with some low vulnerability areas within the far northern parts of the WHPA-D zones. Some areas of high vulnerability are mapped where bedrock outcrops along the drainage courses such as the Speed River, Marden Creek and Cox Creek. The initial vulnerability scoring for Hamilton Drive is shown on **Map 6-50**.

Identification of Transport Pathways and Vulnerability Adjustment

Following a review of the initial vulnerability scoring maps, an assessment of transport pathways was undertaken to determine whether adjustments to the vulnerability assessment were warranted. Technical Rules 39–41 address the general process of how transport pathways would increase vulnerability. Transport pathways for groundwater based drinking water systems include: wells (existing and abandoned), pits and quarries, mines, construction activities, storm water infiltration, septic systems, sanitary sewer infrastructure.

Transport Pathways in the Rockwood and Hamilton Drive Wellhead Protection Areas

Domestic water wells are the most common man-made transport pathway in rural areas. Improperly constructed wells can potentially introduce a cumulative impact to drinking water sources especially when the casing deteriorates. Similarly, if the well is no longer in use, improper abandonment also provides a transport pathway for a contaminant to impact a drinking water source.

It is a requirement of Ontario Regulation 903 that unused wells be properly abandoned by a licensed well contractor. However, proper well abandonment is not actively enforced or monitored therefore it is difficult to assess how many abandoned wells may exist within the WHPAs.

A review of water well records from the MOE water well database and a field survey were conducted to identify wells within the WHPAs. The wells were then ranked based on their risk to the supply aquifer. The survey resulted in the identification of 118 water wells within the Rockwood 2-year TOT zone (WHPA-B) and classified 108 of the wells as high risk wells. 72 water wells were identified within the Hamilton Drive WHPAs and 60 were classified as high risk.

Septic systems are considered transport pathways as they can provide a conduit for contaminants to travel through the ground to the water table. Septic systems are generally built in the upper few metres of the sub-surface and consist of a tank and drainage tiles which distribute effluent allowing it to infiltrate into the ground. In the case of thin confining layers or in unconfined aquifer

conditions, these shallow penetrating systems may present a significant conduit for contaminants to the aquifer of concern. The Village of Rockwood has a municipal sewage collection system; however septic systems may still be present that were used before servicing was available. For the purposes of this assessment in-ground individual septic systems are assumed present at all rural residences outside of the serviced area.

Utilities that are constructed in the sub-surface are potential transport pathways as the disturbed soil surrounding them can provide a pathway for contaminants to enter into the aquifer below. Utilities that may act as transport pathways include storm water trunk sewers and sanitary infrastructure. The depth of excavation for the construction of utilities will determine the risk that the wells pose on the municipal supply aquifer. Municipal sewage sewer lines are located within the village of Rockwood. Underground utilities are located within the WHPA within the Rockwood limits. The areas of risk are already mapped as high vulnerability therefore no increase in vulnerability is required.

Aggregate operations are defined as activities that involve the extraction of material from the surface and in the current study include both pits and quarries. Pits and quarries present a transport pathway as their creation serves to remove a potential layer or layers of protection from the regional aquifer. In some cases, these excavations may extend to below the groundwater table in which case the pit or quarry is a direct conduit to the aquifer.

As part of the assessment, study aggregate operations have been mapped based on existing databases, the review of aerial photography and satellite imagery along with a windshield survey of the WHPAs. There is one aggregate operation located within the WHPA-D of Rockwood Wells 1 and 2. Satellite photography indicates that excavations likely extend below groundwater table as surface water ponds are visible.

Adjusted Vulnerability Scoring

The increase in vulnerability as a result of transport pathways is generally limited to one rank (low to medium or medium to high) except in extreme cases where the constructed pathway is considered to increase the vulnerability of the aquifer from low to high.

At the completion of the transport pathways assessment, the Technical Rules allow investigators to modify the vulnerability scoring if there is a concern that the identified transport pathways within the Wellhead Protection Areas may increase the vulnerability of the aquifer beyond that represented by the intrinsic vulnerability. Modification of the vulnerability score is performed by increasing the vulnerability of the underlying aquifer vulnerability map from either a low to moderate value or moderate to high value. An initial aquifer vulnerability value of high cannot be increased.

The updated assessment report will be revised to better illustrate the transport pathways affecting the intrinsic vulnerability scores.

Adjusted Vulnerability Scoring for the Rockwood Wellhead Protection Areas

The increase in vulnerability due to transport pathways is provided for the Rockwood Wellhead Protection Areas in. The following locations were increased:

- Along Main Street and Harris Street within Rockwood Well TW3/02 WHPA-B the vulnerability was increased from moderate to high. These streets have houses that were present before servicing and likely have wells that are no longer in use;

- The hamlet of Everton was increased to high due to the high density of wells; and
- The area of an aggregate operation located on Wellington Road 125 within WHPA-D of Rockwood Wells 1 & 2 was increased from moderate to high.

The transport pathways for the Rockwood Wellhead Protection Areas are shown on **Map 6-44**, the area of influence is shown on **Map 6-45** and the final vulnerability scoring is shown on **Map 6-46**. An insert of the final vulnerability scoring is shown on **Map 6-48**.

Adjusted Vulnerability for the Hamilton Drive Wellhead Protection Areas

An area of vulnerability increase occurred along Wellington Road 22 within WHPA-D due to a high density of high risk wells. The transport pathways for the Hamilton Drive Wellhead Protection Areas are shown on **Map 6-51**, the area of influence is shown on **Map 6-52** and the final vulnerability scoring is shown on **Map 6-53**.

Uncertainty in the WHPA Delineation and Vulnerability Scoring for the Rockwood and Hamilton Drive Water Supply Systems

The uncertainty analysis factors considered in this assessment follow Part I.4, Rule 14 of the Technical Rules (MOECC, 2017). **Table 7-43** shows a summary of the uncertainty for the WHPA delineation and vulnerability analysis for the Rockwood and Hamilton Drive Water Supply Systems.

Uncertainty Assessment Factor	Uncertainty Designation	Description
14(1) The distribution, variability, quality, and relevance of data used in the preparation of the Assessment Report	Low	Good coverage of Ontario MECP water well record data surrounding the Study Area as well as high-quality data local to the well fields and regionally. Water levels from multiple periods. Averaging of multiple water levels at individual wells was completed to best reflect average conditions.
14(2) The ability of the methods and models used to accurately reflect the flow processes in the hydrological system.	High	The groundwater flow model has been shown to reflect bedrock groundwater flow processes by representing water levels under long-term average and pumping conditions. However, the sensitivity analysis illustrates that the orientation and size of the capture zones, and the impact of the Eramosa River, is very sensitive to the range of model parameters used. Additionally, the model contains a two-layer conceptualization of overburden and may not reflect local conditions.
14(3) The quality assurance and quality control procedures applied	Low	Each step of the model development process relied on data that had been collected and/or reviewed by professional engineers or geoscientists. The development of the model was fully documented (Matrix, 2017) and that document was reviewed by leading academics and industry professionals for the purposes of fulfilling the requirements of the Act.
14(4) The extent and level of calibration and validation achieved for models used or calculations or general	Low	In the Rockwood and Hamilton Drive areas the Tier 3 model was calibrated to steady-state as well as transient conditions. Further, transient verification was conducted at well locations in Rockwood and Hamilton Drive, and showed that the model was able to represent the

Table 7-43: Uncertainty Assessment for the Rockwood and Hamilton Drive Water Supply Systems

<u>Uncertainty Assessment Factor</u>	<u>Uncertainty Designation</u>	<u>Description</u>
<u>assessments completed</u>		<u>response of the shallow and deeper groundwater systems to varying recharge and pumping stress over a longer time period. These calibration efforts and the final parameters derived are both consistent with field observations and those that would be expected based on the conceptual model.</u>
<u>14(5) The accuracy to which the groundwater vulnerability categories effectively assess the relative vulnerability of the underlying hydrogeological features</u>	<u>High</u>	<u>The groundwater vulnerability mapping is based on the SAAT methodology completed by EarthFX (2008) and refined by Golder (2010) and Burnside (2010); however, the hydrogeologic conceptual model of the Study Area was reworked as part of the Tier 3 Assessment (Matrix, 2017). The vulnerability mapping was not refined to reflect the current conceptual model. Further, an assessment of the differences between the current conceptual model and the one that the previous vulnerability mapping is based on, has not been completed to verify whether the groundwater vulnerability categories still effectively assess the relative vulnerability of the underlying hydrogeological features.</u>

Uncertainty in the delineation of the WHPAs was addressed through the simulation of multiple scenarios. The scenarios for WHPA delineation produced similarly shaped capture zones, which were all encompassed in the final WHPA delineation. Further, the reliability of the delineated WHPAs is supported by the reasonability of the calibrated model. The groundwater flow model is calibrated using model parameters that reflect hydraulic field tests and have values that are within expected ranges for the various hydrogeological units. This results in a low uncertainty for the capture zone delineation. There is a low uncertainty rating associated with the time-of-travel delineation; however, there is a high uncertainty rating associated with the vulnerability mapping, which was not updated or reassessed using the current conceptual model (Matrix, 2017). There is also a high uncertainty related to overburden representation in the model. As a result, an uncertainty rating of high should be assigned to the assessment of vulnerability of each WHPA. This high uncertainty is identified as a data gap and updates to the vulnerability mapping should be considered in the future.

The Technical Rules: Assessment Report (Clean Water Act, 2006) requires an assessment of uncertainty as part of the vulnerability assessment. The uncertainty assessments seeks to provide a qualitative summary of data and analysis reliability as performed during the study. Uncertainty associated with a vulnerability assessment can be attributed to a number of factors including:

- Density of input data
- Quality and reliability of data, and
- Assumptions made when reducing or synthesizing data.

The vulnerability assessment completed by Earthfx was based on the Surface to Aquifer Advection Time (SAAT). The SAAT calculation was based on a number of empirical formulae provided in past guidance documents from the MOE.

The calculation of SAAT is made up of two components; the unsaturated zone advection time (UZAT) and the water table to aquifer advection time (WAAT). In the Earthfx study both components were computed based on simplifying assumptions included in MOE provided formulae. It was noted that the UZAT was computed based on estimates for groundwater recharge derived from a GAWSER model. Also values for specific yield of soils were obtained from existing literature. The results of the UZAT analysis showed a high degree of variance which may be attributed to variance in the input GAWSER model. The results of the analysis indicate that there is a 95.5 % certainty that the UZAT time calculated is within ± 42 years of the actual time at any well. This indicates that the variability of the UZAT value (margin of error) is greater than the divisions of the vulnerability range i.e. the vulnerability could vary across the entire range of classifications from low to medium or high based on its margin of error. The potential for this high variation indicates that the uncertainty related to this component is high. UZAT was computed at various water well points across the study area. There was considerable effort made within the study to improve the quality of the spatial and lithologic data provided by each data point. In this regard only wells with a location accuracy of less than 100 m were used as part of the study. It can be interpreted that the computations performed represented values that were correct spatially across the study area.

The second component of the SAAT vulnerability, WAAT, was computed based on a formula provided by the MOE and was applied in areas where the target aquifer was known to be confined or where no aquifer material was recognized. The calculation assumes that flow within this zone can be approximated by the Darcy law for groundwater flow. The results of a statistical analysis indicate a high variance in the computed values which points to a high variance and high degree of uncertainty in the underlying data. The computation is known to be dependent on estimates of hydraulic properties, and interpolation of potentiometric surfaces which are based on sparse and unreliable data. The resulting product can be regarded as being an amalgamation of all the primary data uncertainties. Based on the uncertainty associated with the input data it is concluded that the WAAT calculation can be regarded as having a high uncertainty.

Finally the SAAT is derived by combining the previously discussed components of UZAT and WAAT. It is noted that the UZAT was computed using a GAWSER model to estimate recharge. The GAWSER model is known to be built on certain simplifying assumptions that have not been expounded in the background report from Earthfx. In light of this no level of uncertainty can be attached to the results of this model. Using the results of the UZAT and WAAT calculations as outlined in the Earthfx report it is concluded that the level of uncertainty associated with the computation of SAAT is high.

While the corrections applied to well locations resulted in spatially correct analyses, the underlying uncertainty in the computations themselves results in an overall ranking of high uncertainty for the process.

The Earthfx team performed a comparative analysis of vulnerability methods using Intrinsic Susceptibility Index (ISI) to compare with the values for SAAT. It was indicated that the SAAT ranking compared favorably to the ISI in the high vulnerability areas with more significant deviations in the medium and low ranked areas. The statistical analysis performed on the ISI however indicated that there was also a high uncertainty in these values.

Table 7-43 shows a summary of the uncertainty for the vulnerability analysis for the Rockwood and Hamilton Drive Water Supply Systems.

Table 7-43: Uncertainty Assessment for the Vulnerability Analysis for the Rockwood and Hamilton Drive Water Supply Systems

	Uncertainty Type	WHPA-A	WHPA-B	WHPA-C	WHPA-D
Rockwood Vulnerability Uncertainty	Vulnerability Ratings (SAAT) and conceptualization	Low	High	High	High
	Distribution and quality of data	Low	High	High	High
	WHPA delineation	Low	High	High	High
	Overall – Vulnerability Scores	Low	High	High	High
Hamilton Drive Vulnerability Uncertainty	Vulnerability Ratings (SAAT) and conceptualization	Low	High	High	High
	Distribution and quality of data	Low	High	High	High
	WHPA delineation	Low	High	High	High
	Overall – Vulnerability Scores	Low	High	High	High

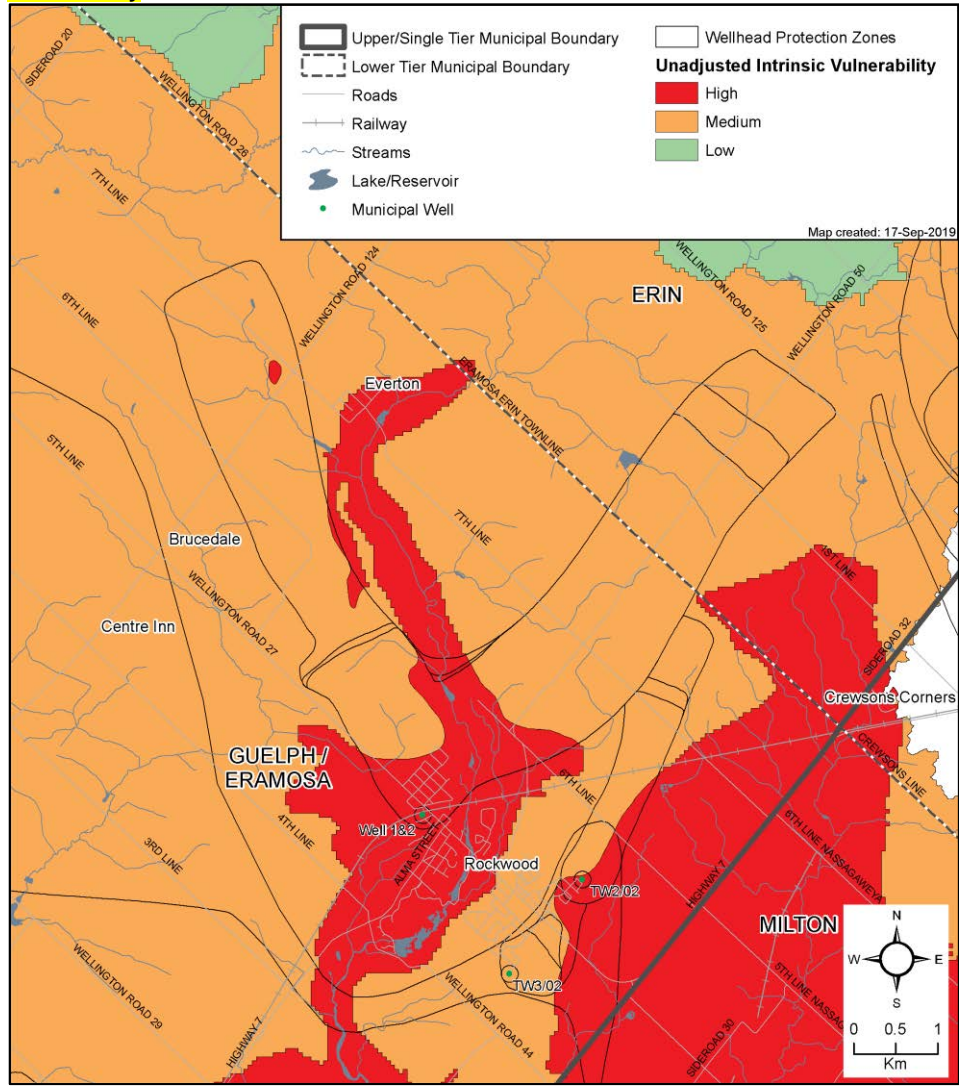
Peer Review

A peer review of the report *Vulnerability Analysis, Issues Evaluation and Threats Assessment, Township of Guelph/Eramosa* (Burnside, 2010) was completed by Brian Luinstra of Luinstra Earth Sciences. The overall impressions of the report by the peer review are as follows:

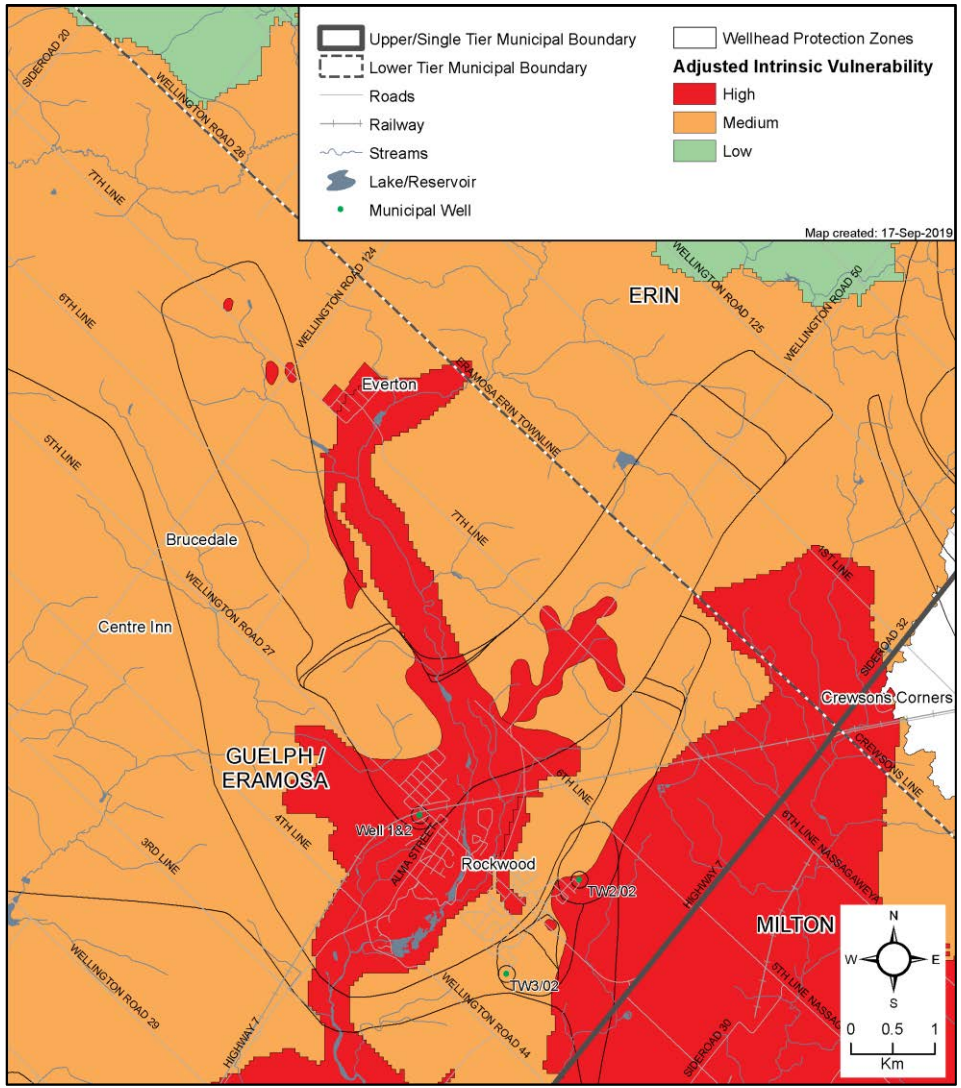
“In the Peer Reviewer’s professional opinion, the overall results appear reasonable and are consistent with the requirements outlined in the Ontario Ministry of Environment Technical Rules for completion of the Assessment Report under the Clean Water Act, 2006. The exception to this is the lack of delineated WHPA-E and WHPA-F for the Rockwood Wells #1 and #2, as well as the Issues analysis for this system. The overall approach to developing the vulnerability scores, evaluating Issues and assessing threats are consistent with the Technical Rules. The report is comprehensive and very well written, and maps appropriate for the intended use of the information.”

Responses to the peer review comments were incorporated into the final report. The responses to the peer review comments enhanced the overall defensibility of the report but did not impact the outcome of the Wellhead Protection Areas or vulnerability scoring.

Map 6-40: Rockwood Water Supply Wellhead Protection Area Unadjusted Intrinsic Vulnerability

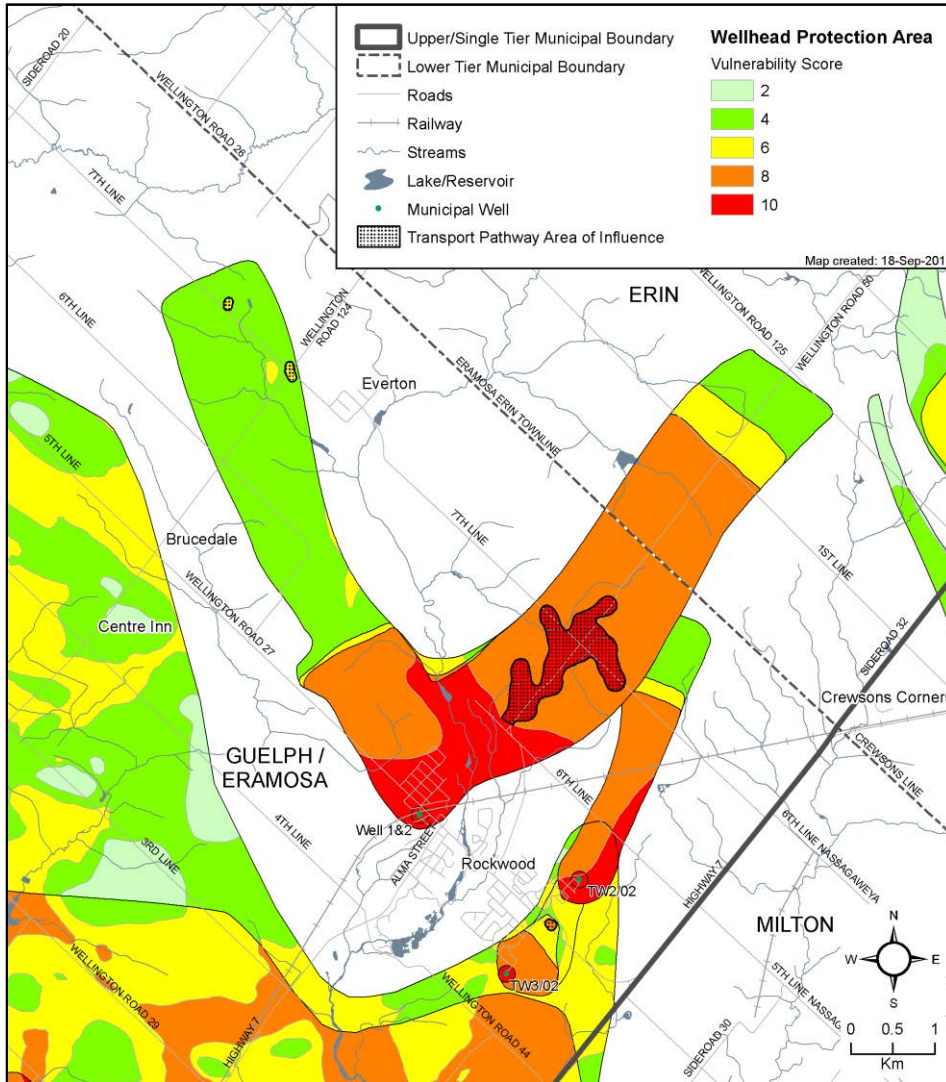


Map 6-41 Rockwood Water Supply Adjusted Intrinsic Vulnerability

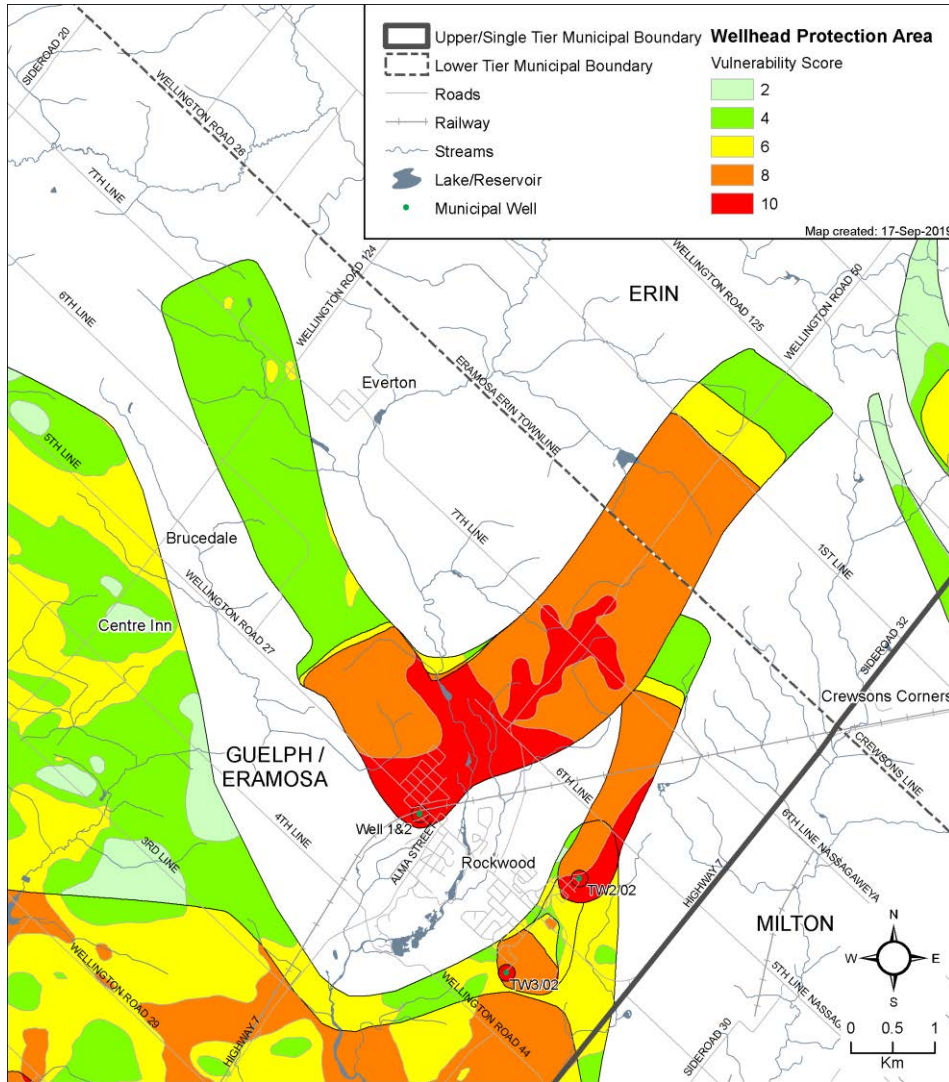


Map 6-44: ~~Rockwood Water Supply Transport Pathways~~

Map 6-42: Rockwood Water Supply Transport Pathway Area of Influence



Map 6-43: Rockwood Water Supply Wellhead Protection Area Final Vulnerability

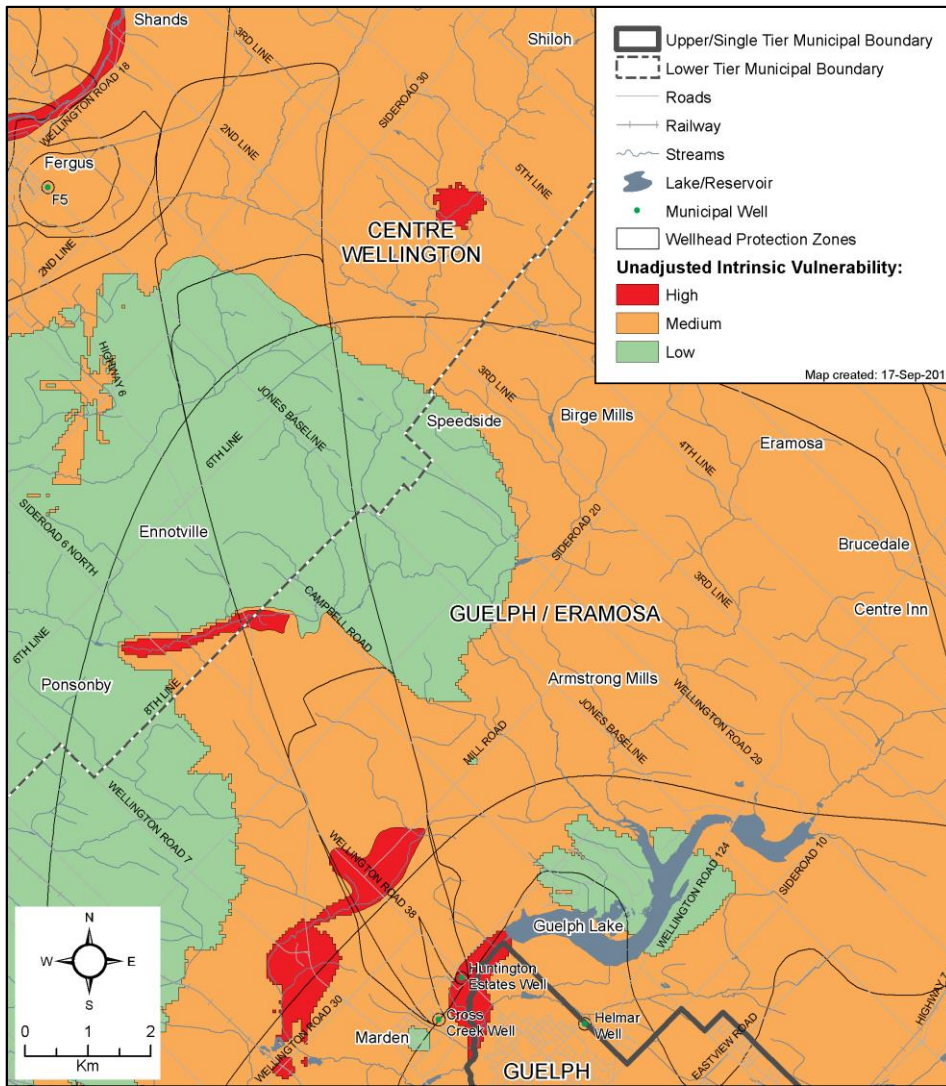


Publicly available Web-GIS mapping of vulnerable areas including vulnerability has been developed and is available through www.sourcewater.ca.

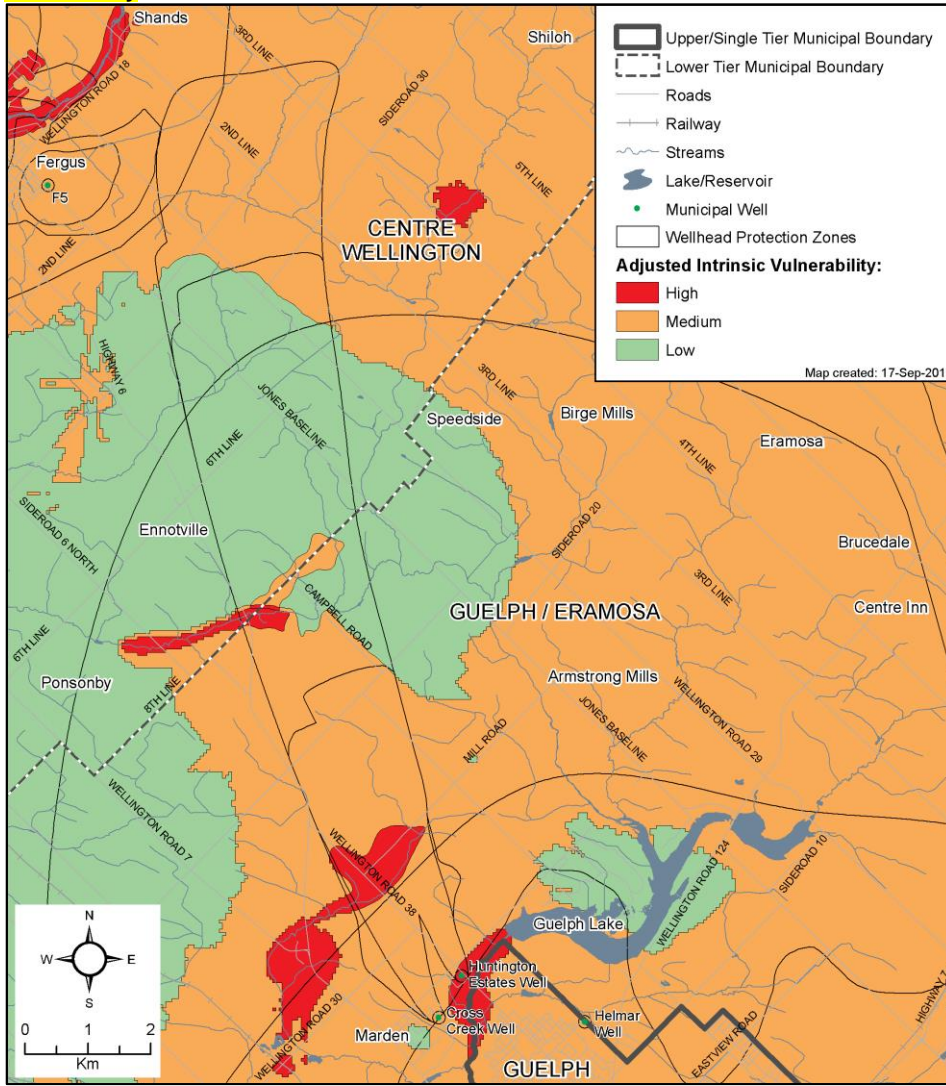
~~Map 6-47: Rockwood Water Supply Wellhead Protection Area Initial Vulnerability (Insert)~~

~~Map 6-48: Rockwood Water Supply Wellhead Protection Area Final Vulnerability~~

Map 6-44 Hamilton Drive Water Supply Unadjusted Intrinsic Vulnerability

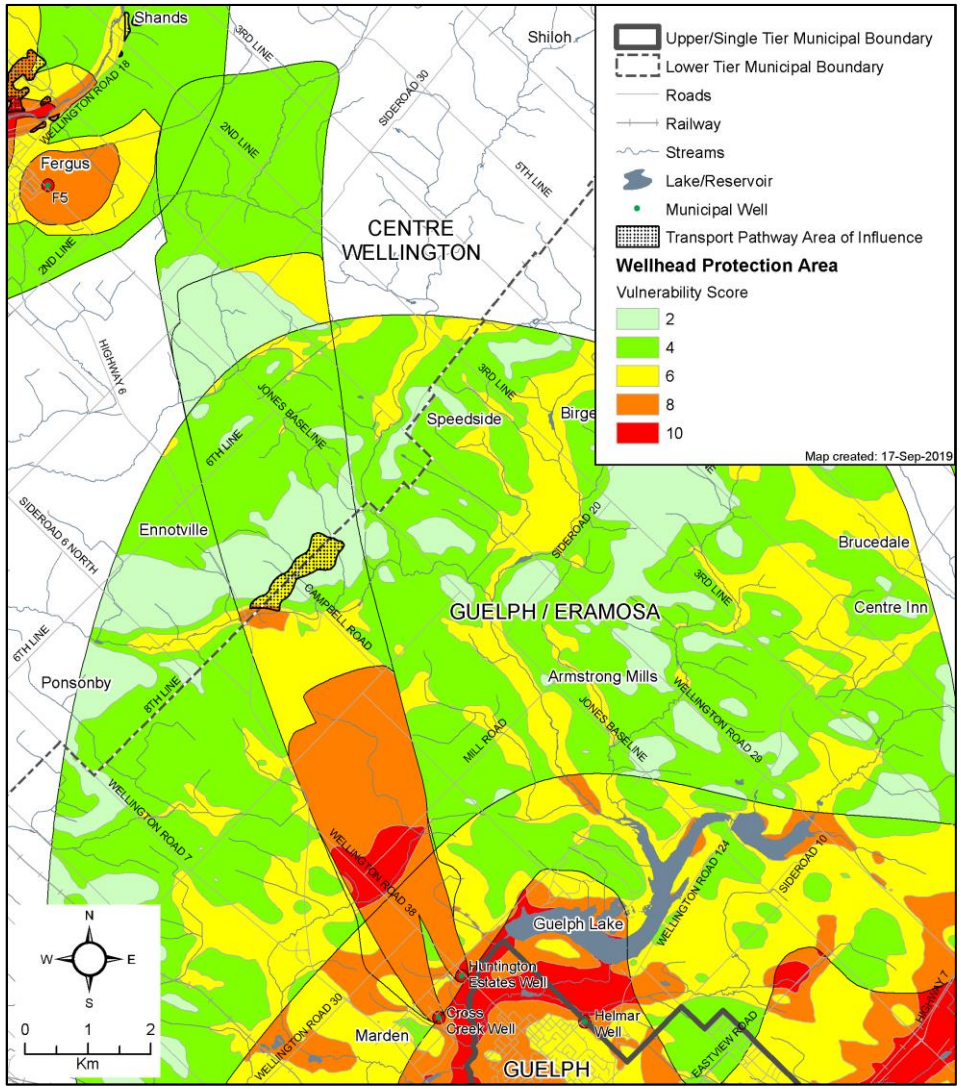


Map 6-45: Hamilton Drive Water Supply Wellhead Protection Area Adjusted Intrinsic Vulnerability

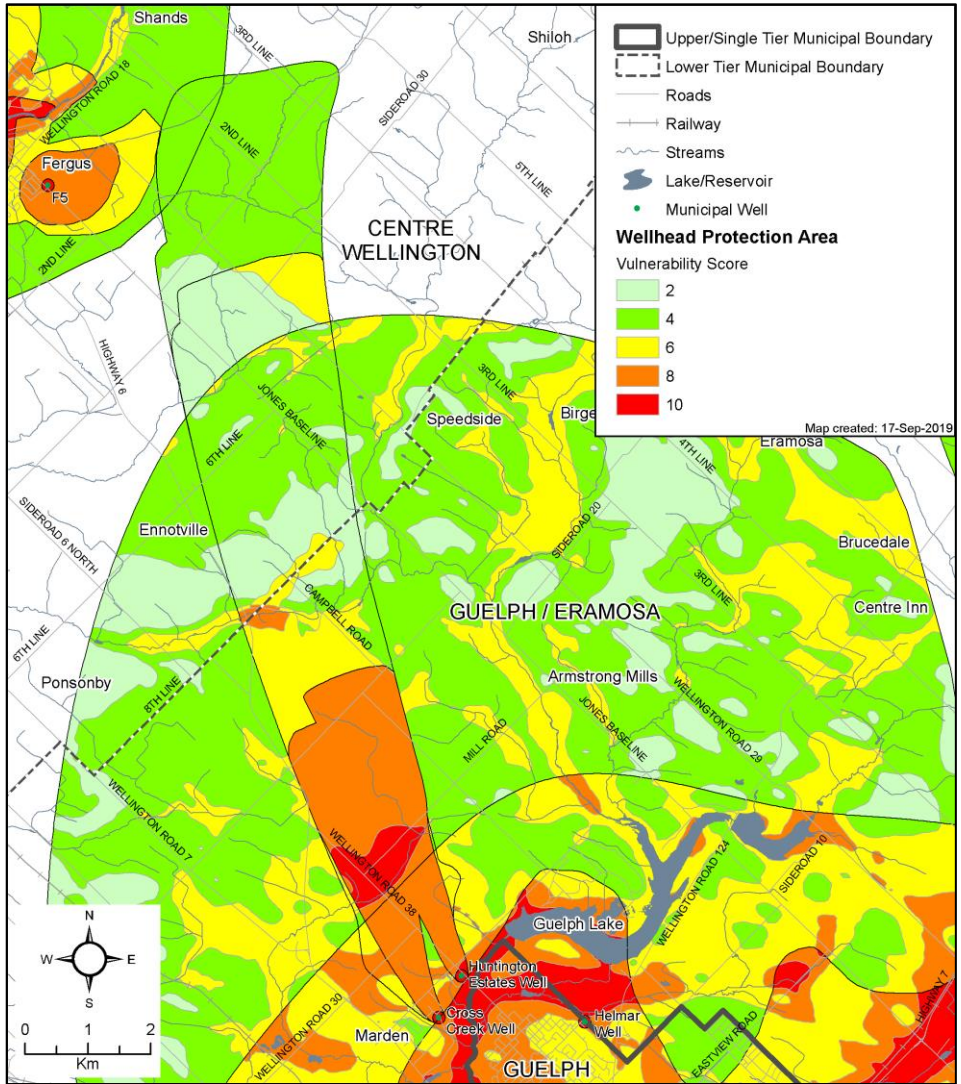


Map 6-48: Hamilton Drive Water Supply Transport Pathways

Map 6-46: Hamilton Drive Water Supply Transport Pathways Area of Influence



Map 6-47: Hamilton Drive Water Supply Wellhead Protection Area Final Vulnerability



Managed Lands within the Rockwood and Hamilton Drive Water Supply Systems

Managed Lands are lands to which nutrients are applied. Managed lands can be categorized into two groups: agricultural managed land and non-agricultural managed land. Agricultural managed land includes areas of cropland, fallow, and improved pasture that may receive nutrients. Non-agricultural managed land includes golf courses, sports fields, lawns and other built-up grassed areas that may receive nutrients (primarily commercial fertilizer). [Detailed methods on managed lands calculations are described in Chapter 3 of this Assessment Report.](#)

[Based on Technical Rule 16 \(9\), the percentage of managed lands were only calculated where the vulnerability score in each WHPA was greater than 4.](#)

[Managed lands calculations for Rockwood and Hamilton Drive were completed in WHPA-A to WHPA-D where the vulnerability was 6 or higher. Table 6-37 provides the results of the calculations and Map 6-48 and Map 6-49 illustrate the results.](#)

[Determining the location and percentage of managed lands, the location of agricultural managed lands, and the calculation of livestock density were used to determine whether the application of agricultural source material \(ASM\), non-agricultural source material \(NASM\), and fertilizer were significant threats within the Wellhead Protection Areas.](#)

[To calculate percentage of managed lands, Technical Rule 16\(9\) was used \(MOE, 2009b\). Similar to the calculation of impervious surfaces, mapping the percentage of managed lands area is not required where the vulnerability score for an area is less than the vulnerability score necessary for the activity to be considered a significant threat. Based on this statement in the Technical Rules, the percentage of managed lands were only calculated where the vulnerability score in each Wellhead Protection Area was greater than four.](#)

Managed lands and livestock density calculations for the Rockwood and Hamilton Drive Wellhead Protection Areas were completed in WHPA-A, WHPA-B, WHPA-C and parts of WHPA-D where the vulnerability was 6 or higher. Table 6-37: Managed Lands Percentage in the Rockwood and Hamilton Drive Wellhead Protection Areas

Township	Location	Well	WHPA-A	WHPA-B	WHPA-C	WHPA-D
Guelph/ Eramosa	Rockwood	Well 1&2	48.39% 7.71% ¹	67.64% 56.90%	72.90% (west); 3.55% (centre); 55.76% 32.64% (east);	44.24% (west); 0% (centre); N/A (east)
		TW3/02zWe ll 3	71.98% 6.03% ⁶	69.82% 58.20%	55.76% 36.89%	N/A 36.23% 5.99%
		TW2/02Well 4	38.05% 25.54%	69.82% 60.84%	55.76% 92.69%	N/A
	Hamilton Drive	Cross Creek	75.18% 79%	57.74% 68.26% 75.58%	75.80% 84.22% 62.07%	22.25% 22.25% 49.02% (west); N/A 73.04% (north); N/A (east)
		Huntington	77.46% 47%			

A coding of N/A indicates that the vulnerability score in this area is 4 or less.

Livestock Density within the Rockwood and Hamilton Drive Water Supply Systems

The calculation of livestock density is required to determine the amount of Nutrient Units (NU) generated in each vulnerable Wellhead Protection Area scenario. This calculation is only completed when there are building structures that could house livestock on a farm parcel that intersects a vulnerable Wellhead Protection Area. Detailed methods on livestock density calculations are described in Chapter 3 of this Assessment Report. This means that for each farm parcel that has a portion of their land in the Wellhead Protection Area and also has a livestock barn on their property (regardless of whether the barn is in the Wellhead Protection Area), the livestock density in Nutrient Units per acre (NU/ac) would be calculated. The Nutrient Units generated by each farm parcel is area-weighted to determine the proportion applied in each Wellhead Protection Area. The total amount of Nutrient Units applied in each Wellhead Protection Area is divided by the amount of agricultural managed land in that same Wellhead Protection Area to determine the livestock density. The agricultural managed lands in each Wellhead Protection Area scenario was calculated as per Part II, Technical Rule 16(10) (MOE, 2009b), and as previously described. Each parcel of land that intersects each Wellhead Protection Area needs to be assessed for the presence of a livestock barn. The nutrients that are generated by the livestock are assumed to be applied only onto that farm parcel.

Barns on farm parcels with codes related to livestock were looked at more carefully to determine what type of livestock could be housed and in which structures. Air photo interpretation with some knowledge of key identifying features of housing structures and land use practices allowed some confidence in selecting the correct structure as a livestock housing structure.

Once a livestock housing barn was selected, the type of livestock that was assumed to be housed in the barn was estimated with help from the farm code description and air photo interpretation. A polygon was drawn to cover the footprint of the structure to represent the area of housing space for the livestock. The area of the barn was multiplied by the conversion factor for that livestock type, relating the area of the barn (in square metres) per Nutrient Unit, as supplied by OMAFRA in the Technical Memorandum issued by GRCA for Lake Erie Region Technical Studies (September 23, 2009) (GRCA, 2009a). This amount of nutrients is assumed to be applied to all the AML area on that farm unit evenly.

To verify the air photo interpretation, drive-by site visits were done to capture a photograph of the barn from the road side.

Once all the livestock barns were found and the NUs calculated, the total NU applied to only the area within the Wellhead Protection Area is needed. Using area weighting, the livestock density (in NU/acre) of each farm parcel was applied to only the area within the Wellhead Protection Area and summed with all the other NU calculations on farm parcels in the Wellhead Protection Area.

The total NU generated by all the barns is divided by the total AML in the Wellhead Protection Area, as calculated in the Managed Lands Methodology, regardless of the type of farm (livestock or non-livestock). The livestock density in the Wellhead Protection Area is thus the sum of all NU applied within the Wellhead Protection Area divided by the total AML area (in acres).

The results of the calculations for livestock densities are provided in **Table 6-38 and Map 6-50 and Map 6-51**, for the Rockwood and Hamilton Drive Wellhead Protection Areas.

Table 6-38: Livestock Density (NU/acre) in the Rockwood and Hamilton Drive Wellhead Protection Areas						
Township	Location	Well	WHPA-A	WHPA-B	WHPA-C	WHPA-D

Guelph/ Eramosa	Rockwood	Well 1&2	0.00	0.94	0.57 (west); 2.81 (centre); 0.01 (east)0.48	0.014 (west); 0.00 (centre); N/A (east)0.16
		TW3/02Well 3	0.57	1.06	0.48	N/A
		TW2/02Well 4	0.00	1.06	0.29	N/A
	Hamilton Drive	Cross Creek	0.00	0.73	0.74	5.82 (west); N/A
		Huntington	0.00	1.16	1.45	0.01 (north); N/A (east)0.08 0.08

A coding of 0 in Table 6-38 indicates that there were no agricultural livestock barns to contribute nutrients and therefore the value for livestock density is 0. A coding of N/A indicates that the vulnerability score in this area is 4 or less.

Percent Impervious Surface Area in Wellhead Protection Areas

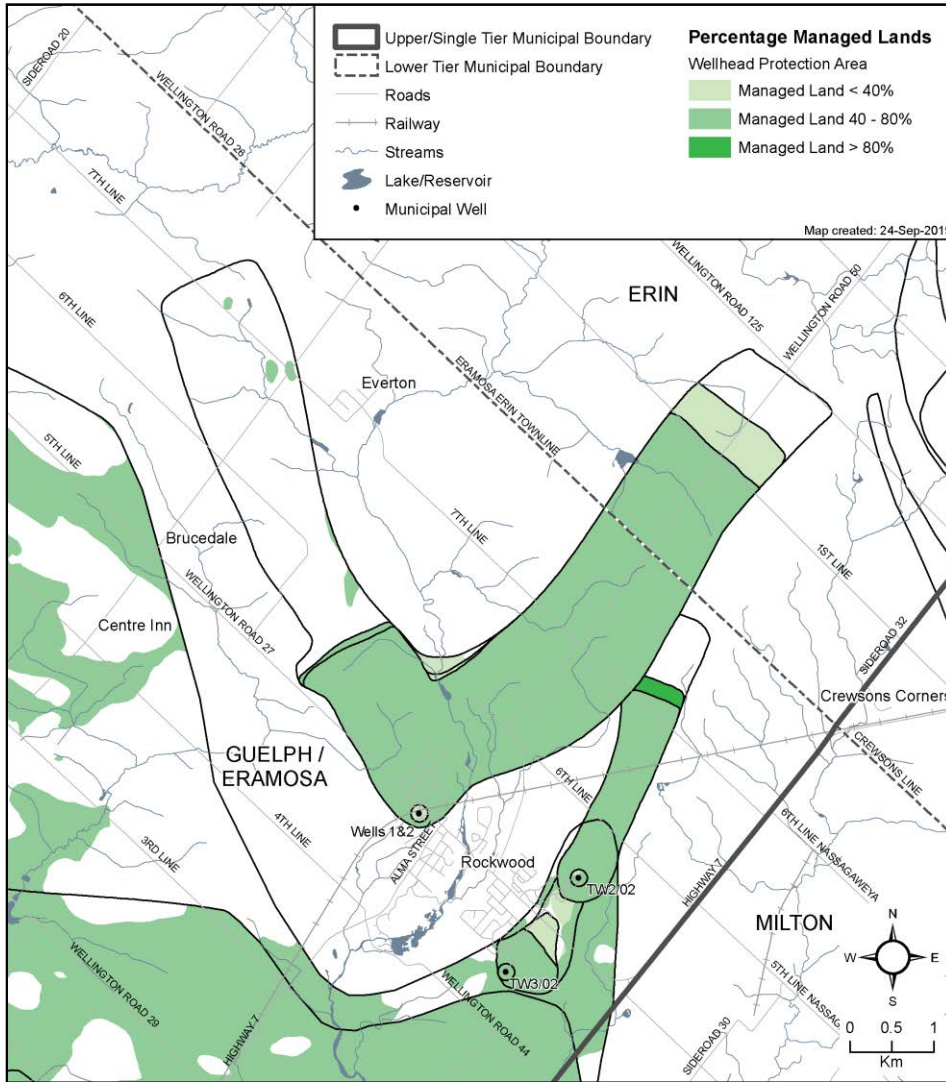
To determine whether the application of road salt poses a threat in the Township of Guelph-Eramosa, the percentage of impervious surface where road salt can be applied per square kilometre was calculated as per Technical Rules 16(11) and 17. The 1km X 1km method described in Chapter 3 was used for Rockwood and Hamilton Drive wellfields. The application of road salt can only be a threat in areas with a vulnerability score of 6 or greater under the threats-based approach; therefore the percent impervious calculation was only completed in areas with a score of 6 or greater.

~~The areas were calculated using road mapping from the National Road Network (Natural Resources Canada) and satellite air photography to identify large parking lots and paved areas. Using a 1 km x 1 km grid centered over each vulnerable area, the percentage of impermeable surfaces within each square kilometre was calculated. The Technical Rules require that the grid is centred on the centroid of the source protection area. As per Technical Rule 15.1, the Director has provided confirmation that he agrees to the departure. The Director's letter of confirmation can be found in Appendix B. The percentage of impervious surfaces is an indicator for the potential for impacts due to road salting. In areas with high levels of impervious surfaces (roads) there is an increased likelihood that road salts will impact water quality.~~

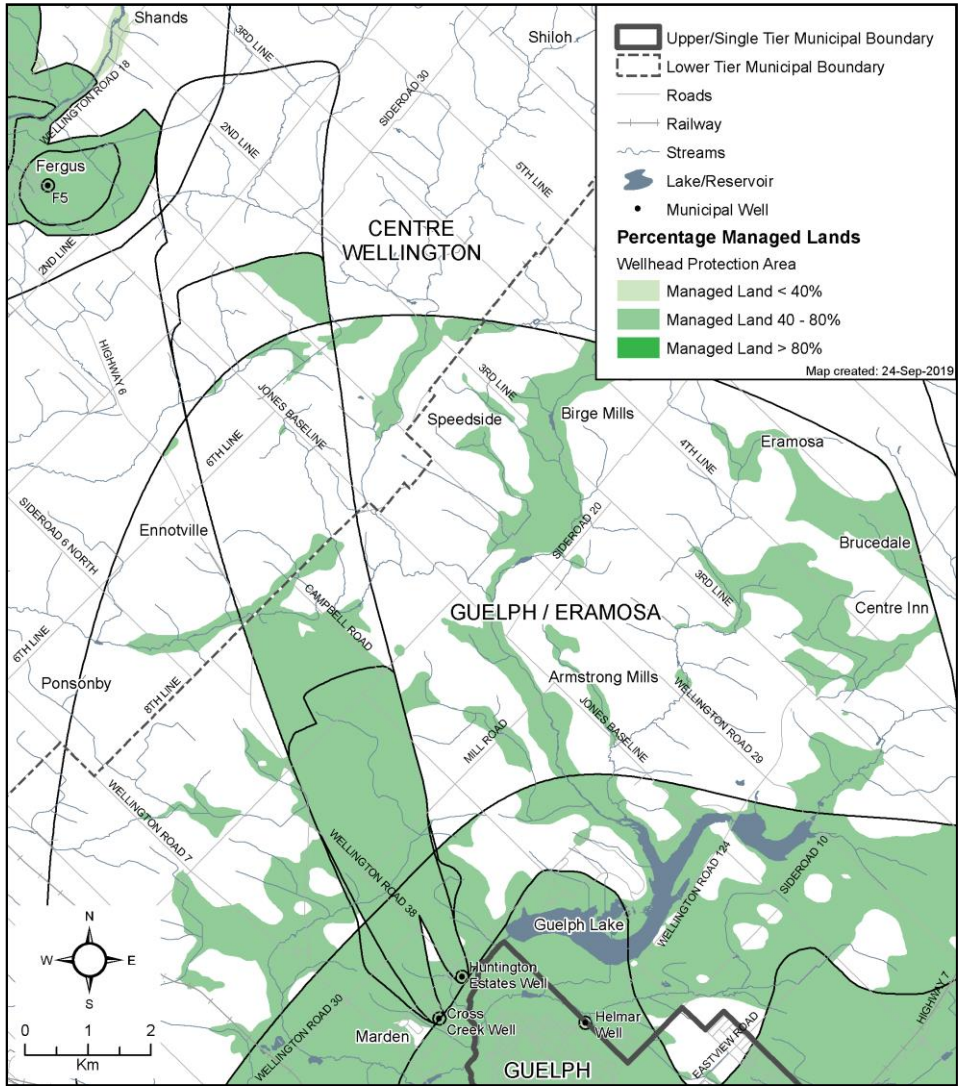
The application of road salt can only be a threat in areas with a vulnerability score of 6 or greater; therefore the percent impervious calculation was only completed in areas with a score of 6 or greater.

The impervious surface percentages were calculated in each ~~Wellhead Protection Area~~ WHPA for the Township of Guleph/Eramosa. The results indicate a low to moderate percentage of impervious surfaces for both Rockwood ~~(0% and 8.2%)~~ and Hamilton Drive ~~(0% and 6.2%)~~ as shown in **Map 6-52 and Map 6-53**. With the current thresholds in the ~~MECP's~~ ~~OE's~~ Tables of Drinking Water Threats the application of road salt is not a significant threat.

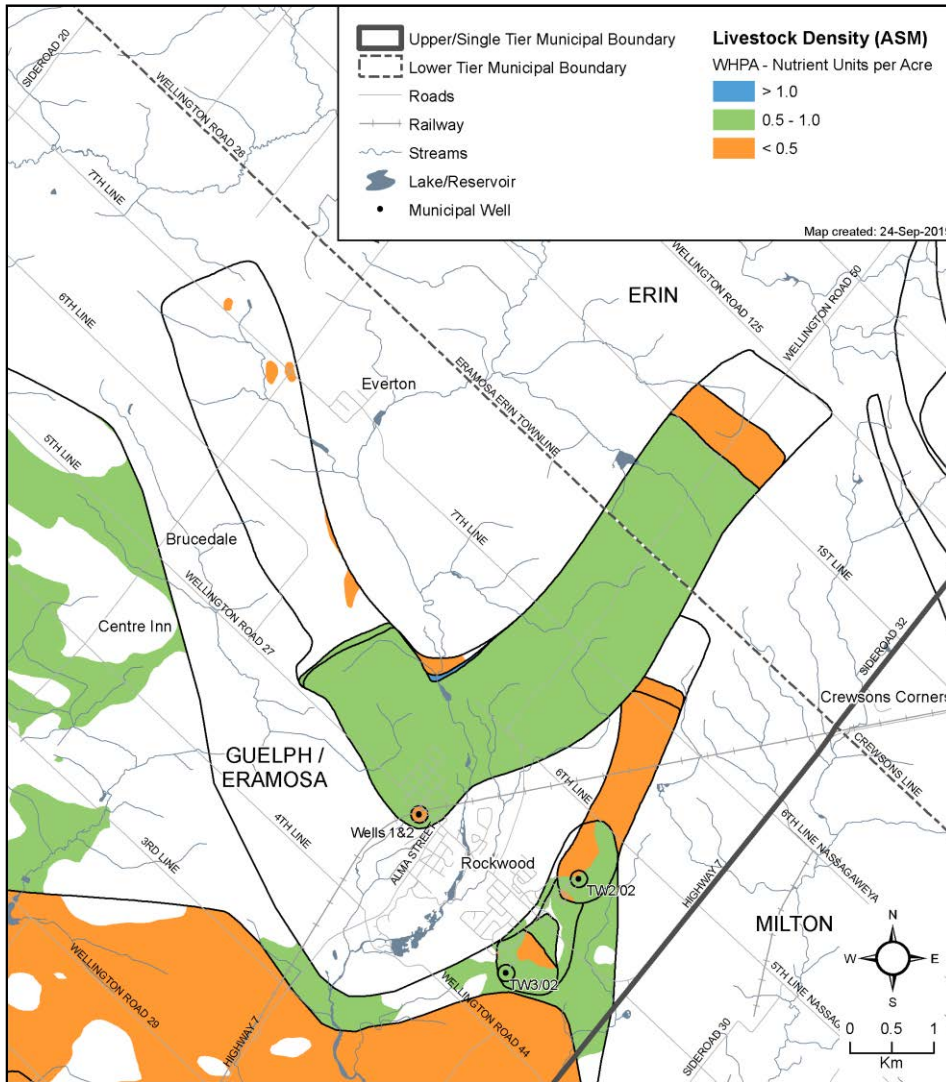
Map 6-48: Rockwood Water Supply Percent Managed Lands



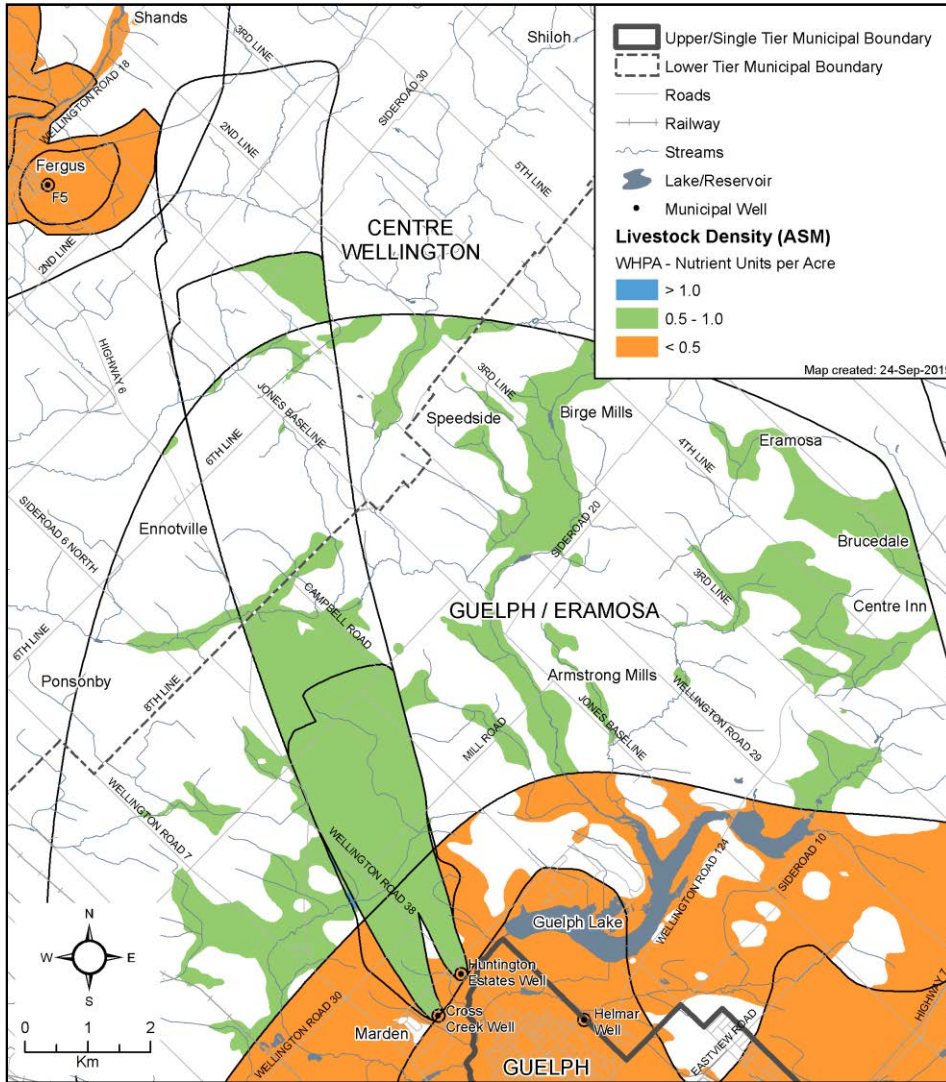
Map 6-49: Hamilton Drive Water Supply Percent Managed Lands



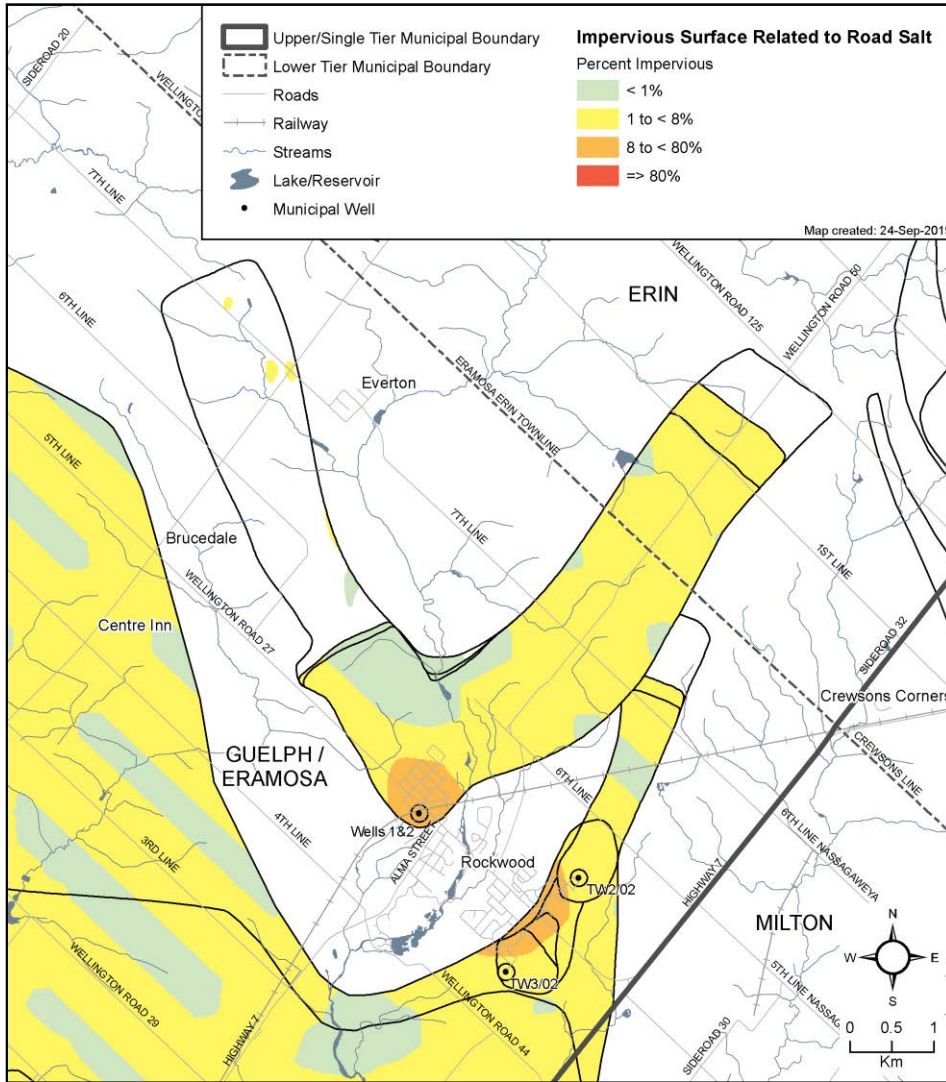
Map 6-50: Rockwood Water Supply Livestock Density



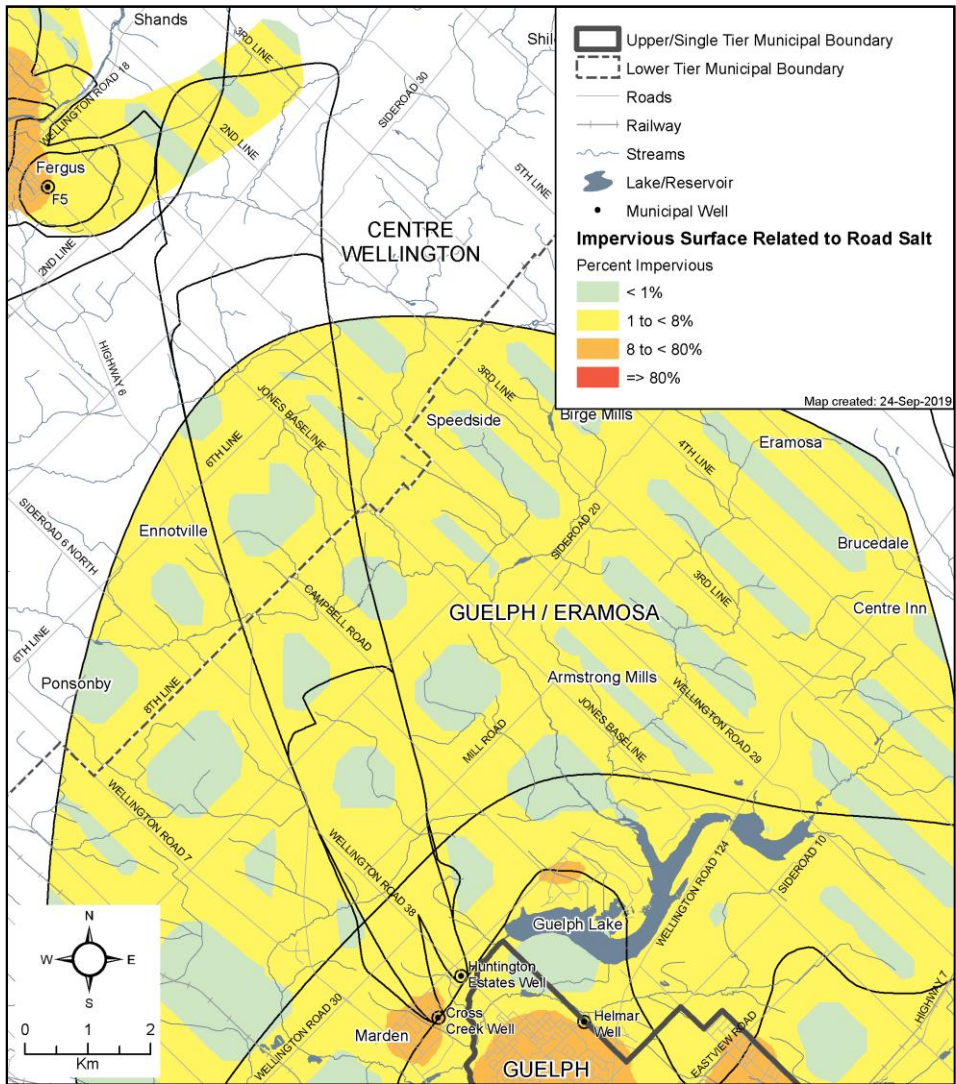
Map 6-51: Hamilton Drive Water Supply Livestock Density



Map 6-52: Rockwood Percent of Impervious Surfaces



Map 6-53: Hamilton Drive Percent of Impervious Surfaces



6.4.4 Drinking Water Threats Assessment

The Ontario Clean Water Act, 2006, defines a Drinking Water Threat as “an activity or condition that adversely affects or has the potential to adversely affect the quality or quantity of any water that is or may be used as a source of drinking water, and includes an activity or condition that is prescribed by the regulation as a drinking water threat.” A Prescribed Drinking Water Threats table in Chapter 3 [of this Assessment Report](#) lists all possible drinking water threats.

Identification of Significant, Moderate and Low Drinking Water Quality Threats for the Rockwood and Hamilton Drive Water Supply Systems

The identification of a land use activity as a significant, moderate, or low drinking water threat depends on its risk score, determined by considering the circumstances of the activity and the type and vulnerability score of any underlying protection zones, as set out in the Tables of Drinking Water Threats available through www.sourcewater.ca. Information on drinking water threats is also accessible through the Source Water Protection Threats Tool: <http://swpip.ca>. ~~For local threats, the risk score is calculated as per the Director's Approval Letter, as shown in Appendix C.~~ The information above can be used with the vulnerability scores shown in **Map 6-43 and Map 6-47** to help the public determine where certain activities are or would be significant, moderate and low drinking water threats.

Table 6-39 provides a summary of the threat levels possible in the Rockwood and Hamilton Drive Well Supplies for Chemical, Dense Non-Aqueous Phase Liquid (DNAPL), and Pathogens. A checkmark indicates that the threat classification level is possible for the indicated threat type under the corresponding vulnerable area / vulnerable score; a blank cell indicates that it is not. The colours shown for each vulnerability score correspond to those shown in the maps.

Threat Type	Vulnerable Area	Vulnerability Score	Threat Classification Level		
			Significant 80+	Moderate 60 to <80	Low >40 to <60
Chemicals	WHPA-A/B	10	✓	✓	✓
	WHPA-B/C	8	✓	✓	✓
	WHPA-C/D	6		✓	✓
	WHPA-D	2 & 4			
Handling / Storage of DNAPLs	WHPA-A/B/C	Any Score	✓		
	WHPA-D	6		✓	✓
	WHPA-D	2 & 4			
Pathogens	WHPA-A/B	10	✓	✓	
	WHPA-B	8		✓	✓
	WHPA-C/D	Any Score			

6.4.5 Conditions Evaluation

~~Conditions are contamination that already exist and are a result of past activities that could affect the quality of drinking water. To identify a Condition, Part XI.3, Rule 126 of the Technical Rules (MOECC, 2017), lists criteria for drinking water sources, which is outlined in Chapter 3 of this Assessment Report. Conditions are contamination that already exist and are a result of past activities that could affect the quality of drinking water. To identify a Condition, Part XI.3, Rule 126~~

of the CWA Technical Rules (MOE, 2009b), lists the following two criteria for groundwater sources:

- The presence of a non-aqueous phase liquid in groundwater in a highly vulnerable aquifer, significant groundwater recharge area or wellhead protection area.
- The presence of a contaminant in groundwater in a highly vulnerable area, significant groundwater recharge area or a wellhead protection area, if the contaminant is listed in Table 2 of the Soil, Groundwater and Sediment Standards and is present at a concentration that exceeds the potable groundwater standard set out for the contaminant in that Table.

The above listed criteria were used to evaluate potentially contaminated sites within the Rockwood and Hamilton Drive WHPAs to determine if such a Condition was present at a given site.

The criteria were used to evaluate potentially contaminated sites within the Rockwood and Hamilton Drive WHPAs to determine if such a Condition was present at a given site.

Conditions Evaluation for the Rockwood and Hamilton Drive Water Supply Systems

A review of available data regarding potential contamination within the Wellhead Protection Areas was completed. Data available included databases from the Ecolog ERIS results such as Record of Site Condition, MECP Spills Database and Occurrence Reporting Information System.

Table 6-40 provides a summary of potential conditions identified through the Ecolog ERIS search. This search of available databases does not provide evidence of a condition such as water quality results or monitoring report results.

Source Database	Description	Vulnerable Area Location	Details
ORIS	Heating oil spill	Rockwood 1/2 WHPA-B	275 L spill to ground in 2002, possible impact
ORIS	Furnace oil spill	Rockwood 1/2 WHPA-B	Unknown amount spilled to municipal sewer, 1997
ORIS	Furnace oil spill	Rockwood 1/2 WHPA-B	160L spill to ground, impact confirmed, 1992
WDSH/ANDR	Old village dump	100 m outside Rockwood 1/2 WHPA-B	Landfill closed 1964, classified as no potential environmental and health impacts.
ORIS	PCP/oil mixture spill	Cross Creek WHPA-D	68L spill to ground in 1996, impact confirmed, cleaned up.

In addition to the condition site assessment presented above and in the Approved Grand River Assessment Report (August 2012), additional information ~~was been~~ obtained from municipal files and some responsible parties pertaining to condition sites within the Township of Guelph / Eramosa. This information was reviewed in 2015 and two (2) sites were identified as condition sites but not as significant drinking water threat condition sites. In 2019, these sites were reviewed

~~and based on changes to the Director's Technical Rules, the two (2) sites are no longer condition sites. As a result, the available documents, reports and data pertaining to an additional, two (2) potential condition sites were reviewed to determine whether any of the sites met the technical rules as a condition or significant drinking water threat condition site.~~

~~Based on the documentation available at this time in 2019, the additional, two (2) sites within Rockwood 1 / 2, WHPA A are not considered condition sites under Technical Rule 126, however, there is not sufficient evidence to identify the sites as significant drinking water threat condition sites under technical rule 140.~~

~~Based on available data there were two Conditions identified under Rule 126 in the Rockwood or Hamilton Drive Wellhead Protection Areas, however, no Significant Drinking Water Threat Conditions sites were identified under technical Rule 140.~~

6.4.6 Drinking Water Quality Issues Evaluation

The objective of the Issues evaluation is to identify drinking water Issues where the existing or trending concentration of a parameter or pathogen at an intake, well or monitoring ~~well~~-location would result in the deterioration of the quality of water for use as a source of drinking water. The parameter or pathogen must be listed in Schedule 1, 2 or 3 of the Ontario Drinking Water Quality Standards (ODWQS) or Table 4 of the Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines (Technical Rules XI.1 (114 – 117)). Elevated concentrations of selected parameters that are naturally occurring or where effective treatment is in place are not considered drinking water Issues.

Once a drinking water Issue is identified, the objective is to identify all sources and threats that may contribute to the Issue within an Issue Contributing Area and manage these threats appropriately. If at this time the Issue Contributing Area can not be identified or the Issue can not be linked to threats then a work plan must be provided to assess the possible link.

If an Issue is identified for an intake, well or monitoring ~~location~~well, then all threats related to a particular Issue within the Issue Contributing Areas are as significant drinking water threats, regardless of the vulnerability.

Methodology for the Drinking Water Quality Issues Evaluation

A review of the available water quality data to assess whether any contaminants are impacting or have the potential to impact or interfere with the Township of Guelph-Eramosa drinking water sources was completed. ~~(Burnside, 2010).~~ This included the following steps:

- Collection of water quality data
- Comparison of water quality data to the ODWQS to see if any parameters were in exceedance
- Concentrations of parameters of consideration over time were plotted to evaluate if there were any increasing trends.

Drinking Water Issues Evaluation for the Rockwood Water Supply System

Historical water quality data for the Rockwood wells indicate that the water is traditionally very hard and hardness often exceeds the ODWQS standards ([Rockwood Annual Drinking Water Report 2008 to 2018](#) ~~Burnside, 2002b~~). A hardness concentration of ~~48065~~ 48065 mg/L was recorded for Well 1 and 2 in 20~~1892~~1892. This is above the Operational Guideline of the ODWQS range of 80-100

mg/L (~~Burnside, 2002b~~). This level is typical of drinking water obtained from a dolostone bedrock source and is not considered a condition that threatens the groundwater as a safe drinking water source.

~~MOE Annual Reports~~ Water quality data for 2003 and 2005 to 2008 up to August 2019 were reviewed. Sampling is completed at the supply systems weekly for microbiological parameters and once every 36 months for chemical parameters. Since 2018, sampling for sodium and chloride has been completed monthly at Station Street Wells 1 and 2. One exceedance of total coliforms (2 cfu/100 mL) was reported in June 2015. All parameters analyzed met the ODWQS except for fluoride at Rockwood Well TW3/02.

The criteria were used to evaluate potentially contaminated sites within the Elora and Fergus WHPAs to determine if such a Condition was present at a given site.

In 2005, and exceedance of fluoride concentrations at Rockwood Well 3 was noted of 1.65 mg/L (MAC of 1.5 mg/L), in 2005 and 1.7 mg/L in 2009 are recorded for Rockwood Well TW3/02. No further exceedances for fluoride have been recorded since 2005. Both concentrations exceed the Maximum Allowable Concentration (MAC) Ontario Drinking Water Standard (ODWS) of 1.5 mg/L. Adverse effects of fluoride between 1.5 mg/L and 2.4 mg/L are considered to be only cosmetic in nature (dental mottling in a small portion of the population). The M~~EC~~~~P~~~~O~~~~E~~ recommends that public awareness concerning other fluoride sources is raised when naturally occurring fluoride levels are between 1.5 mg/L and 2.4 mg/L. Since fluoride is naturally occurring and a non-health related parameter it is not considered an Issue under Technical Rule 114.

Elevated sodium concentrations have been recorded in Rockwood Wells 1 and 2 with levels ranging from 62.5 to 97 mg/L reaching 180 mg/L in 2018 (Figure 2). The Ontario Drinking Water Standards MAC for sodium is 200 mg/L, however the local Medical Officer of Health should be notified when sodium concentrations exceed 20 mg/L. There has been a ~~a~~ slightly sharp increasing trend ~~at~~ for Rockwood Wells 1 and 2 during 2018 and 2019; however, this trend is based on only a few data points ranging over several years and recent sampling (2010) shows a decrease in concentration. The concentrations have yet to reach the MAC/2 (100 mg/L), which triggers increased sampling frequency under the Safe Drinking Water Act for municipal water systems. Sodium concentrations at Rockwood Well 3 have been increasing slightly from 3 mg/L in 2005 to 17 mg/L in 2019. Sodium concentrations at Rockwood Well 3 are below the Indicator of Adverse Quality (20 mg/L). In February 2018, chloride concentrations at Rockwood Wells 1 and 2 are at the Maximum Acceptable Concentration of 250 mg/L with five exceedances in 2019 (Figure 3). Chloride concentrations range from 180 to 260 mg/L (2018 and 2019) at Rockwood Wells 1 and 2.

Sodium concentrations at Rockwood Well 3 have been increasing slightly from 3 mg/L in 2005 to 17 mg/L in 2019. Sodium concentrations at Rockwood Well 3 are below the Indicator of Adverse Quality (20 mg/L). Chloride concentrations show a stable trend in Rockwood Well 3 with concentrations ranging from 33 to 37 mg/L (2018 and 2019).

Elevated sodium and chloride concentrations at Rockwood Wells 1 and 2 may be an indication of impacts from the application of road salt, however, have not been and may be higher during the winter and spring months when runoff from roads is recharging the aquifer. The higher values in 2009 are from samples collected in February and March while the lower values in 2002 and 2003 were from samples collected in May and August. Therefore, the difference in values may be a result of seasonal variations of sodium concentrations within the aquifer. More frequent sampling would be required to confirm if a trend exists. An increase in sampling frequency during 2018 and

2019 did not show a seasonal trend, but rather a sharp increasing trend. The municipality is further assessing the potential sources, trends, timing and fate / transport mechanisms for sodium and chloride at the Station Street Wells 1 and 2.

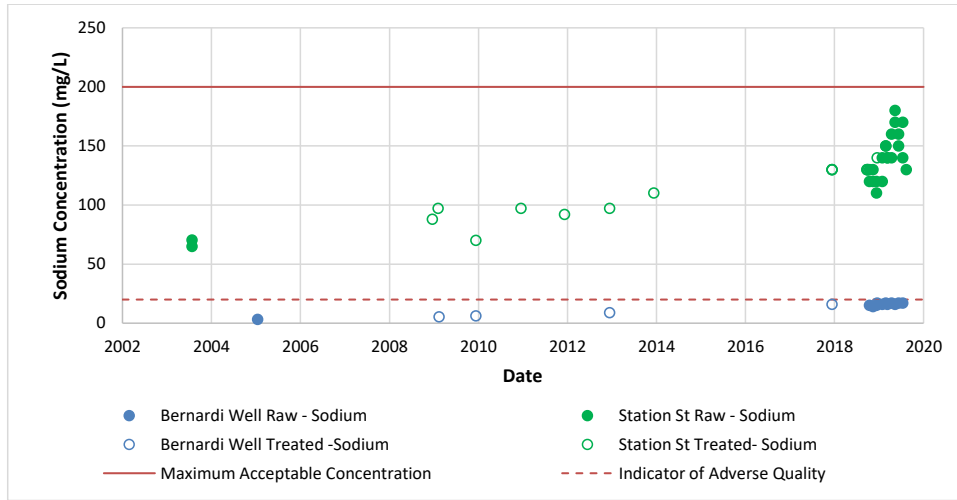


Figure 2: Sodium Concentrations at Rockwood Wells (Bernardi (3) and Station St. (1 and 2))

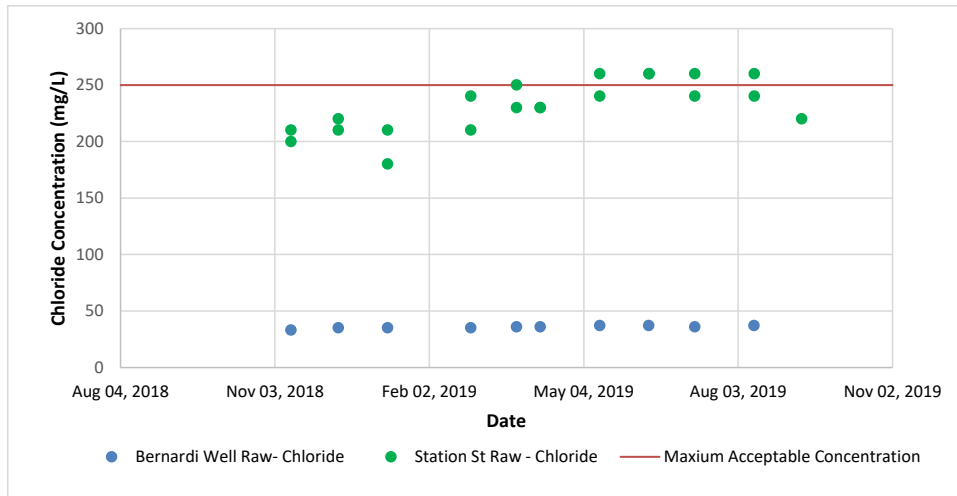


Figure 3: Chloride Concentrations at Rockwood Wells (Bernardi (3) and Station St. (1 and 2))

A Microbial Contamination Control Plan for Wells 1 and 2 was prepared in September 2008 to comply with the Certificate of Approval 3052-5RBP8E. As part of this report, particle counting was completed at the well. The results from the report indicate there are no microbial water quality issues for the Rockwood Water Supply (Burnside, 2008).

Summary of Water Quality Issues Evaluation for the Rockwood Water Supply System

It is recommended that the sodium and chloride concentrations at Station Street Wells 1 and 2 be described a drinking water issue per Technical Rule 115.1 under Section 15(2) (f) of the Clean Water Act, 2006. Under this Technical Rule, an Issues Contributing Areas is not delineated and therefore there can be no significant threat activities identified associated with this issue. The only applicable policies would relate to the monitoring of the sodium and chloride issue. Since in-depth sampling has only been ongoing since 2018 and since it is unclear whether the source is naturally occurring, this issue approach allows the Township time to complete further sampling and study into the trends, timing and fate / transport mechanisms for sodium and chloride at the Station Street Wells 1 and 2.

Sodium is identified as a parameter of concern due to higher concentrations at Rockwood Wells 1 and 2, but there is not enough data, nor is there an obvious increasing trend, to identify. Sodium has not been identified as an Issue under Technical Rule 114.

There are currently no Issues concerning drinking water quality ~~for and requiring an Issues Contributing Area for~~ the Rockwood Water Supply.

Drinking Water Issues Evaluation for the Hamilton Drive Water Supply System

Historical water quality analysis results of raw water samples from the Cross Creek Well and Huntington Well indicate exceedences of the ODWQS for hardness in both wells with values ~~ranging from 275 to 294 of 300 mg/L in 2019. (Burnside, 2004b).~~ This level is typical of drinking water obtained from a dolostone bedrock source and is not considered an Issue that threatens the groundwater as a safe drinking water source.

~~MOE Annual Reports for 2005-2008~~ Water quality data for up to 2019 were reviewed ~~with no exceedences identified.~~ Microbiological data reported exceedences in August 2015, June 2017, July 2017, and October 2017 of from 2002 to 2009 showed no concerns with total coliforms. One exceedance of *E. coli* was reported for July 2017.

Fluoride concentrations range from 0.14 to 0.16 mg/L at the Hamilton Drive Wells. A review of fluoride concentrations to 2019 reported no exceedences of the Maximum Allowable Concentration (MAC) Ontario Drinking Water Standard (ODWS) of 1.5 mg/L.

Sodium concentrations range from 9.8 to 29 mg/L at the Hamilton Drive Wells. A review of sodium concentrations at the Huntington Well reported exceedences of the Indicator of Adverse Quality of 20 mg/L; however the Aesthetic Objective of 200 mg/L was not exceeded. There were no exceedences of sodium at the Cross Creek Well. Chloride concentrations range from 9.2 to 47 mg/L at the Hamilton Drive Wells. The chloride concentrations at Hamilton Drive are below the MAC ODWS for chloride of 250 mg/L.

Summary of Drinking Water Issues Evaluation for the Hamilton Drive Water Supply System

There are currently no Issues concerning drinking water quality for the Hamilton Drive Water Supply.

Limitations and Uncertainty for the Drinking Water Issues Evaluation

The water quality data reviewed covered a period from 2001 to ~~2009~~2019; however sampling frequency did not increase until 2018. This is a limited time span with frequent sampling making it difficult to identify/confirm trends, especially when not all parameters were sampled during each year. It is also noted that there is no monitoring well water quality data available. Monitoring wells are only monitored for water levels as part of the PTTW requirements.

6.4.7 Enumeration of Significant Drinking Water Quality Threats

The Technical Rules (MOECC, ~~2009~~2017) require an estimation of the number of locations at which an Activity is a significant drinking water threat and the number of locations at which a Condition resulting from past activity is a significant drinking water threat.

6.4.7.1 Initial Enumeration of Significant Drinking Water Threats

For the initial enumeration in the 2012 Assessment Report, numerous data sources were used to identify threats on properties within the Wellhead Protection Areas.

Data Sources for the Enumeration of Significant Drinking Water Quality Threats

EcoLog Environmental Risk Information Services Ltd. (EcoLog ERIS) is a national database service, which provides specific environmental and real estate information for locations across Canada. A review of all available provincial, federal and private environmental databases was requested for the areas within a radius around the wells that included the outer edge of the WHPA. As a result, the search included data to the west of the WHPAs. The search included the following databases:

Federal Government Source Databases

- National PCB Inventory 1988 – June 2004
- National Pollutant Release Inventory 1994 – 2004
- Environmental Issues Inventory System 1992 – 2001
- Federal Convictions 1988 – January 2002
- Contaminated Sites on Federal Land June 2000 – 2005
- Environmental Effects Monitoring 1992 – 2004
- Fisheries & Oceans Fuel Tanks 1964 – September 2003
- Indian & Northern Affairs Fuel Tanks 1950 – August 2003
- National Analysis of Trends in Emergencies System (NATES) 1974 – 1994
- National Defense & Canadian Forces Fuel Tanks Up to May 2001
- National Defense & Canadian Forces Spills March 1999 – February 2005
- National Defense & Canadian Forces Waste Disposal Sites 2001,2003
- National Environmental Emergencies System (NEES) 1974 – 2003
- Parks Canada Fuel Storage Tanks 1920 – January 2005
- Transport Canada Fuel Storage Tanks 1970 – May 2003.

Provincial Government Source Databases

- Certificates of Approval 1985 – September 2002
- Ontario Regulation 347 Waste Generators Summary 1986 – 2004
- Ontario Regulation 347 Waste Receivers Summary 1986 – 2004
- Private Fuel Storage Tanks 1989 – 1996

- Ontario Inventory of PCB Storage Sites 1987 – April 2003
- Compliance and Convictions 1989 – 2002
- Waste Disposal Sites – MOE CA Inventory 1970 – September 2002
- Waste Disposal Sites – MOE 1991 Historical Approval Inventory Up to October 1990
- Occurrence Reporting Information System (ORIS) 1988 – 2002
- Pesticide Register 1988 – August 2003
- Wastewater Discharger Registration Database 1990 – 1998
- Coal Gasification Plants 1987, 1988
- Non-Compliance Reports 1992(water only), 1994 – 2003
- Ministry Orders 1995 – 1996
- Aggregate Inventory Up to May 2005
- Abandoned Aggregate Inventory Up to September 2002
- Abandoned Mines Inventory System 1800 – 2005
- Record of Site Condition 1997 – September 2001
- Ontario Oil and Gas Wells (1999 – Oct 2004; 1800 – May 2004 available for 14 select counties)
- Drill Holes 1886 – 2005
- Mineral Occurrences 1846 – October 2004
- Environmental Registry 1994 – July 2003

Private Sources Databases

- Retail Fuel Storage Tanks 1989 – June 2005
- Canadian Pulp and Paper 1999, 2002, 2004, 2005
- Andersen's Waste Disposal Sites 1930 – 2004
- Scott's Manufacturing Directory 1992 – 2005
- Chemical Register 1992, 1999 – June 2005
- Canadian Mine Locations 1998 – 2005
- Oil and Gas Wells October 2001 – 2005
- Automobile Wrecking & Supplies 2001 – June 2005
- Anderson's Storage Tanks 1915 – 1953
- ERIS Historical Searches, March 1999 – 2005.

The database search identified numerous items within the search radius around the various Wellhead Protection Areas, which were later confirmed through field site reconnaissance. All potential contaminant sources identified have been mapped and compiled into the project database.

Historical and current aerial photographs were reviewed to identify land use changes and potential high-risk activities such as waste disposal sites within the Wellhead Protection Areas. While the resolution of the photographs limits the detail that can be observed of the surface conditions, the following is a summary of what can be discerned:

- **1978 Aerial Photography:** Within Rockwood Well 1 and 2 Wellhead Protection Area, the southern portion is dominated by the Eramosa River and its associated forested buffer area. Residential development is visible to the north of the wells along three streets directly adjacent to Main Street North. The northern part of the WHPA contains agricultural land uses with some rural residences. Agricultural land uses are prominent within the Wellhead Protection Areas of Rockwood Wells 3 and 4. Some residential and commercial buildings exist along Main Street South (Highway 7) within the Village of Rockwood. A small active

gravel pit/quarry located between the two Wellhead Protection Areas, north of the Village and east of Eramosa was noted. Several surface water features at the pit are visible in the photograph. No waste disposal sites or potential brownfield sites were identified. Within the Cross Creek and Huntington Wellhead Protection Areas, land is generally agricultural and wetlands. The subdivisions of Cross Creek and Huntington are not present in the photograph.

- 2000 Aerial Photography:** The photographs from 2000 revealed that land use within the Rockwood Wellhead Protection Areas has remained relatively unchanged with the Eramosa River and its associated forested buffer dominating the western portion of the areas and agricultural land uses dominating the eastern portions of the area. Some development has occurred south of Main Street South (Highway 7), in the vicinity of Well TW3/02, and north of Main Street North, in the vicinity of Wells 1 and 2. The pit/quarry noted in the 1978 photograph is visible although appears to be no longer in use. Surface water features visible in the 1978 aerial photography appear to remain generally unchanged in the 2000 photography. A junk and scrap yard was identified within WHPA-D at 6th Line and Sideroad 10. Within the Cross Creek and Huntington Wells Wellhead Protection Area, some development of houses and small subdivisions has taken place since the 1978 air photograph.

A drive-by roadside inspection of the Wellhead Protection Areas was completed on July 27, 2006 to verify and complement the dataset compiled during the records review portion of the assessment. The inspection consisted of a fence line/roadside documentation of the properties and their land uses included in the Wellhead Protection Area.

Within the Rockwood Well 1 and 2 Wellhead Protection Areas, one cemetery, a gravel pit and an automotive repair shop were identified. Land uses within Rockwood Well TW3/02 and Well TW2/02 Wellhead Protection Areas include residential lands, natural areas and agricultural lands. Rockwood Well TW3/02 is located on the edge of a developing subdivision in the Village of Rockwood. At the time of the site visit, construction of new houses within the subdivision was taking place. Agricultural fields are located south of the well. Several livestock farms were identified in the Wellhead Protection Areas.

Land uses within the Cross Creek and Huntington Wellhead Protection Areas include residential and agriculture. One cemetery was identified in the Cross Creek Wellhead Protection Area.

Land Use Activity Assumptions for the Purpose of Enumerating Significant Drinking Water Quality Threats

A standardized set of assumptions were made for each land use type and activity. The assumptions are summarized in **Table 6-41**.

Table 6-41: Land Use Activity Assumptions for the Purpose of Enumerating Significant Drinking Water Quality Threats in the Rockwood and Hamilton Drive Water Supply Systems	
Scenario	Assumption
Agricultural property with residence and outbuildings	<ul style="list-style-type: none"> Storage and handling of pesticides, fuel, commercial fertilizer, agricultural source material, septic system. Application of pesticide, commercial fertilizer, agricultural source material.

Table 6-41: Land Use Activity Assumptions for the Purpose of Enumerating Significant Drinking Water Quality Threats in the Rockwood and Hamilton Drive Water Supply Systems	
Scenario	Assumption
Agricultural property with residence and outbuilding – buildings not in WHPA	<ul style="list-style-type: none"> • Circumstances related to storage and handling or septic systems are not applied. Those related to application are applied.
Agricultural property without farm buildings and structures	<ul style="list-style-type: none"> • Circumstances related to storage and handling or septic systems are not applied. Those related to application are applied.
Residence with no gas line	<ul style="list-style-type: none"> • Oil furnace
Organic solvent	<ul style="list-style-type: none"> • Storage below grade in a quantity that would make it a significant threat
No sanitary sewer infrastructure	<ul style="list-style-type: none"> • Septic system
Presence of any chemical	<ul style="list-style-type: none"> • Storage is below grade
Multiple PINs associated with one Assessment Roll number	<ul style="list-style-type: none"> • One threat point assigned to the entire assessed property.
Where an assessment line transects a property, but has one PIN	<ul style="list-style-type: none"> • One threat point assigned to the entire property.
Lawn/turf	<ul style="list-style-type: none"> • Potential application of commercial fertilizer (ID dependent on the percent of managed land and the application of NU to the surrounding properties)
Municipal well sites	<ul style="list-style-type: none"> • Commercial fertilizer not applied unless the well is within a municipal park, in which case there is potential that fertilizer is applied.
All properties	<ul style="list-style-type: none"> • If buildings and structures are located outside the vulnerable area – circumstance IDs associated with storage and handling are not applied
Septic system	<ul style="list-style-type: none"> • In serviced villages where sanitary services are being phased in, but have not yet reached the mandatory connection date, it is assumed private septic systems are still present.
Sanitary sewers	<ul style="list-style-type: none"> • A sanitary sewer is a linear feature. For the purposes of enumeration of threats, where a sanitary sewer is present one threat point is assigned to represent the sanitary sewer in each WHPA.
Storm sewer piping	<ul style="list-style-type: none"> • Storm sewer piping is not considered to be part of a storm water management facility.

To complete the threats classification the data fields within the database were populated using the following methods and assumptions.

Land use activities were assigned based on the tables provided in the MOE Lookup Table Database v. 7.1.2 (WRIP, 2009). They were assigned a land use category and a land use activity name based on best fit with the actual land use activity.

Threats were assigned based on the land use activities and the threats listed for those activities in the ~~MOE-MECP~~ Lookup Tables. All threats were assumed to be present except in the following circumstances:

- Playing fields were assigned the land use activity name Spectator Sports. The threat application of commercial fertilizer was manually added.
- Cemeteries were assigned the land use of Religious Organizations. The threat application of commercial fertilizer was manually added.
- For agricultural land uses, if the parcel did not have any farm buildings located on it, any threats related to storage (i.e. fuel, fertilizer, pesticides) were removed.
- The threat, "Waste Disposal Site – Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste" was only applied to properties with a Certificate of Approval and/or are a registered waste generator or waste receiver.
- Threat points were placed in the area on the parcel with the highest vulnerability score except for residential fuel tank and septic systems threats which were placed within a reasonable distance of the associated building.
- All residential properties have been assumed to have fuel storage tanks for heating except for houses built in Rockwood after 2000. A threat has been assigned to each parcel within the WHPA. Homes built after 2000 are assume to be heated by natural gas, electrical or propane.

6.7.4.2 Enumeration of Significant Drinking Water Threats for 2019 Assessment Report

Since the initial enumeration of significant drinking water threats for the 2012 Assessment Report, a substantial amount of work has been completed by municipal Risk Management staff and consultants to verify threats at a site level. This work has included additional air photo analysis, site visits, windshield surveys, review of databases and site specific files / reports. The focus of this work is to complete verification of significant drinking water threats and where warranted negotiate risk management plans and to conduct inspections. This work has been focused within the wellhead protection areas delineated in the 2012 and 2015 Assessment Reports. New wellhead protection areas have now been delineated, however, there is overlap between the 2015 and the new wellhead protection areas.

For purposes of updating significant drinking water quality threats in the newly delineated wellhead protection areas, a review is being conducted of the existing database of verified threats, municipal servicing data and air photos. Results will be updated in the Assessment Report prior to public consultation.

Significant Drinking Water Threats for the Rockwood Water Supply

As per the Technical Rules (MOECC, 2017~~99b~~), the enumeration of significant threats is required for the completion of the Assessment Report. **Table 6-42** summarizes the significant threats identified in the Rockwood Wellhead Protection Areas in the Township of Guelph-Eramosa.

PDWT ¹ #	Threat Subcategory ²	Number of Activities	Vulnerable Area
1	Waste Disposal Site- Storage of Hazardous Waste at Disposal Sites	7	WHPA-A WHPA-B
2	Sewage System or Sewage Works- Septic Onsite Sewage Systems	34	WHPA-B

PDWT ¹ #	Threat Subcategory ²	Number of Activities	Vulnerable Area
	Sewage System or Sewage Works- Sanitary Sewers and related pipes	1	WHPA-A WHPA-B
	Sewage System or Sewage Works- Discharge of Untreated Stormwater from a Stormwater Retention Pond	2	WHPA-A WHPA-B
3	Application of Agricultural Source Material to Land	21	WHPA-A WHPA-B
4	Handling and Storage of Agricultural Source Material	8	WHPA-B
8	Application of Commercial Fertilizer	17	WHPA-B
9	Handling and Storage of Commercial Fertilizer	8	WHPA-B
10	Application of Pesticides to Land	21	WHPA-A WHPA-B
11	Handling and Storage of Pesticides	8	WHPA-B
16	Handling and Storage of Dense Non-Aqueous Phase Liquids	9	WHPA-A WHPA-B WHPA-C
17	Handling and Storage of Organic Solvents	7	WHPA-A WHPA-B
21	Management or handling of Agricultural Source Material- Agricultural Source Material (ASM) Generation (Grazing and pasturing)	8	WHPA-B
Total Number of Activities		151	
Total Number of Properties		52	
<p>1: Prescribed Drinking Water Threat Number refers to the prescribed drinking water threat listed in O.Reg 287/07s.1.1.(1).</p> <p>2: Where applicable, waste, sewage, and livestock threat numbers are reported by sub-threat; fuel and DNAPL by Prescribed Drinking Water Threat category.</p> <p>Note: Residential handling and storage of fuel threats were not enumerated as significant threats due to Natural gas service being provided to the Township of Guelph-Eramosa in 2000. Further, polices must be created in order to address potential fuel storage tanks remaining on residential properties.</p> <p>Note: Storm sewer piping is not considered to be part of a storm water management facility.</p>			

Significant Drinking Water Threats for the Hamilton Drive Water Supply

As per the Technical Rules (MOECC, ~~2009~~2017), the enumeration of significant threats is required for the completion of the Assessment Report. **Table 6-43** summarizes the significant threats identified in the Hamilton Drive Wellhead Protection Areas.

PDWT ¹ #	Threat Subcategory ²	Number of Activities	Vulnerable Area
1	Waste Disposal Site- Storage of Hazardous Waste at Disposal Sites	2	WHPA-A

PDWT ¹ #	Threat Subcategory ²	Number of Activities	Vulnerable Area
2	Sewage System or Sewage Works- Septic-Onsite Sewage Systems	23	WHPA-A WHPA-B
3	Application of Agricultural Source Material to Land	1	WHPA-B
8	Application of Commercial Fertilizer	1	WHPA-B
10	Application of Pesticides to Land	1	WHPA-B
16	Handling and Storage of Dense Non-Aqueous Phase Liquids	3	WHPA-A WHPA-B
17	Handling and Storage of Organic Solvents	2	WHPA-A
Total Number of Activities		33	
Total Number of Properties		27	
<p>1: Prescribed Drinking Water Threat Number refers to the prescribed drinking water threat listed in O.Reg 287/07s.1.1.(1).</p> <p>Note: Residential handling and storage of fuel threats were not enumerated as significant threats due to Natural gas service being provided to the Township of Guelph-Eramosa 2000. Further, polices must be created in order to address potential fuel storage tanks remaining on residential properties.</p> <p>2: Where applicable, waste, sewage, and livestock threat numbers are reported by sub-threat; fuel and DNAPL by Prescribed Drinking Water Threat category.</p> <p>Note: Storm sewer piping is not considered to be part of a storm water management facility.</p>			

Limitations and Uncertainty for the Enumeration of Significant Drinking Water Quality Threats for the Rockwood and Hamilton Drive Well Supply

In this study a number of databases were used to create the threats enumeration. All databases have an error associated with them, whether it applies to the spatial or attribute information. The accuracy of the databases used depends on the source, the age of the information and the scale at which the spatial information was recorded. To decrease some of the error in the database information a field reconnaissance was completed to confirm the data when possible. Therefore, the uncertainty associated with the location of threats is predominantly low since most were field verified.

The determination of land use activities used a series of assumptions which have an uncertainty associated to them. For this enumeration, it was assumed that any possible threats associated with an activity were present and that all potential chemicals were present. The circumstances and quantity for each threat were assigned based on available knowledge such as typical storage practices, typical chemical quantities and typical waste disposal practices for that particular land use activity.

Based on the uncertainty involved in the assumptions and data used, the uncertainty for the threats enumeration has been classified as high. This level of uncertainty is expected in a desk top study. It is anticipated that additional information that is collected over time will allow for the uncertainty related to the hazard rating to be reduced.

Table 6-44 summarizes the uncertainty assessment for the enumeration of significant drinking water quality threats in the Rockwoods and Hamilton Drive Water Supply Systems.

Commented [KD2]: This section should be moved to the initial enumeration section once the new enumeration is completed and a new limitations section is added. In the new enumeration section, we need to add a limitation about the vulnerability assessment not being updated to match the new understanding in the Tier 3 model.

Table 6-44: Uncertainty Assessment for Enumeration of Significant Drinking Water Quality Threats in the Rockwood and Hamilton Drive Water Supply Systems

	Uncertainty Type	WHPA-A	WHPA-B	WHPA-C	WHPA-D
Rockwood Threats Uncertainty	Location of Threats	Low	Low	High	High
	Circumstances of threats	High	High	High	High
	Overall – Threats Uncertainty	High	High	High	High
Hamilton Drive Threats Uncertainty	Location of Threats	Low	Low	Low	Low
	Circumstances of threats	Low	High	High	High
	Overall – Threats Uncertainty	Low	High	High	High

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7.0 COUNTY OF WELLINGTON

The following County of Wellington Source Protection Plan policies apply to the water supply systems located within the County of Wellington within the Grand River watershed and to vulnerable areas originating from other municipalities as presented in the following schedules. Reference shall be made to the City of Guelph, Regional Municipality of Waterloo and Regional Municipality of Halton policies for the portions of the water supply systems located within those jurisdictions.

- Schedule A: Township of Wellington North, Arthur Well Supply
- Schedule B: Township of Mapleton, Drayton Well Supply
- Schedule C: Township of Mapleton, Moorefield Well Supply
- Schedule D: Township of Centre Wellington, Index Map
- Schedule E: Centre Wellington Well Supply Map A
- Schedule F: Centre Wellington Well Supply Map B
- Schedule G: Centre Wellington Well Supply Map C
- Schedule H: Centre Wellington Well Supply Map D
- Schedule I: Township of Guelph/Eramosa, Index Map
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- Schedule W: Township of Centre Wellington, Issue Contributing Areas
- Schedule X: Township of Guelph/Eramosa, Issue Contributing Areas
- Schedule Y: Township of Puslinch, Issue Contributing Areas
- Schedule Z: County of Wellington, Intake Protection Zones

7.1 Definitions

General definitions are provided in Volume I of the Source Protection Plan or in the *Clean Water Act, 2006*. Defined terms are intended to capture both the singular and plural forms of these terms.

The following definitions shall apply to the County of Wellington Source Protection Policies.

County – means the Corporation of the County of Wellington.

Existing – except where otherwise indicated in this Plan, existing means:

- a. A use, activity, building or structure at a location in a vulnerable area that is in compliance with all applicable regulations on the effective date of this Source Protection

Plan, or at some point prior to the effective date of the Source Protection Plan with a demonstrated intent to continue; or

- b. An expansion of an existing use or activity, which may include a new building or structure to service the existing use or activity, where the expansion reduces the risk of contaminating drinking water; or
- c. The expansion, replacement or alteration of an existing building or structure associated with a significant drinking water threat that does not increase the risk of contaminating drinking water; or
- d. The conversion of an existing use to a similar use, provided it is demonstrated that the conversion will reduce the risk of contaminating drinking water.

New or Future – means not existing, as defined herein.

Municipality – means one or more of the seven lower tier municipalities located within the County, consisting of the Township of Guelph-Eramosa, Township of Centre Wellington, Town of Erin, Township of Mapleton, Township of Puslinch, Town of Minto, and the Township of Wellington North.

Stormwater Management Facility - means one or more of the following measures constructed to collect, control, infiltrate and / or discharge stormwater run-off.

- Stormwater management ponds (ie wet ponds)
- Dry or retention ponds
- Constructed wetlands
- Low impact development measures including, but not limited to, infiltration galleries / basins, soak away pits, pervious pipe (subsurface) and / or permeable pavement
- Infiltration trenches (open to surface) including but not limited to swales, vegetated strips
- Lot level infiltration measures used to infiltrate storm run-off from salt application areas. This excludes measures used solely to infiltrate roof run-off and water from foundation drains.

Salt Application Area – means the area where salt is applied to provide traction, ice or snow control including melting ice.

Salt – means any solid or liquid chloride-based chemical used to melt ice, provide traction and / or ice / snow control.

7.2 Wellington Source Protection Plan Policies

Policy Number	Source Protection Plan Policies within the County of Wellington
Transitional Policies and Implementation Timing	
WC-CW-1.1.1 <i>Implement. & Timing</i>	This source protection plan came into effect on July 1, 2016, the effective date specified in the Notice of Approval posted on the Environmental Registry of Ontario Bill of Rights Registry . Amendments to the Source Protection Plan are permitted in accordance with the <i>Clean Water Act, 2006</i> , and the General

Policy Number	Source Protection Plan Policies within the County of Wellington
	Regulations. The effective date for amended policies, only including but not limited to the addition of new drinking water threats and regulated areas and activities, is the date of posting of the Notice of Approval of the amendment provisions on the Environmental Bill of Rights Registry of Ontario.
WC-CW-1.1.2 <i>Implement. & Timing</i>	<p>Except as set out below, the policies contained in this Source Protection Plan shall come into effect on the date set out by the Minister.</p> <ol style="list-style-type: none"> For Section 57 of the <i>Clean Water Act, 2006</i>, if an activity was engaged in at a particular location before this Source Protection Plan takes effect, policies regarding prohibited activities do not apply to a person who engages in the activity at that location until 180 days from the date the relevant policies within the Source Protection Plan takes effect; For Section 58 of the <i>Clean Water Act, 2006</i>, if an activity was engaged in at a particular location before the relevant policies within this Source Protection Plan takes effect and the Risk Management Official gives notice to a person who is engaged in the activity at that location, policies regarding regulated activities apply to the person who engages in the activity at that location on and after a date specified in the notice that is at least 120 days after the date the notice is given; For Section 59 of the <i>Clean Water Act, 2006</i>, policies regarding restricted land uses shall come into effect the same day the relevant policies within the Source Protection Plan takes effect; Where the Source Protection Policies require the municipality to develop and implement education and outreach programs as the primary tool for managing or eliminating a particular significant threat, such programs shall be developed and implemented within five (5) years from the date the relevant policies within the Source Protection Plan takes effect. For Sections 43 of the <i>Clean Water Act, 2006</i>, if an activity was engaged in a particular location before the relevant policies within this Source Protection Plan takes effect, amendments to Prescribed Instruments shall be completed within three (3) years from the date the Source Protection Plan takes effect; and, For Section 40 and 42 of the <i>Clean Water Act, 2006</i>, the Official Plan must be amended to conform with the significant threat policies within five (5) years from the date the relevant policies within the Source Protection Plan takes effect or the next Official Plan review required under Section 26 of the <i>Planning Act</i> and the Zoning By-law within two (2) years from adoption of the Official Plan conformity amendment.
WC-CW-1.2 <i>Transition</i>	<p>For the purposes of this Plan, where one or more of the following:</p> <ol style="list-style-type: none"> A complete application for development under the <i>Planning Act</i> or <i>Condominium Act</i>; An application for Environmental Compliance Approval; or An application for a Building Permit <p>has been received by the applicable implementing body prior to the date this Source Protection Plan takes effect, a related significant drinking water threat may be considered as existing and subject to the policies pertaining to existing significant drinking water threats. Where the above noted applications have lapsed or been withdrawn, the above noted transition policies shall no longer apply.</p>
Uses and Areas Designated as Restricted Land Use	
WC-CW-1.3 <i>Part IV- RLU</i>	In accordance with Section 59 of the <i>Clean Water Act, 2006</i> , all land uses, except solely residential uses, where significant drinking water threat activities have been designated for the purposes of Sections 57 and 58 of the <i>Clean Water Act, 2006</i> are

Policy Number	Source Protection Plan Policies within the County of Wellington
	<p>hereby designated as Restricted Land Uses and a written notice from the Risk Management Official shall be required prior to approval of any Building Permit, <i>Planning Act</i> or <i>Condominium Act</i> application.</p> <p>Despite the above policy, a Risk Management Official may issue written direction specifying the situations under which a planning authority or Chief Building Official may be permitted to make the determination that a site specific land use is, or is not, that a site specific land use is not designated for the purposes of section 59. Where such direction has been issued, a site specific land use that is the subject of an application for approval under the <i>Planning Act</i> or for a permit under the <i>Building Code Act</i> is not designated for the purposes of Section 59, provided that the planning authority or Chief Building Official, as applicable, is satisfied that:</p> <ol style="list-style-type: none"> a. The application complies with the written direction issued by the Risk Management Official; and b. The applicant has demonstrated that a significant drinking water threat activity designated for the purposes of section 57 or 58 will not be engaged in, or will not be affected by the application. <p>Where the Risk Management Official has provided written direction designating a land use for the purpose of section 59, a written Notice from the Risk Management Official shall be required prior to approval of any Building Permit under the <i>Building Code Act, 1992</i> as amended, in addition to <i>Planning Act</i> and <i>Condominium Act</i> applications in accordance with Section 59 of the <i>Clean Water Act, 2006</i>.</p>
Official Plan and Zoning By-law Amendment(s) Policies	
<p>WC-MC-1.4</p> <p style="text-align: center;"><i>Future Land Use Planning</i></p>	<p>The County and/or municipality shall amend, as required, their Official Plan and Zoning By-Laws to:</p> <ol style="list-style-type: none"> a. Identify the vulnerable areas in which drinking water threats prescribed under the <i>Clean Water Act, 2006</i> would be significant; b. Indicate that within the areas identified, any use or activity that is, or would be, a significant drinking water threat is required to conform with all applicable Source Protection Plan policies and, as such, may be prohibited, restricted or otherwise regulated by those policies; c. Incorporate any other amendments required to conform with the threat specific land use policies identified in this Source Protection Plan.
Education and Outreach Programs	
<p>WC-CW-1.5</p> <p style="text-align: center;"><i>Existing/Future Education & Outreach</i></p>	<p>The municipality, in collaboration with Conservation Authorities and other bodies wherever possible, may develop and implement education and outreach programs directed at any, or all, significant drinking water threat prescribed under the <i>Clean Water Act, 2006</i>, where such programs are deemed necessary and/or appropriate by the municipality and subject to available funding. Such programs may include, but not necessarily be limited to, increasing awareness and understanding of significant drinking water threats and promotion of best management practices.</p>
Incentive Programs	
<p>WC-CW-1.6</p> <p style="text-align: center;"><i>Existing/Future Incentive</i></p>	<p>The County and/or municipality, in collaboration with other bodies and levels of government wherever possible, may develop and implement incentive programs directed at various significant threat activities and/or condition sites prescribed under the <i>Clean Water Act, 2006</i>, where such programs are deemed necessary and/or appropriate by the County and/or municipality, subject to available funding.</p>

Policy Number	Source Protection Plan Policies within the County of Wellington
WC-NB.-1.7 <i>Existing/Future Incentive</i>	The Ministry of the Environment, Conservation and Parks and other provincial ministries shall consider providing continued funding and support to protect existing and future drinking water sources and address significant drinking water threats under the Ontario Drinking Water Stewardship Program and Rural Water Quality Program.
WC-NB-1.8 <i>Existing/Future Incentive</i>	To reduce the risks to drinking water from an existing activity, where this activity is a significant drinking water threat, the Grand River Conservation Authority, in consultation with the County, will deliver available cost share incentive programs as long as the Grand River Conservation Authority has such programs and outreach staff available, and work with affected land owners to implement best management practices for the following activities: <ol style="list-style-type: none"> The application of agricultural source material to land; The storage of agricultural source material; and, The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard.
Annual Reporting	
WC-CW-1.9 <i>Monitoring</i>	The municipality and / or County shall provide a report to the Source Protection Authority, by February 1 st of each year, summarizing the actions taken to implement the Source Protection Plan policies, where specifically required by the policies. Where the municipality and / or County is required to implement education and outreach programs as the primary means of managing the risk associated with significant drinking water threats, the report must indicate, at minimum, the properties where these programs were implemented and additional details on how the significant drinking water threat was managed and/or ceased to be significant.
WC-CW-1.10 <i>Monitoring</i>	Where the County and/or municipality is required to amend their Official Plan and/ Zoning By-law to bring their planning documents into conformity with the Source Protection Plan, the County and/or municipality shall provide proof of compliance to the Source Protection Authority, and shall provide a copy of such compliance within 30 days of adoption of the amendment(s) by County and/or municipal Council or, where the matter has been appealed to the Ontario Municipal Board, the date of their decision to approve.
WC-CW-1.11 <i>Monitoring</i>	The Risk Management Official shall provide a report to the Source Protection Authority, by February 1 st of each year, summarizing the actions taken by the Risk Management Official to implement the Source Protection Plan policies, in accordance with the <i>Clean Water Act, 2006</i> and associated regulations.
WC-CW-1.12 <i>Monitoring</i>	Where the Source Protection Plan policies may result in amendments to a Prescribed Instrument or the issuance of a new Prescribed Instrument, the applicable ministry shall provide a summary of the actions taken the previous year to implement the policies and provide a written report summarizing this information to the Source Protection Authority by February 1 st of each year.
WC-CW-1.13 <i>Monitoring</i>	Where the Source Protection Plan policies prohibit an activity that results in the denial of a Prescribed Instrument, the applicable ministry shall summarize the actions taken the previous year to implement the policies and provide a written report summarizing this information to the Source Protection Authority by February 1 st of each year.
WC-CW-1.14 <i>Monitoring</i>	The municipality shall provide a report to the Source Protection Authority, by February 1 st , of each year, for the wells within its jurisdiction. This report shall summarize ing the actions taken the previous year year to assess the chloride concentrations related to Municipal Well E3 in Elora and Municipal Well F1 in Fergus and / or sodium and

Policy Number	Source Protection Plan Policies within the County of Wellington
	chloride concentrations related to Station Street Wells 1 and 2 in Rockwood, including recommendations for further study or monitoring, if required. The report shall include a conclusion on whether the chloride concentrations should be a are-a described issue in accordance with the <i>Clean Water Act</i> and technical rules.
Conditions	
WC-MC-1.16 <i>Existing Prescribed Instr. Condition Sites Identified</i>	To address conditions resulting from past activities that are significant drinking water threats, the Ministry of the Environment, Conservation and Parks shall <ol style="list-style-type: none"> Ensure that all Prescribed Instruments issued for Condition sites include terms and conditions, as appropriate, to ensure that the risk to drinking water sources is managed. Appropriate conditions may include requirements for source control, remediation to provincial standards, monitoring and Contaminant Management Plans; Ensure that Prescribed Instruments include a condition requiring the instrument holder to report on the actions taken and the status of the site to the Ministry of Environment, Conservation and Parks, Source Protection Authority and the municipality on an annual basis; and Provide to the County and/or municipality a copy of the new or revised Prescribed Instrument.
WC-NB-1.17 <i>Existing Specify Action Condition Sites Identified</i>	To address Conditions resulting from past activities that are significant drinking water threats, the Ministry of the Environment, Conservation and Parks should prioritize abatement activities on Conditions Sites located within the Wellhead Protection Area A, Wellhead Protection Area B and Issues Contributing Areas.
WC-NB-1.18 <i>Existing Specify Action Condition Sites Identified</i> <i>Monitoring</i>	To address conditions resulting from past activities that are significant drinking water threats the Ministry of Environment, Conservation and Parks and the County and/or municipality: <ol style="list-style-type: none"> Shall meet at a minimum frequency of once a calendar year every six months for the purpose of mutually sharing information on Condition sites; Should mutually share information related, as appropriate, to technical investigations or remediation, technical data, actions taken by Ministry of Environment, Conservation and Parks or by the County and/or municipality, inspections, other relevant information; and Should develop an Information-Sharing Process document including requirements, if any, for meeting agendas, participants, the nature and format for the types of information to be mutually shared, and the Information-Sharing Process document should be developed within six months from the date the Source Protection Plan takes effect.
Strategic Action	
Spill Prevention, Spill Contingency or Emergency Response Plans	
WC-NB-1.19. <i>Existing/Future Specify Action</i>	To ensure spill prevention plans, contingency plans, and emergency response plans are updated for the purpose of protecting municipal drinking water sources with respect to spills that occur within a WHPA or IPZ along highways, or railway lines: <ol style="list-style-type: none"> The County and/or Municipality is requested to incorporate the location of WHPAs and IPZs into their emergency response plans in order to protect municipal drinking water sources when a spill occurs along highways or rail lines; and

Policy Number	Source Protection Plan Policies within the County of Wellington
	<p>b. The Ministry of the Environment, Conservation and Parks is requested to provide mapping of the identified vulnerable areas to assist the Spills Action Centre in responding to reported spills along transportation corridors.</p>
Transport Pathways	
<p>WC-NB-1.20</p> <p><i>Existing/Future Specify Action</i></p>	<p>To achieve the intent of the <i>Clean Water Act</i>, 2006, significant drinking water threats identified in the vicinity of a transport pathway shall be managed to reduce the risk to municipal drinking water sources such that they do not become a significant threat and that a pathway reduces the risk to the source water of a municipal water supply. The County and/or Municipality are requested to support ongoing programs which encourage the decommissioning of abandoned wells as per O. Reg. 903 within all WHPA--A and IPZ-1One areas where there is or would be a significant drinking water threat.</p>
Prescribed Instruments	
<p>WC-MC-1.21</p> <p><i>Existing/Future Prescribed Instr.</i></p>	<p>Any Prescribed Instrument issued under the Nutrient Management Act that is created or amended or is used for the purposes of obtaining an exemption from a Risk Management Plan under section 61 of O. Reg. 287/07 shall incorporate terms and conditions that, when implemented, manage the activities they regulate such that those activities cease to be or never become, a significant drinking water threat. OMAFRA is expected to review all Prescribed Instruments issued under the Nutrient Management Act in areas where the activities they regulate are, or would be, significant drinking water threats to ensure the Prescribed Instruments contain such terms and conditions, including the Prescribed Instruments that are not directly created or issued by OMAFRA, such as Nutrient Management Plans.</p>
<p>WC-NB-1.22</p> <p><i>Existing/Future Specify Action</i></p>	<p>OMAFRA, and other creators/issuers of Prescribed Instruments under the Nutrient Management Act, are expected to consult with the Risk Management Official with respect to any modifications or requirements that may need to be incorporated into such Prescribed Instruments to ensure the activities they regulate cease to be or never become significant drinking water threats.</p>
Interpretation	
<p>WC-CW-1.23</p> <p><i>Interpretation of Source Protection Plan</i></p>	<p>The Source Protection Plan provides policies to meet the objectives of the <i>Clean Water Act</i>, 2006. The Source Protection Plan consists of the written policy text and Schedules.</p> <ol style="list-style-type: none"> a. The Schedules in the Source Protection Plan identify the areas where the policies of the Source Protection Plan apply. The boundaries for the circumstances shown on the Plan Schedules are general. More detailed interpretation of the boundaries relies on the mapping in the approved Assessment Report and the Specific Circumstances found in the Tables of Drinking Water Threats, <i>Clean Water Act</i>, 2006. b. Where any Act or portion of an Act of the Ontario Government or Canadian Government is referenced in this Plan, such reference shall be interpreted to refer to any subsequent renaming of sections in the Act as well as any subsequent amendments to the Act, or successor thereof. This provision is also applicable to any policy statement, regulation or guideline issued by the Province or the municipality.

7.3 Policies Addressing Prescribed Drinking Water Threats

Policy Number	Policies Addressing Prescribed Drinking Water Threats within the County of Wellington
1. Establishment, Operation or Maintenance of a Waste Disposal Site, within the Meaning of Part V of the <i>Environmental Protection Act</i>	
WC-MC-2.1 <i>Existing Prescribed Instr.</i> WHPA-A-v.10; WHPA-B-v.10; WHPA-B-v.8; WHPA-C-v.8; IPZ-1-v.10	To ensure an existing waste disposal site within the meaning of Part V of the <i>Environmental Protection Act</i> that is subject to an Environmental Compliance Approval, ceases to be a significant drinking water threat, where this activity is a significant drinking water threat, as prescribed by the <i>Clean Water Act, 2006</i> , the Ministry of the Environment, Conservation and Parks shall review and, if necessary, amend Environmental Compliance Approvals to ensure that terms and conditions are incorporated that, when implemented, ensure that the activity ceases to be a significant drinking water threat.
WC-CW-2.2 <i>Existing Part IV-RMP</i> WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10	To ensure an existing waste disposal site within the meaning of Part V of the <i>Environmental Protection Act</i> which does not require an Environmental Compliance Approval, ceases to be a significant drinking water threat, where this activity is a significant drinking water threat, as prescribed by the <i>Clean Water Act, 2006</i> , this activity is designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan is required.
WC-MC-2.3. <i>Future Prescribed Instr.</i> WHPA-A-v.10; WHPA-B-v.10; WHPA-B-v.8; WHPA-C-v.8; IPZ-1-v.10	To ensure the establishment, operation or maintenance of a new waste disposal site within the meaning of Part V of the <i>Environmental Protection Act</i> that is subject to an Environmental Compliance Approval, never becomes a significant drinking water threat, where this activity would be a significant drinking water threat, as prescribed by the <i>Clean Water Act, 2006</i> , the Ministry of the Environment, Conservation and Parks shall prohibit these activities within the Environmental Compliance Approvals process.
WC-CW-2.4. <i>Future Part IV-RMP</i> WHPA-A-v.10 WHPA-B-v.10; IPZ-1-v.10;	To ensure the establishment, operation or maintenance of a new waste disposal site within the meaning of Part V of the <i>Environmental Protection Act</i> which does not require an Environmental Compliance Approval never becomes a significant drinking water threat, where this activity is, or would be, a significant drinking water threat this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.
2. Establishment, Operation or Maintenance of a System That Collects, Stores, Transmits, Treats or Disposes of Sewage	
Sewage System or Sewage Works – Onsite Sewage Systems and Onsite Sewage System Holding Tank	
WC-CW-3.1 <i>Existing/Future Specify Action</i> WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10; ICA (NIT)	To ensure existing or new onsite sewage systems and onsite holding tanks with a design flow of less than or equal to 10,000 Litres per day and subject to approval under the <i>Ontario Building Code Act</i> or the <i>Ontario Water Resources Act</i> within a WHPA-A or WHPA-B with a vulnerability score equal to ten (10) or IPZ-1- One or Nitrate ICA, cease to be or never become a significant drinking water threat the municipality shall implement an on-site sewage system maintenance inspection program. Inspections shall be prioritized based on the proximity to the drinking water supply.
WC-CW-3.2 <i>Existing/Future Education & Outreach</i> WHPA-A-v.10;	To ensure existing or new onsite sewage systems and onsite holding tanks with a design flow of less than or equal to 10,000 Litres per day and subject to approval under the <i>Ontario Building Code Act</i> or the <i>Ontario Water Resources Act</i> within a WHPA-A or B with a vulnerability score equal to ten (10), IPZ-1- One , or Nitrate, Sodium or Chloride -ICA cease to be or never become a significant drinking water threat, the municipality shall develop and implement an education initiative about

Policy Number	Policies Addressing Prescribed Drinking Water Threats within the County of Wellington
<p><i>WHPA-B-v.10; IPZ-1-v.10; ICA (NIT/SOD/CHL)</i></p>	<p>small onsite sewage systems and holding tanks. The education program shall encourage the use of beneficial management practices that reduce the impact on groundwater.</p>
<p>WC-MC-3.3</p> <p><i>Existing/Future Prescribed Instr. WHPA-A-v.10; WHPA-B-v.10; IPZ-v.10; ICA(NIT/SOD/CHL)</i></p>	<p>To ensure existing or future onsite sewage systems with a design flow of greater than 10,000 Litres per day and regulated under the <i>Ontario Water Resources Act</i> cease to be or never become a significant drinking water threat, where this activity is, or would be, a significant drinking water threat, the Ministry of the Environment, Conservation and Parks shall review and, if necessary, amend Environmental Compliance Approvals to incorporate terms and conditions that, when implemented, ensure that the activity ceases to be or never becomes a significant drinking water threat. .</p> <p>The terms and conditions may include, as appropriate, requirements for the proponent/applicant to undertake mandatory monitoring of groundwater impacts, contingencies in the event that drinking water quality is adversely affected, regular and ongoing compliance monitoring, mandatory system inspections at least every five (5) years, and upgrading of these onsite sewage systems to current standards, if necessary.</p> <p>In addition, the terms and conditions may include the proponent/applicant to provide annual reporting to the Source Protection Authority and Municipality of any monitoring and inspection programs required and their results.</p>
<p>Sewage System or Sewage Works – Sewage Works Storage - Treatment or Holding Tanks Sewage System or Sewage Works - Sewage Treatment Plant Effluent Discharges (Includes Lagoons) Sewage System or Sewage Works – Sewage Treatment Plant By-Pass Discharge to Surface Water</p>	
<p>WC-MC-3.4</p> <p><i>Future Prescribed Instr. WHPA-A-v.10; WHPA-B-v.10; WHPA-B-v.8; WHPA-C-v.8; IPZ-1_v.10; ICA(NIT/TCE/CHL)</i></p>	<p>To ensure the establishment of new sewage treatment plants with effluent and/or bypass discharge or new sewage treatment plants with sewage storage tanks never becomes a significant drinking water threat, where these activities would be a significant drinking water threat, the Ministry of the Environment, Conservation and Parks shall prohibit these activities within the Environmental Compliance Approvals process. This policy does not apply to the expansion, modification, optimization, re-rating, operation, maintenance or replacement of existing sewage treatment plants.</p>
<p>Sewage System or Sewage Works – Sanitary Sewers and Related Pipes</p>	
<p>WC-MC-3.5</p> <p><i>Existing/ Future Prescribed Instr. WHPA-A-v.10; WHPA-B-v.10; IPZ-1_v.10; ICA(NIT)</i></p>	<p>For any To ensure existing or new sanitary sewers and related pipes, industrial effluent discharge and /-or existing sewage treatment plants cease to be or never become a significant drinking water threat, where these activities are, or would be, a significant drinking water threat, the Ministry of the Environment, Conservation and Parks shall review and, if necessary, amend Environmental Compliance Approvals to incorporate terms and conditions that, when implemented, will ensure that these activities cease to be or never become a significant drinking water threat.</p> <p>The terms and conditions may include requirements for regular maintenance, monitoring and inspections conducted by the proponent.</p>
<p>Sewage System or Sewage Works – Industrial Effluent Discharge Sewage System or Sewage Works – Combined Sewer Discharge from a Stormwater Outlet to Surface Water</p>	
<p>WC-MC-3.6</p> <p><i>Future Prescribed Instr. IPZ-1-v.10</i></p>	<p>To ensure new industrial effluent discharge to surface water or combined sewer discharge from a stormwater outlet within an IPZ One (1), never becomes a significant drinking water threat, the Ministry of the Environment, Conservation and</p>

Policy Number	Policies Addressing Prescribed Drinking Water Threats within the County of Wellington
	Parks shall prohibit this activity within the Environmental Compliance Approvals process.
Sewage System or Sewage Works – Discharge from a Stormwater Management Facility	
WC-MC-3.7 <i>Existing/Future Prescribed Instr.</i> WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10; ICA(NIT/CHL)	<p>For any To ensure an existing or new stormwater management facility that discharges stormwater ceases to be or never becomes a significant drinking water threat, where this activity is, or would be, a significant drinking water threat, as prescribed by the <i>Clean Water Act, 2006</i>, the Ministry of the Environment, Conservation and Parks shall review and, if necessary, amend Environmental Compliance Approvals to incorporate terms and conditions (for example, regular maintenance) that, when implemented, will ensure that this activity ceases to be or never becomes a significant drinking water threat.</p> <p>The terms and conditions may include requirements for regular maintenance, monitoring and inspections conducted by the proponent.</p>
WC-CW-3.8 <i>Existing/Future Part IV – RMP ICA (CHL)</i>	<p>To ensure any existing or new stormwater management facility ceases to be or never becomes a significant drinking water, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i>, and a Risk Management Plan shall be required where the following applies:</p> <ul style="list-style-type: none"> a) where the activity is or would be a significant drinking water threat b) the stormwater management facility is located within a Chloride Issues Contributing Area; and c) the stormwater management facility does not require an Environmental Compliance Approval.
3. The Application of Agricultural Source Material to Land	
WC-CW-4.1 <i>Existing/Future Part IV-Prohibit WHPA-A-v.10; IPZ-1-v.10</i>	<p>To ensure the existing or future application of agricultural source material to land within a WHPA-A or IPZ One (1), ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.</p>
WC-CW-4.2 <i>Existing/Future Part IV-RMP WHPA-B-v.10 ICA (NIT)</i>	<p>To ensure the existing or future application of agricultural source material to land not phased in under the Nutrient Management Act within a WHPA-B with a vulnerability score equal to ten (10), or a Nitrate ICA outside of a WHPA-A, ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.</p> <p>The requirements of the Risk Management Plan will generally be based on the requirements of a Nutrient Management Plan and/or strategy under the <i>Nutrient Management Act</i>, but may also include any modifications or additional requirements deemed necessary or appropriate by the Risk Management Official.</p>
WC-MC-4.3 <i>Existing/Future Prescribed Instr. WHPA-B-v.10</i>	<p>To ensure the existing or future application of agricultural source material to land with an existing, or requiring, a Nutrient Management Plan or Strategy in accordance with the <i>Nutrient Management Act</i> within a WHPA-B with a vulnerability score equal to ten (10), ceases to be or never becomes a significant drinking water threat, the Ministry of Agriculture, Food and Rural Affairs shall review and, if necessary, amend the Nutrient Management Plan/Strategy to ensure that such Plan/Strategy incorporates</p>

Policy Number	Policies Addressing Prescribed Drinking Water Threats within the County of Wellington
	measures and/or terms and conditions deemed necessary to ensure this activity ceases to be or never becomes a significant drinking water threat.
3. The Application of Agricultural Source Material 4. The Storage of Agricultural Source Material	
WC-CW-4.4 <i>Existing/Future Education & Outreach ICA (NIT)</i> <i>(Outside WHPA-A & WHPA B-v.10)</i>	To ensure the existing or future application and storage of agricultural source material within a Nitrate ICA outside of a WHPA-A or B with a vulnerability score equal to ten (10), ceases to be or never becomes a significant drinking water threat, the municipality shall develop and implement an education initiative about the application and storage of agricultural source material. The education program shall encourage the use of beneficial management practices that reduce the impact on groundwater.
4. The Storage of Agricultural Source Material	
WC-CW-5.1 <i>Future Part IV-Prohibit WHPA-A-v.10; IPZ-1-v.10</i>	To ensure any new storage of agricultural source material on lands within a WHPA-A or IPZ-1 One never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.
WC-CW-5.2 a) Existing Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10 b) Future Part IV-RMP WHPA-B-v.10 ICA (NIT)	To ensure: <ol style="list-style-type: none"> any existing storage of agricultural source material on lands not phased-in under the Nutrient Management Act where this activity is a significant drinking water threat, within a WHPA-A or WHPA-B with a vulnerability score equal to ten (10) or IPZ-1 One (1) or a Nitrate ICA; or the future storage of agricultural source material on lands not phased-in under the Nutrient Management Act within a WHPA-B with a vulnerability score equal to ten (10) or a Nitrate ICA outside of a WHPA-A, ceases to be or never becomes a significant drinking water threat, this activity is designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan is required. The requirements of the Risk Management Plan will generally be based on the requirements of a nutrient management plan and/or strategy under the <i>Nutrient Management Act</i> , but may also include any modifications or additional requirements deemed necessary or appropriate by the Risk Management Official.
WC-MC-5.3 a) Existing Prescribed Instr. WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10 b) Future Prescribed Instr. WHPA-B-v.10	To ensure: <ol style="list-style-type: none"> any existing storage of agricultural source material on lands phased-in under the <i>Nutrient Management Act</i> where this activity is a significant drinking water threat, as prescribed by the <i>Clean Water Act, 2006</i>; within a WHPA-A or WHPA-B with a vulnerability score equal to ten (10) or IPZ-1 One (1); or the future storage of agricultural source material on lands phased-in under the <i>Nutrient Management Act</i> within a Wellhead Protection Area WHPA-B with a vulnerability score equal to ten (10), ceases to be or never becomes a significant drinking water threat, the Ministry of Agriculture, Food and Rural Affairs shall review and, if necessary, amend the Nutrient Management Plan/Strategy to ensure that such Plan/Strategy incorporates measures and/or terms and conditions deemed necessary to ensure that the activity ceases to be or never becomes a significant drinking water threat.
6. The Application of Non-Agricultural Source Material (NASM)	

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<p>WC-MC-6.1</p> <p><i>Existing/Future Prescribed Instr. WHPA-A-v.10; IPZ-1-v.10</i></p> <p><i>In the Moorefield, Drayton, Fergus and Guelph well systems this policy only applies to the application of NASM from a meat plant or sewage works</i></p>	<p>To ensure the existing and or future application of non-agricultural source material to lands within a WHPA-A or IPZ One (1), ceases to be or never becomes a significant drinking water threat, the Ministry of Agriculture, Food and Rural Affairs or the Ministry of Environment, Conservation and Parks as applicable, shall revoke or not approve, any Non-Agricultural Source Material (NASM) Plan in accordance with the <i>Nutrient Management Act</i>, or any Environmental Compliance Approval in accordance with the <i>Environmental Protection Act</i>, that permits, or would permit, the application of non-agricultural source material within vulnerable areas where it is, or would be, a significant drinking water threat.</p>
<p>WC-MC-6.2</p> <p><i>Existing Prescribed Instr. WHPA-B-v.10 ICA(NIT) (Outside WHPA-A-v.10)</i></p> <p><i>In the Moorefield, Drayton, Fergus and Guelph well systems this policy only applies to the application of NASM from a meat plant or sewage works</i></p>	<p>To ensure the existing application of non-agricultural source material to lands within a WHPA-B with a vulnerability score equal to ten (10) and/or a Nitrate ICA outside of a WHPA-A, ceases to be a significant drinking water threat, the Ministry of Agriculture, Food and Rural Affairs, or Ministry of the Environment, Conservation and Parks as applicable, shall review and, if necessary, amend the required Non-Agricultural Source Material (NASM) Plan in accordance with the <i>Nutrient Management Act</i>, or an Environmental Compliance Approval in accordance with the <i>Environmental Protection Act</i>, to ensure that such Plans/Compliance Approvals incorporate measures and/or terms and conditions deemed necessary to ensure this activity ceases to be a significant drinking water threat.</p>
<p>7. The Handling and Storage of Non-Agricultural Source Material (NASM)</p>	
<p>WC-MC-7.1</p> <p><i>a) Existing Prescribed Instr. WHPA-A-v.10; WHPA-B-v.10; ICA(NIT); IPZ-1-v.10</i></p> <p><i>b) Future Prescribed Instr. WHPA-B-v.10; ICA(NIT) (Outside WHPA-A-v.10)</i></p>	<p>To ensure:</p> <ol style="list-style-type: none"> any existing handling and storage of non-agricultural source material on lands where this activity is a significant drinking water threat, as prescribed by the <i>Clean Water Act, 2006</i>; or any new storage of non-agricultural source material on lands within a WHPA-B with a vulnerability score equal to ten (10) or a Nitrate ICA but outside of a WHPA-A, <p>cease to be or never become a significant drinking water threat, the Ministry of Agriculture, Food and Rural Affairs, or Ministry of the Environment, Conservation and Parks as applicable, shall review and, if necessary, amend the required Non-Agricultural Source Material (NASM) Plan in accordance with the <i>Nutrient Management Act</i>, or an Environmental Compliance Approval in accordance with the <i>Environmental Protection Act</i>, to ensure that such Plans/Compliance Approvals incorporate measures and/or terms and conditions deemed necessary to ensure the activity ceases to be or never becomes a significant drinking water threat.</p>
<p>WC-CW-7.2</p> <p><i>Future Part IV-Prohibit WHPA-A-v.10; IPZ-1-v.10</i></p>	<p>To ensure any new handling and storage of non-agricultural source material within a WHPA-A or IPZ One (1), never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.</p>
<p>8. The Application of Commercial Fertilizer to Land</p>	
<p>WC-CW-8.1</p> <p><i>Existing/Future</i></p>	<p>To ensure the existing or future application of commercial fertilizer to agricultural and non-agricultural land (excluding an individual for personal or family use) within a</p>

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<p>Part IV-Prohibit. WHPA-A-v.10; IPZ-1-v.10</p> <p><i>Currently does not apply to the application of commercial fertilizer in the Moorefield, Drayton, Fergus, Rockwood, Hamilton Drive or Guelph well systems due to managed land and livestock density calculations</i></p>	<p>WHPA-A or IPZ-One (1), ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.</p>
<p>WC-MC-8.2.</p> <p>Existing/Future Prescribed Instr. WHPA-B-v.10;</p> <p><i>Currently does not apply to the application of commercial fertilizer in the Arthur, Moorefield, Drayton, Eora, Fergus, or Guelph well systems due to managed land and livestock density calculations</i></p>	<p>To ensure the existing or future application of commercial fertilizer to land with an existing or requiring a Nutrient Management Plan or Strategy in accordance with the <i>Nutrient Management Act</i> within a WHPA-B with a vulnerability score equal to ten (10), ceases to be or never becomes a significant drinking water threat, the Ministry of Agriculture, Food and Rural Affairs shall review and, if necessary, amend the Nutrient Management Plan/Strategy to ensure that such Plan/Strategy incorporates measures and/or terms and conditions deemed necessary to ensure that this activity ceases to be or never becomes a significant drinking water threat.</p>
<p>WC-CW-8.3.</p> <p>Existing/Future Part IV-RMP WHPA-B-v.10 ICA (NIT)</p> <p><i>Currently does not apply to the application of commercial fertilizer in the Arthur, Moorefield, Drayton, Eora, Fergus, or Guelph well systems due to managed land and livestock density calculations</i></p>	<p>To ensure the existing or future application of commercial fertilizer to non-agricultural lands (excluding an individual for personal or family use) or agricultural land not phased in under the <i>Nutrient Management Act</i> within a WHPA-B with a vulnerability score equal to ten (10); or a Nitrate ICA outside of a WHPA-A ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.</p>
<p>8. The Application of Commercial Fertilizer to Land 9. The Handling and Storage of Commercial Fertilizer</p>	
<p>WC-CW-8.4</p> <p>Existing/ Future Education & Outreach WHPA-A-v.10; WHPA-B-v.10; ICA(NIT); IPZ-1-v.10</p>	<p>To ensure the existing and future application or storage of commercial fertilizer ceases to be or never becomes a significant drinking water threat, where this activity is, or would be, a significant drinking water threat, the Municipality shall develop and implement an education and outreach program targeted towards:</p> <ul style="list-style-type: none"> a. An individual for personal or family use to promote timely fertilizer application and best management practices in urban settings; and

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<p>Currently does not apply to the application of commercial fertilizer in the Moorefield, Drayton, or Fergus well systems due to managed land and livestock density calculations</p>	<p>b. Agricultural lands and non-agricultural lands to promote best management practices to safeguard water supplies from drinking water threats.</p>
9. The Handling and Storage of Commercial Fertilizer	
<p>WC-CW-9.1</p> <p>a) Existing Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10; ICA (NIT)</p> <p>b) Future Part IV-RMP WHPA-B-v.10 ICA (NIT)</p>	<p>To ensure:</p> <p>a. any existing handling and storage of more than 2,500 kilograms of commercial fertilizer as defined in O. Reg. 267/03 within a WHPA-A or WHPA-B with a vulnerability score equal to ten (10), an IPZ One (1), or a Nitrate ICA or</p> <p>b. the future handling and storage of more than 2,500 kilograms of commercial fertilizer as defined in O. Reg. 267/03 within a WHPA-B with a vulnerability score equal to ten (10) a Nitrate ICA outside of a WHPA-A,</p> <p>ceases to be or never becomes a significant drinking water threat, this activity is designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan is required.</p>
<p>WC-CW-9.2</p> <p>Future Part IV-Prohibit WHPA-A-v.10; IPZ-1-v.10</p>	<p>To ensure the handling and storage of commercial fertilizer greater than 2,500 kilograms of commercial fertilizer as defined in O. Reg. 267/03 within a WHPA-A and IPZ One (1), never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.</p>
10. The Application of Pesticide to Land	
<p>WC-CW-10.1</p> <p>Existing/Future Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10</p>	<p>To ensure the existing or future application of pesticides within the meaning of Part I of the <i>Pesticide Act</i> on lands greater than one (1) hectare ceases to be or never becomes a significant drinking water threat, where this activity is, or would be, a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.</p>
11. The Handling and Storage of Pesticides	
<p>WC-CW-11.1</p> <p>a) Existing Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10</p> <p>b) Future Part IV-RMP WHPA-B-v.10</p>	<p>To ensure:</p> <p>a. any existing handling and storage of pesticides within the meaning of Part I of the <i>Pesticide Act</i> where this activity is a significant drinking water threat; or</p> <p>b. the future handling and storage pesticides within the meaning of Part I of the <i>Pesticide Act</i> within WHPA-B with a vulnerability score equal to ten (10),</p> <p>ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.</p>
<p>WC-CW-11.2</p> <p>Future Part IV-Prohibit WHPA-A-v.10; IPZ-1-v.10</p>	<p>To ensure any new handling and storage of pesticides within the meaning of Part I of the <i>Pesticide Act</i> within a WHPA-A or IPZ One (1), never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.</p>

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<p>2. Establishment, Operation or Maintenance of a System That Collects, Stores, Transmits, Treats or Disposes of Sewage 12. The Application of Road Salt 13. The Handling and Storage of Road Salt 14. The Storage of Snow</p>	
<p>WC-MC-12.01</p> <p><i>Future Land Use Planning ICA (CHL)</i></p>	<p>This policy applies to all land uses except residential consisting of four units or fewer and only where the salt application area is equal to or greater than 200 square metres or 8 parking spaces. The County of Wellington and Municipality shall generally require such future development to be designed and maintained using best management practices in snow storage, salt storage and application and storm water management, to ensure these activities never become a significant drinking water threat. Further, the County shall provide appropriate Official Plan policies and study requirements for complete applications for new developments within the Chloride ICA.</p> <p>To ensure the establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage, the application, handling or storage of road salt, and the storage of snow never become a significant drinking water threat,</p> <ul style="list-style-type: none"> a) the County of Wellington and Municipality shall generally require future development to be designed and maintained using best management practices addressing these activities, and b) the County shall provide appropriate Official Plan policies and study requirements for complete applications for new developments within the Chloride ICA, <p>if the following applies:</p> <ul style="list-style-type: none"> i. where the activity would be a significant drinking water threat, ii. in an area with any land use except residential consisting of four units or fewer, and iii. where the salt application area is equal to or greater than 200 square metres or 8 parking spaces
<p>12. The Application of Road Salt 13. The Handling and Storage of Road Salt</p>	
<p>WC-CW-12.02</p> <p><i>Existing/Future Specify Action WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10; ICA (CHL)</i></p>	<p>To ensure the application, handling and storage of road salt never becomes or ceases to be a significant drinking water threat, where these activities are or would be significant drinking water threats, the municipality should review available training programs related to salt application and storage and ensure that adequate training opportunities are available to train municipal staff and private contractors on best management practices related to salt application and storage.</p>
<p>12. The Application of Road Salt</p>	
<p>WC-CW-12.1</p> <p><i>Existing/Future Specify Action ICA (CHL/SOD)</i></p>	<p>Where a Chloride or Sodium Issue Contributing Area ICA has been identified as a drinking water issue delineated, or where salt application is or would be a significant drinking water threat, the municipality and / or County of Wellington shall review and, if necessary, revise or issue new their Salt Management Plans for the application of salt on roadways in all Wellhead Protection Areas.</p> <p>The Salt Management Plan shall include, as a minimum, measures to ensure application rate, timing and location reduce the potential for salt-related surface water</p>

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	run-off and groundwater infiltration and meet the objectives of Environment Canada's Code of Practice for Environmental Management of Road Salts including the salt vulnerable area mapping to include areas where significant threats can occur. Where an RMP applies to municipal salt application, the Salt Management Plan shall be incorporated into the RMP.
<p>WC-CW-12.2</p> <p>Existing/Future Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10; ICA (CHL)</p>	<p>To ensure any existing or new application of road salt ceases to be or never becomes a significant drinking water, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i>, and a Risk Management Plan shall be required where the following applies:</p> <ol style="list-style-type: none"> the activity is or would be a significant drinking water threat; salt is or could be applied to the property; the salt application area is equal to or greater than 200 square metres or 8 parking spots; and the property is used for any land uses except residential consisting of four units or fewer. <p>Notwithstanding the above, a Risk Management Plan will also be required for all any municipal properties where the activity is or would be a significant drinking water threat.</p>
<p>WC-CW/NB-12.3</p> <p>Existing/Future Specify Action WHPA-A-v.10; WHPA-B-v.10; ICA (CHL)</p>	<p>The County, municipalities and the Ministry of Transportation should enhance road design measures for modifying, widening or expanding existing roads and / or designing / developing new roads to minimize the impact from any application of salt on roadways related to the development of new roads in the following areas:</p> <ol style="list-style-type: none"> a-In WHPA- A and WHPA-B where the vulnerability is equal to ten (10); or b-Where a Chloride Issue has been identified. <p>The assessment should make recommendation for enhanced measures to protect drinking water sources to be carried through detailed design and construction of the road.</p>
<p>WC-NB-12.4</p> <p>Existing/Future Specify Action. WHPA-A-v.10; WHPA-B-v.10; ICA (CHL)</p>	<p>For existing or future transport pathways within a Chloride ICA, the Ministry of Environment, Conservation and Parks should prioritize inspections and abatement activities related to well maintenance and abandonment pursuant to Ontario Regulation 903, <i>Ontario Water Resources Act, 1990</i>.</p>
<p>WC-CW-12.5</p> <p>Existing/Future Specify Action. ICA (CHL)</p>	<p>For existing or future transport pathways within a Chloride ICA, the municipality shall review whether the transport pathways increase infiltration of chloride to the groundwater and what actions can be taken by the municipality to reduce the infiltration of chloride.</p> <p>Actions may include, but are not limited to, incorporating terms and conditions into Risk Management Plans, maintenance or removal of transport pathways, direction to other parties regarding maintenance or removal of transport pathways, reduction of salt application within the area of the transport pathway, and advocate with Ministry of Environment, Conservation and Parks or Ministry of Transportation for actions to reduce the infiltration of chloride or other measures as required.</p>

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<p>WC-NB-12.6</p> <p>Existing/Future Specify Action ICA (CHL)</p>	<p>Where a Chloride ICA has been delineated or where road salt application is or would be a significant drinking water threat, the Ministry of Transportation should review and, if necessary, revise or issue new Salt Management Plans for the application of salt on roadways in all Wellhead Protection Areas.</p> <p>The Salt Management Plan should include, as a minimum, measures to ensure application rate, timing and location reduce the potential for salt-related surface water run-off and groundwater infiltration and meet the objectives of Environment Canada's Code of Practice for Environmental Management of Road Salts including the salt vulnerable area mapping to include areas where significant threats can occur.</p>
<p>WC-CW-12.7</p> <p>Existing/Future Education & Outreach ICA (CHL)</p>	<p>To ensure any existing or new application of road salt ceases to be or never becomes a significant drinking water threat, where this activity is or would be a significant drinking water threat within a Chloride ICA, the municipality and / or the Public Health Unit shall develop and implement an education initiative addressing the application of road salt. The education program shall encourage the implementation of best management practices that form the core of the Smart About Salt or similar accreditation program to reduce the impact of winter de-icing activities.</p>
<p>13. The Handling and Storage of Road Salt</p>	
<p>WC-CW-13.1</p> <p>a) Existing Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10</p> <p>b) Future Part IV-RMP WHPA-B-v.10</p>	<p>To ensure:</p> <ul style="list-style-type: none"> a. any existing handling and storage of road salt outside of an ICA but within WHPA-A and WHPA-B with a vulnerability score of ten (10) or IPZ-One (1) with a vulnerability score of ten (10); or b. any new handling and storage of road salt within a WHPA-B with a vulnerability score equal to ten (10), <p>ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.</p>
<p>WC-CW-13.2</p> <p>Future Part IV-Prohibit WHPA-A-v.10; IPZ-1-v.10</p>	<p>To ensure any new handling and storage of road salt within a WHPA-A or IPZ-One (1) outside of an ICA, never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.</p>
<p>WC-CW-13.2.1</p> <p>Existing/Future Part IV-Prohibit WHPA-A-v.10 within ICA (CHL)</p>	<p>To ensure, within a WHPA-A and within a Chloride ICA that:</p> <ul style="list-style-type: none"> a. any existing or new handling and storage of road salt in any amount that is stored uncovered; or b. any new (future), handling and storage of road salt in covered storage in amounts greater than 100 kilograms, <p>ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.</p>
<p>WC-CW-13.2.2</p> <p>Existing/Future Part IV-RMP ICA (CHL) outside WHPA-A-v.10</p>	<p>To ensure, within a Chloride ICA that:</p> <ul style="list-style-type: none"> a) any existing or new (future) handling and storage of road salt, outside of a WHPA-A, in any amount that is stored uncovered; or b) any existing or new (future) handling and storage of road salt, outside of a WHPA-A, in covered storage in amounts greater than 100 kilograms; or

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	<p>c) any existing or new (future) handling and storage of road salt, for a property that requires a salt application Risk Management Plan, in uncovered or covered storage of any amount; or</p> <p>d) any existing or new (future) handling and storage of road salt at a municipal property, in uncovered or covered storage of any amount;</p> <p>ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.</p>
<p>WC-CW-13.3</p> <p><i>Existing/Future Education & Outreach ICA (CHL/SOD) v.<10</i></p>	<p>To ensure any existing or new handling and storage of road salt ceases to be or never becomes a significant drinking water threat, where this activity is a significant drinking water threat within a Sodium or Chloride ICA, where the vulnerability score is less than 10, the municipality and / or the Public Health Unit shall develop and implement an education initiative about the handling and storage of road salt. The education program shall encourage the implementation of the best management practices which that form the core of the Smart About Salt or similar accreditation program to reduce the impact of winter de-icing activities.</p>
<p>14. The Storage of Snow</p>	
<p>WC-CW-14.1</p> <p><i>Existing Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10 outside of ICA (CHL); Future Part IV-RMP WHPA-B-v.10 outside of ICA (CHL)</i></p>	<p>To ensure:</p> <ol style="list-style-type: none"> any existing snow storage outside of a Chloride ICA but within WHPA-A and WHPA-B with a vulnerability score of ten (10) or IPZ-One (1) with a vulnerability score of ten (10); or any new snow storage outside of a Chloride ICA but within a WHPA-B with a vulnerability score equal to ten (10), <p>ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.</p>
<p>WC-CW-14.2</p> <p><i>Future Part IV-Prohibit WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10 outside of ICA (CHL)</i></p>	<p>To ensure any new snow storage within a WHPA-A or IPZ-One (1) outside of a Chloride ICA, never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.</p>
<p>WC-CW-14.3</p> <p><i>Existing/Future Education & Outreach WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10; ICA (NIT/SOD/CHL)</i></p>	<p>To ensure existing or new snow storage within a WHPA-A or B with a vulnerability score equal to ten (10), IPZ-1 with a vulnerability score equal to ten (10), IPZ-One, or Nitrate, Sodium or Chloride ICA cease to be or never become a significant drinking water threat, the municipality shall develop and implement an education initiative about snow storage. The education program shall encourage the use of best management practices that reduce the impact on groundwater.</p>
<p>WC-CW-14.4</p> <p><i>Future Part IV-Prohibit WHPA-A-v.10 within ICA (CHL)</i></p>	<p>To ensure any new, below grade snow storage greater than 0.01 hectare in area or at or above grade snow storage greater than 1 hectare in area within a WHPA-A in a Chloride ICA never becomes a significant drinking water threat this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.</p>

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<p>WC-CW-14.5</p> <p><i>Existing/Future Part IV-RMP ICA (CHL)</i></p>	<p>To ensure any existing or new facility for snow storage within a Chloride ICA ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required where:</p> <ol style="list-style-type: none"> a. a prohibition policy does not apply; b. salt is or could be applied to the property; c. the salt application area is equal to or greater than 200 square metres or 8 parking spots; and d. the property is used for any land uses except residential consisting of four units or fewer.
15. The Handling and Storage of Fuel	
<p>WC-CW-15.1</p> <p><i>Existing/Future Education & Outreach WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10</i></p>	<p>To ensure the existing and future handling and storage of fuel more than 250 Litres but not more than 2500 Litres ceases to be or never becomes a significant drinking water threat, where this activity is, or would be, a significant drinking water threat, the municipality shall develop and implement an education and outreach program for property owners with identified fuel oil tanks outlining the requirements under the fuel oil code by the Technical Standards and Safety Authority and best management practices that could be implemented.</p>
<p>WC-CW-15.2</p> <p><i>a) Existing Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10</i></p> <p><i>b)Future Part IV-RMP WHPA-B-v.10</i></p>	<p>To ensure:</p> <ol style="list-style-type: none"> a. the existing handling and storage of liquid fuel of more than 2,500 Litres, where this activity is a significant drinking water threat; or b. any new handling and storage of liquid fuel of more than 2,500 Litres within a WHPA-B with a vulnerability score equal to ten (10), <p>ceases to be or never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.</p> <p>For significant threats that are Technical Standards and Safety Authority regulated, the Risk Management Plan may be at a minimum scoped to address matters such as a contaminant management plan and any monitoring, reporting completed by the proponent/applicant and auditing requirements provided to the Technical Standards and Safety Authority.</p>
<p>WC-CW-15.3</p> <p><i>Future Part IV-Prohibit WHPA-A-v.10; IPZ-1-v.10</i></p>	<p>To ensure any new handling and storage of liquid of more than 2,500 Litres within a WHPA-A or IPZ-One (1), never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.</p> <p>Notwithstanding this prohibition, fuel handling and storage required for emergency back-up generators within these vulnerable areas may be permitted subject to a Risk Management Plan in accordance with policy WC-CW-15.2.</p>
<p>WC-MC-15.4</p> <p><i>Existing/Future Prescribed Instr. WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10</i></p>	<p>To ensure any existing or new handling and storage of fuel on properties licensed under the <i>Aggregate Resources Act</i> ceases to be or never becomes a significant drinking water threat, where this activity is, or would be, a significant drinking water threat,</p> <ol style="list-style-type: none"> a. The Ministry of Natural Resources and Forestry shall review all licenses, permits and site plans issued under the <i>Aggregate Resources Act</i> and/or

Policy Number	Policies Addressing Prescribed Drinking Water Threats within the County of Wellington
	<p>related regulations, standards and policies and, if necessary, include measures that, when implemented, will manage the risk so that these activities do not become or cease to be a significant drinking water threat.</p> <p>b. The Ministry of Natural Resources and Forestry shall not issue new or amended licenses or permits and approve site plans under the <i>Aggregate Resources Act</i> and/or related regulations, standards and policies unless measures that, when implemented, will manage the risk so that these activities do not become or cease to be a significant drinking water threat.</p>
16. The Handling and Storage of a Dense Non-Aqueous Phase Liquid (DNAPL)	
WC-CW-16.1 <i>Existing</i> Part IV-RMP WHPA-A/B/C; IPZ-1-v.10; ICA(TCE)	To ensure any existing handling and storage of a dense non-aqueous phase liquid greater than 25 Litres , for industrial, commercial, institutional or agricultural purposes ceases to be a significant drinking water threat, where this activity is a significant drinking water threat, this activity is designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan is required.
WC-CW-16.2 <i>Future</i> Part IV-Prohibit WHPA-A-v.10; IPZ-1-v.10	To ensure any new handling and storage of a dense non-aqueous phase liquid for industrial, commercial institutional or agricultural purposes within WHPA-A or IPZ One (1) , never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.
WC-CW-16.3 <i>Future</i> Part IV-RMP WHPA-B/C; ICA(TCE)	To ensure any new handling and storage of a dense non-aqueous phase liquid greater than 25 Litres , for industrial, commercial, institutional or agricultural purposes within a WHPA-B, C or TCE ICA, never becomes a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.
WC-CW-16.4 <i>Existing/Future</i> Education & Outreach WHPA-A/B/C; IPZ-1-v.10; ICA (TCE)	To ensure an existing or new handling and storage of a dense non-aqueous phase liquid ceases to be or never becomes a significant drinking water threat, where this activity is, or would be, a significant drinking water threat, the municipality shall develop and implement education and outreach programs to encourage the use of alternative products where available and the proper handling/storage and disposal procedures for these products.
17. The Handling and Storage of an Organic Solvent	
WC-CW-17.1 a) <i>Existing</i> Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10; b) <i>Future</i> Part IV-RMP; WHPA-B-v.10	To ensure: <ol style="list-style-type: none"> any existing handling and storage of an organic solvent where this activity is a significant drinking water threat; or any new handling and storage of an organic solvent within a WHPA-B with a vulnerability score equal to ten (10), ceases to be or never becomes significant drinking water threat this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.
WC-CW-17.2 <i>Future</i> Part IV-Prohibit WHPA-A-v.10; IPZ-1-v.10	To ensure any new handling and storage of organic solvents within WHPA-A or IPZ One (1) , never becomes a significant drinking water threat, where this activity is a significant drinking water threat, this activity shall be designated for the purpose of Section 57 of the <i>Clean Water Act, 2006</i> and shall be prohibited.
18. The Management of Runoff that Contains Chemicals Used in De-icing of Aircraft	

Policy Number	Policies Addressing Prescribed Drinking Water Threats within the County of Wellington
WC-CW-18.1 <i>Future Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10</i>	To ensure any new airports where there could be runoff containing de-icing chemicals, never become a significant drinking threat, where this activity would be a significant drinking water threat, this activity shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.
21. The Use of Land as Livestock Grazing or Pasturing Land, an Outdoor Confinement Area or a Farm Animal Yard	
WC-CW-19.1 <i>Existing/Future Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10</i>	To ensure the use of land for existing or new livestock grazing or pasturing, within a WHPA-A or WHPA-B with a vulnerability score equal to ten (10) or IPZ One (1) , ceases to be or never becomes a significant drinking water threat, where these activities are, or would be, a significant drinking water threat, these activities shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required.
WC-CW-19.2 <i>Existing/Future Part IV-RMP WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10 ICA (NIT)</i>	To ensure a farm animal yard or an outdoor confinement area as defined in O. Reg. 267/03, for existing or new livestock operations not phased-in under the Nutrient Management Act within a WHPA-A or WHPA-B with a vulnerability score equal to ten (10) or IPZ One (1) or a Nitrate ICA, cease to be or never become significant drinking water threats, where these activities are, or would be, significant drinking water threats, <ol style="list-style-type: none"> These activities shall be designated for the purpose of Section 58 of the <i>Clean Water Act, 2006</i> and a Risk Management Plan shall be required. The requirements of the Risk Management Plan will generally be based on the requirements of a nutrient management plan and/or strategy under the <i>Nutrient Management Act</i>, but may also include any modifications or additional requirements deemed necessary or appropriate by the Risk Management Official.
WC-MC-19.3 <i>Existing/Future Prescribed Instr. WHPA-A-v.10; WHPA-B-v.10; IPZ-1-v.10; ICA (NIT)</i>	To ensure a farm animal yard or an outdoor confinement area as defined in O. Reg. 267/03, for existing or new livestock operations with an existing or requiring a Nutrient Management Plan or Strategy in accordance with the <i>Nutrient Management Act</i> , cease to be or never become a significant drinking water threat, where these activities are, or would be, a significant drinking water threat, the Ministry of Agriculture, Food and Rural Affairs shall review and, if necessary, amend the required Nutrient Management Plan/Strategy to ensure that such Plan/Strategy incorporates measures and/or terms and conditions deemed necessary to ensure that these activities cease to be or never become a significant drinking water threat.
WC-CW-19.4 <i>Existing/Future Education & Outreach ICA (NIT)v.<10</i>	To ensure livestock grazing or pasturing land, an outdoor confinement area or farm animal yard within a Nitrate ICA where the vulnerability score is less than 10, cease to be or never become significant drinking water threats, the municipality shall develop and implement an education initiative about these activities. The education program shall encourage the use of beneficial management practices that reduce the impact on groundwater.
22. The Establishment and Operation of a Liquid Hydrocarbon Pipeline	
WC-NB-20.1 <i>Future Specify Action WHPA-A-v.10; WHPA-B-v.10</i>	To reduce the risks to municipal drinking water sources from the establishment and operation of a liquid hydrocarbon pipeline within the meaning of O. Reg. 210/01 under the <i>Technical Safety and Standards Act</i> or that is subject to the <i>National Energy Board Act</i> , where the activity would be a significant drinking water threat, the National Energy Board, Ontario Energy Board, and the pipeline proponent are encouraged to provide the Source Protection Authority and the Municipality the location of any new proposed pipeline within the Municipality and/or Source Protection Area.

Policy Number	Policies Addressing Prescribed Drinking Water Threats within the County of Wellington
<i>Monitoring</i>	The Source Protection Authority shall document in the annual report the number of new pipelines proposed within vulnerable areas if a pipeline has been proposed and/or application has been received.

7.4 Appendix A: List of Policies as per Section 34 of Regulation 287/07

LIST A

Title: Significant threat policies that affect decisions under the *Planning Act* and *Condominium Act*, 1998

Opening Statement: “Clause 39 (1)(a), subsections 39 (2), (4) and (6), and sections 40 and 42 of the *Clean Water Act*, 2006 apply to the following policies:”

Content: WC-CW-1.1.1, WC-CW-1.1.2, WC-CW-1.2, WC-CW-1.3, WC-MC-1.4, **WC-MC-12.01**

LIST B

Title: Moderate and low threat policies that affect decisions under the *Planning Act* and *Condominium Act*, 1998

Opening Statement: “Subsection 39 (1) (b) of the *Clean Water Act*, 2006 applies to the following policies:”

Content: No Applicable Policies

LIST C

Title: Significant threat policies that affect Prescribed Instrument decisions

Opening Statement: “Subsection 39 (6), clause 39 (7) (a), section 43 and subsection 44 (1) of the *Clean Water Act*, 2006 apply to the following policies:”

Content: WC-CW-1.1.1, WC-CW-1.1.2, WC-CW-1.2, WC-MC-1.16; WC-MC-1.21, WC-MC-2.1, WC-MC-2.3, WC-MC-3.3, WC-MC-3.4, WC-MC-3.5, WC-MC-3.6, WC-MC-3.7, WC-MC-4.3, WC-MC-5.3, WC-MC-6.1, WC-MC-6.2, WC-MC-7.1, WC-MC-8.2, WC-MC-15.4, WC-MC-19.3

LIST D

Title: Moderate and low threat policies that affect Prescribed Instrument decisions

Opening Statement: “Clause 39 (7) (b) of the *Clean Water Act*, 2006 applies to the following policies:”

Content: No Applicable Policies

LIST E

Title: Significant threat policies that impose obligations on municipalities, source protection authorities and local boards

Opening Statement: “Section 38 and subsection 39 (6) of the *Clean Water Act*, 2006 applies to the following policies:”

Content: WC-CW-1.1.1, WC-CW-1.1.2, WC-CW-1.2, WC-CW-1.5, WC-CW-1.6, WC-CW-1.14, WC-CW-1.23, WC-CW-3.1, WC-CW-3.2, WC-CW-4.4, WC-CW-8.4, **WC-CW-12.02**, WC-CW-12.1, **WC-CW/NB-12.3**, **WC-CW-12.5**, **WC-CW-12.7**, WC-CW-13.3, WC-CW-14.3, WC-CW-15.1, WC-CW-16.4, WC-CW-19.4

LIST F

Title: Monitoring policies referred to in subsection 22 (2) of the *Clean Water Act*, 2006

Opening Statement: “Section 45 of the *Clean Water Act*, 2006 applies to the following policies:”

Content: WC-CW-1.9, WC-CW-1.10, WC-CW-1.11, WC-CW-1.12, WC-CW-1.13, WC-CW-1.14, WC-NB-20.1; WC-MC-1.16c

LIST G

Title: Policies related to section 57 of the *Clean Water Act*, 2006

Opening Statement: “The following policies relate to section 57 (prohibition) of the Clean Water Act, 2006.”

Content: WC-CW-1.1.1, WC-CW-1.1.2, WC-CW-1.2; WC-CW-4.1, WC-CW-5.1, WC-CW-7.2, WC-CW-8.1, WC-CW-9.2, WC-CW-11.2, WC-CW-13.2, WC-CW-13.2.1, WC-CW-14.2, WC-CW-14.4, WC-CW-15.3, WC-CW-16.2, WC-CW-17.2

LIST H

Title: Policies related to section 58 of the *Clean Water Act*, 2006

Opening Statement: “The following policies relate to section 58 (Risk Management Plans) of the Clean Water Act, 2006.”

Content: WC-CW-1.1.1, WC-CW-1.1.2, WC-CW-2.2, WC-CW-2.4, WC-CW-3.8, WC-CW-5.2, WC-CW-8.3, WC-CW-9.1, WC-CW-10.1, WC-CW-11.1, WC-CW-12.2, WC-CW-13.1, WC-CW-13.2.2, WC-CW-14.1, WC-CW-14.5, WC-CW-15.2, WC-CW-16.1, WC-CW-16.3, WC-CW-17.1, WC-CW-18.1, WC-CW-19.1, WC-CW-19.2

LIST I

Title: Policies related to section 59 of the *Clean Water Act*, 2006

Opening Statement: “The following policies relate to section 59 (restricted land use) of the *Clean Water Act*, 2006.”

Content: WC-CW-1.1.1, WC-CW-1.1.2, WC-CW-1.3

LIST J

Title: Strategic Action policies

Opening Statement: For the purposes of section 33 of O. Reg. 287/07, the following policies are identified as strategic action policies:

Content: WC-NB-1.18, WC-NB-1.19, WC-NB-1.20, WC-NB-1.22

LIST K

Title: Significant threat policies targeted to bodies other than municipalities, local board or source protection authorities for implementation

Opening Statement: The following policies are identified as non-legally binding policies:

Content: WC-NB-1.7, WC-NB-1.8, WC-NB-1.17, WC-CW/NB-12.3, WC-NB-12.4, WC-NB-12.6, WC-NB-20.1

7.5 Appendix B: Prescribed Instruments and Policy Summary Tables

Table 1: Prescribed Instruments Which Apply To Source Protection Plan Policies In Lists C And D Above (S.34(4) Of O.Reg. 287/07)

Policy #	Legal Effect (conform with, have regard to)	Environmental Protection Act	Nutrient Management Act	Ontario Water Resources Act	Aggregate Resources Act
WC-CW-1.1.1	Comply With	X	X	X	X
WC-CW-1.1.2	Comply With	X	X	X	X
WC-CW-1.2	Comply With	X			X
WC-MC-1.16	Must Conform	X			
WC-MC-1.21	Must Conform			X	
WC-MC-2.1	Must Conform	X		X	
WC-MC-2.3	Must Conform	X		X	
WC-MC-3.3	Must Conform	X		X	
WC-MC-3.4	Must Conform	X		X	
WC-MC-3.5	Must Conform	X		X	
WC-MC-3.6	Must Conform	X		X	
WC-MC-3.7	Must Conform	X		X	
WC-MC-4.3	Must Conform		X		
WC-MC-5.3	Must Conform		X		
WC-MC-6.1	Must Conform	X	X		
WC-MC-6.2	Must Conform	X	X		
WC-MC-7.1	Must Conform	X	X		
WC-MC-8.2	Must Conform		X		
WC-MC-15.4	Must Conform				X
WC-MC-19.3	Must Conform		X		

Table 2: Policy Summary Matrix

Policy #	Legal Effect (conform with, have regard to, non-binding)	Policy affects decisions under the Planning Act and Condominium Act, 1998 (Lists A and B)	Policy affects Prescribed Instrument decisions (Lists C and D)	Significant threat policies that impose obligations on municipalities, source protection authorities and local boards (List E)	Monitoring policies referred to in s.22(2) of the CWA (List F)	Part IV Policies - Significant threat policies that are designated in the plan as requiring a Risk Management Plan, are prohibited under s. 57, or to which s. 59 of the CWA applies (Lists G, H, and I)	Strategic Action Policies (List J)	Significant threat policies which designate a body other than a municipality, source protection authority or local board as responsible for implementing the policy (List K)
WC-CW-1.1.1	Comply With	X	X	X		X		
WC-CW-1.1.2	Comply With	X	X	X		X		
WC-CW-1.2	Comply With	X	X	X		X		

Policy #	Legal Effect (conform with, have regard to, non-binding)	Policy affects decisions under the Planning Act and Condominium Act, 1998 (Lists A and B)	Policy affects Prescribed Instrument decisions (Lists C and D)	Significant threat policies that impose obligations on municipalities, source protection authorities and local boards (List E)	Monitoring policies referred to in s.22(2) of the CWA (List F)	Part IV Policies - Significant threat policies that are designated in the plan as requiring a Risk Management Plan, are prohibited under s. 57, or to which s. 59 of the CWA applies (Lists G, H, and I)	Strategic Action Policies (List J)	Significant threat policies which designate a body other than a municipality, source protection authority or local board as responsible for implementing the policy (List K)
WC-CW/NB-12.3	Comply With/Non Binding			X				X
WC-CW-1.3	Comply With	X				X		
WC-MC-1.4	Must Conform	X						
WC-MC-12.01	Must Conform	X						
WC-MC-1.16	Must Conform		X		X			
WC-MC-1.21	Must Conform		X					
WC-MC-2.1	Must Conform		X					
WC-MC-2.3	Must Conform		X					
WC-MC-3.3	Must Conform		X					
WC-MC-3.4	Must Conform		X					
WC-MC-3.5	Must Conform		X					
WC-MC-3.6	Must Conform		X					
WC-MC-3.7	Must Conform		X					
WC-MC-4.3	Must Conform		X					
WC-MC-5.3	Must Conform		X					
WC-MC-6.1	Must Conform		X					
WC-MC-6.2	Must Conform		X					
WC-MC-7.1	Must Conform		X					
WC-MC-8.2	Must Conform		X					
WC-MC-12.4	Must Conform		X					
WC-MC-15.4	Must Conform		X					
WC-MC-19.3	Must Conform		X					
WC-CW-1.5	Comply With			X				
WC-CW-1.6	Comply With			X				
WC-CW-1.14	Comply With			X				
WC-CW-1.23	Comply With			X				
WC-CW-3.1	Comply With			X				
WC-CW-3.2	Comply With			X				
WC-CW-4.4	Comply With			X				
WC-CW-8.4	Comply With			X				
WC-CW-12.1	Comply With			X				
WC-CW-12.02	Comply With			X				
WC-CW-12.5	Comply With			X				
WC-CW-12.7	Comply With			X				
WC-CW-13.3	Comply With			X				

Policy #	Legal Effect (conform with, have regard to, non-binding)	Policy affects decisions under the Planning Act and Condominium Act, 1998 (Lists A and B)	Policy affects Prescribed Instrument decisions (Lists C and D)	Significant threat policies that impose obligations on municipalities, source protection authorities and local boards (List E)	Monitoring policies referred to in s.22(2) of the CWA (List F)	Part IV Policies - Significant threat policies that are designated in the plan as requiring a Risk Management Plan, are prohibited under s. 57, or to which s. 59 of the CWA applies (Lists G, H, and I)	Strategic Action Policies (List J)	Significant threat policies which designate a body other than a municipality, source protection authority or local board as responsible for implementing the policy (List K)
WC-CW-14.3	Comply With			X				
WC-CW-15.1	Comply With			X				
WC-CW-16.4	Comply With			X				
WC-CW-19.4	Comply With			X				
WC-CW-1.9	Comply With				X			
WC-CW-1.10	Comply With				X			
WC-CW-1.11	Comply With				X			
WC-CW-1.12	Comply With				X			
WC-CW-1.13	Comply With				X			
WC-CW-1.14	Comply With				X			
WC-NB-20.1	Non-binding				X			
WC-CW-2.4	Comply With					X		
WC-CW-3.8	Comply With					X		
WC-CW-4.1	Comply With					X		
WC-CW-5.1	Comply With					X		
WC-CW-7.2	Comply With					X		
WC-CW-8.1	Comply With					X		
WC-CW-9.2	Comply With					X		
WC-CW-11.2	Comply With					X		
WC-CW-12.2	Comply With					X		
WC-CW-13.2	Comply With					X		
WC-CW-13.2.1	Comply With					X		
WC-CW-13.2.2	Comply With					X		
WC-CW-14.2	Comply With					X		
WC-CW-14.4	Comply With					X		
WC-CW-14.5	Comply With					X		
WC-CW-15.3	Comply With					X		
WC-CW-16.2	Comply With					X		
WC-CW-17.2	Comply With					X		
WC-CW-2.2	Comply With					X		
WC-CW-4.2	Comply With					X		
WC-CW-5.2	Comply With					X		
WC-CW-8.3	Comply With					X		
WC-CW-9.1	Comply With					X		
WC-CW-10.1	Comply With					X		
WC-CW-11.1	Comply With					X		
WC-CW-13.1	Comply With					X		

Policy #	Legal Effect (conform with, have regard to, non-binding)	Policy affects decisions under the Planning Act and Condominium Act, 1998 (Lists A and B)	Policy affects Prescribed Instrument decisions (Lists C and D)	Significant threat policies that impose obligations on municipalities, source protection authorities and local boards (List E)	Monitoring policies referred to in s.22(2) of the CWA (List F)	Part IV Policies - Significant threat policies that are designated in the plan as requiring a Risk Management Plan, are prohibited under s. 57, or to which s. 59 of the CWA applies (Lists G, H, and I)	Strategic Action Policies (List J)	Significant threat policies which designate a body other than a municipality, source protection authority or local board as responsible for implementing the policy (List K)
WC-CW-14.1	Comply With					X		
WC-CW-15.2	Comply With					X		
WC-CW-16.1	Comply With					X		
WC-CW-16.3	Comply With					X		
WC-CW-17.1	Comply With					X		
WC-CW-18.1	Comply With					X		
WC-CW-19.1	Comply With					X		
WC-CW-19.2	Comply With					X		
WC-NB-1.18	Non- Binding						X	
WC-NB-1.19	Non- Binding						X	
WC-NB-1.20	Non- Binding						X	
WC-NB-1.22	Non-Binding						X	
WC-NB-1.7	Non-Binding							X
WC-NB-1.8	Non-Binding							X
WC-NB-1.17	Non- Binding							X
WC-NB-12.4	Non-Binding							X
WC-NB-12.6	Non-Binding							X
WC-NB-20.1	Non-Binding							X

7.6 Schedule A: County of Wellington, Township of Wellington North, Arthur Well Supply



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal			
2. Sewage Systems			
3, 4. Agricultural Source Material			
6, 7. Non-Agricultural Source Material*			
8, 9. Commercial Fertilizer*			
10, 11. Pesticide			
12, 13. Road Salt*			
14. Storage of Snow			
15. Fuel			
16. DNAPLs			
17. Organic Solvents			
18. Aircraft De-icing			
21. Livestock Area			
Local Oil Pipelines Threat			

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within the Non-GUDI Wellhead Protection Zones shown on this map. For details refer to the text of the Source Protection Plan and the Ministry of the Environment Drinking Water Threats Tables.
 *Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of the plan for further details.

Legend:

- Well
- Road
- Minor River
- Lake / Main River
- Lower Tier
- Municipal Boundary

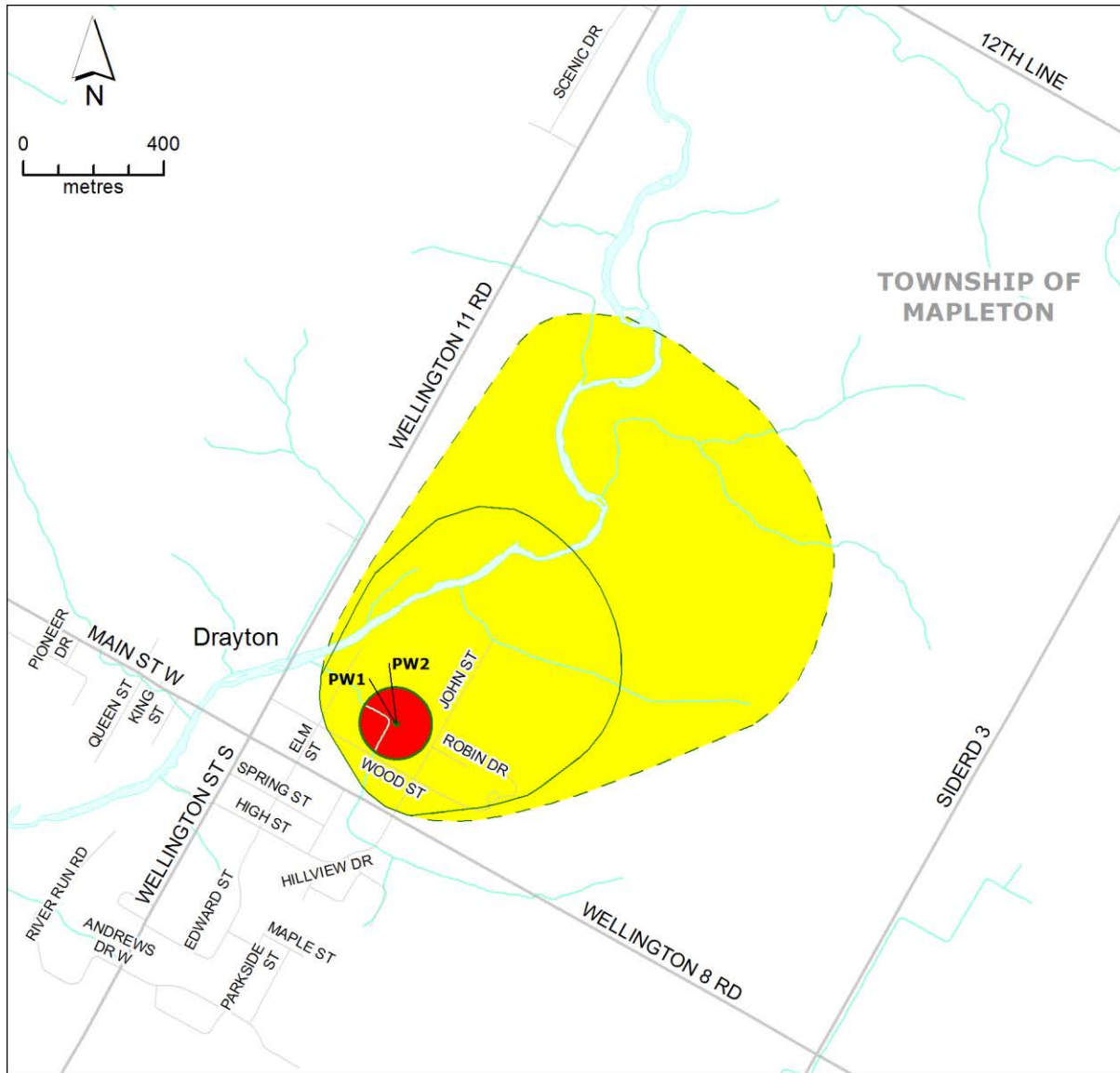
Wellhead Protection Zones:

- WHPA-A
- WHPA-B
- WHPA-C



1. Updated November 13, 2014
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
 3. This map is for illustrative purposes only. Information contained hereon is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

7.7 Schedule B: County of Wellington, Township of Mapleton, Drayton Well Supply



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	10	8	2,4,6
2. Sewage Systems	10	8	2,4,6
3, 4. Agricultural Source Material	10	8	2,4,6
6, 7. Non-Agricultural Source Material*	10	8	2,4,6
8, 9. Commercial Fertilizer*	10	8	2,4,6
10, 11. Pesticide	10	8	2,4,6
12, 13. Road Salt*	10	8	2,4,6
14. Storage of Snow	10	8	2,4,6
15. Fuel	10	8	2,4,6
16. DNAPLs	10	8	2,4,6
17. Organic Solvents	10	8	2,4,6
18. Aircraft De-icing	10	8	2,4,6
21. Livestock Area	10	8	2,4,6
Local Threat	10	8	2,4,6
Oil Pipelines	10	8	2,4,6

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within the Non-GUDI Wellhead Protection Zones shown on this map. For details refer to the text of the Source Protection Plan and the Ministry of the Environment Drinking Water Threats Tables.
 *Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of the plan for further details.

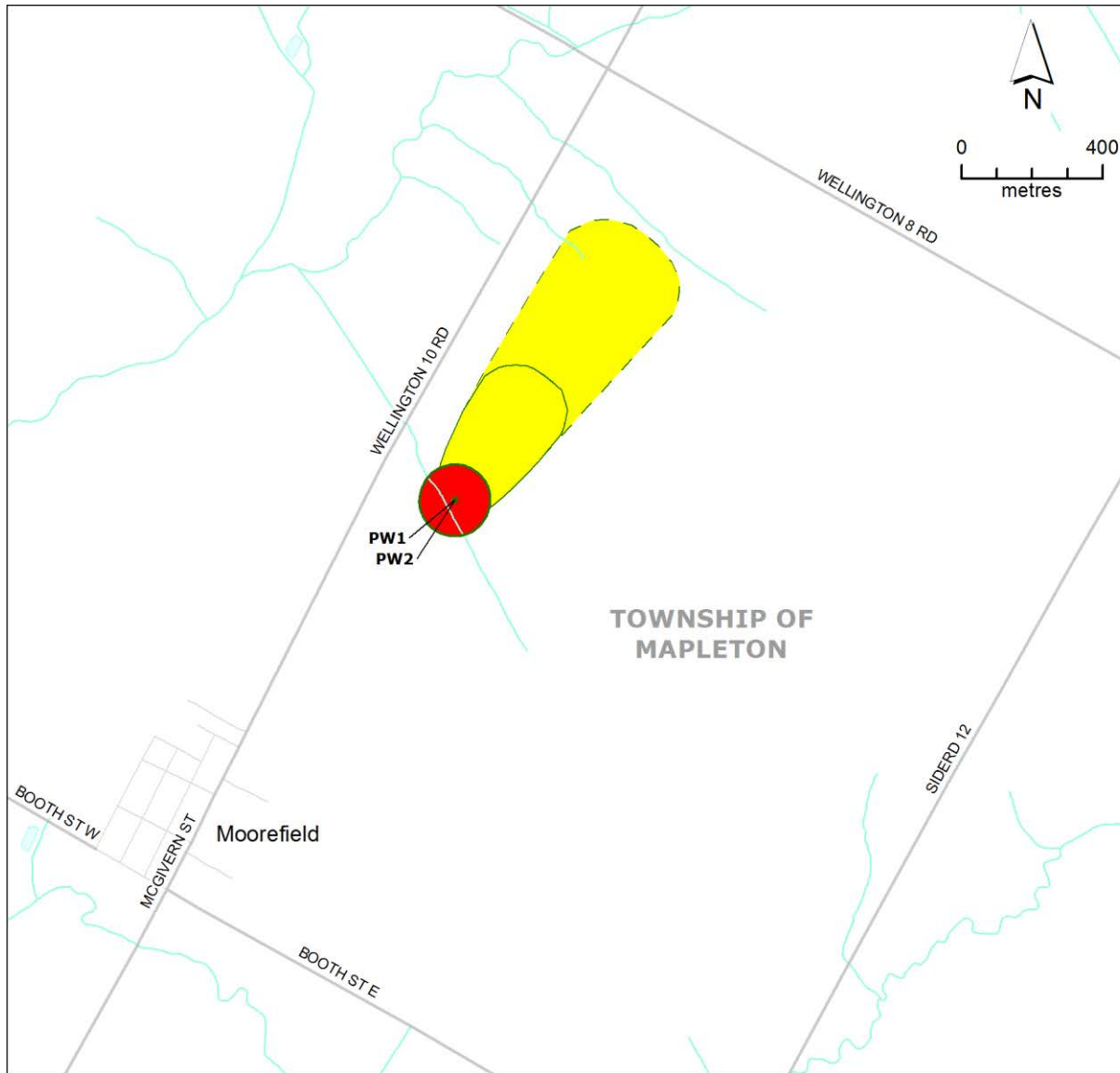
Wellhead Protection Zones:

- Well (Red circle)
- Road (Grey line)
- Minor River (Blue wavy line)
- Lake / Main River (Light blue area)
- WHPA-A (Yellow outline)
- WHPA-B (Orange outline)
- WHPA-C (Red outline)



1. Updated November 13, 2014
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
 3. This map is for illustrative purposes only. Information contained hereon is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

7.8 Schedule C: County of Wellington, Township of Mapleton, Moorefield Well Supply



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	10	8	2,4,6
2. Sewage Systems	10	8	2,4,6
3, 4. Agricultural Source Material	10	8	2,4,6
6, 7. Non-Agricultural Source Material*	10	8	2,4,6
8, 9. Commercial Fertilizer*	10	8	2,4,6
10, 11. Pesticide	10	8	2,4,6
12, 13. Road Salt*	10	8	2,4,6
14. Storage of Snow	10	8	2,4,6
15. Fuel	10	8	2,4,6
16. DNAPLs	10	8	2,4,6
17. Organic Solvents	10	8	2,4,6
18. Aircraft De-icing	10	8	2,4,6
21. Livestock Area	10	8	2,4,6
Local Threat Oil Pipelines	10	8	2,4,6

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within the Non-GUDI Wellhead Protection Zones shown on this map. For details refer to the text of the Source Protection Plan and the Ministry of the Environment Drinking Water Threats Tables.
*Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of the plan for further details.

Well
 Road
 Minor River
 Lake / Main River

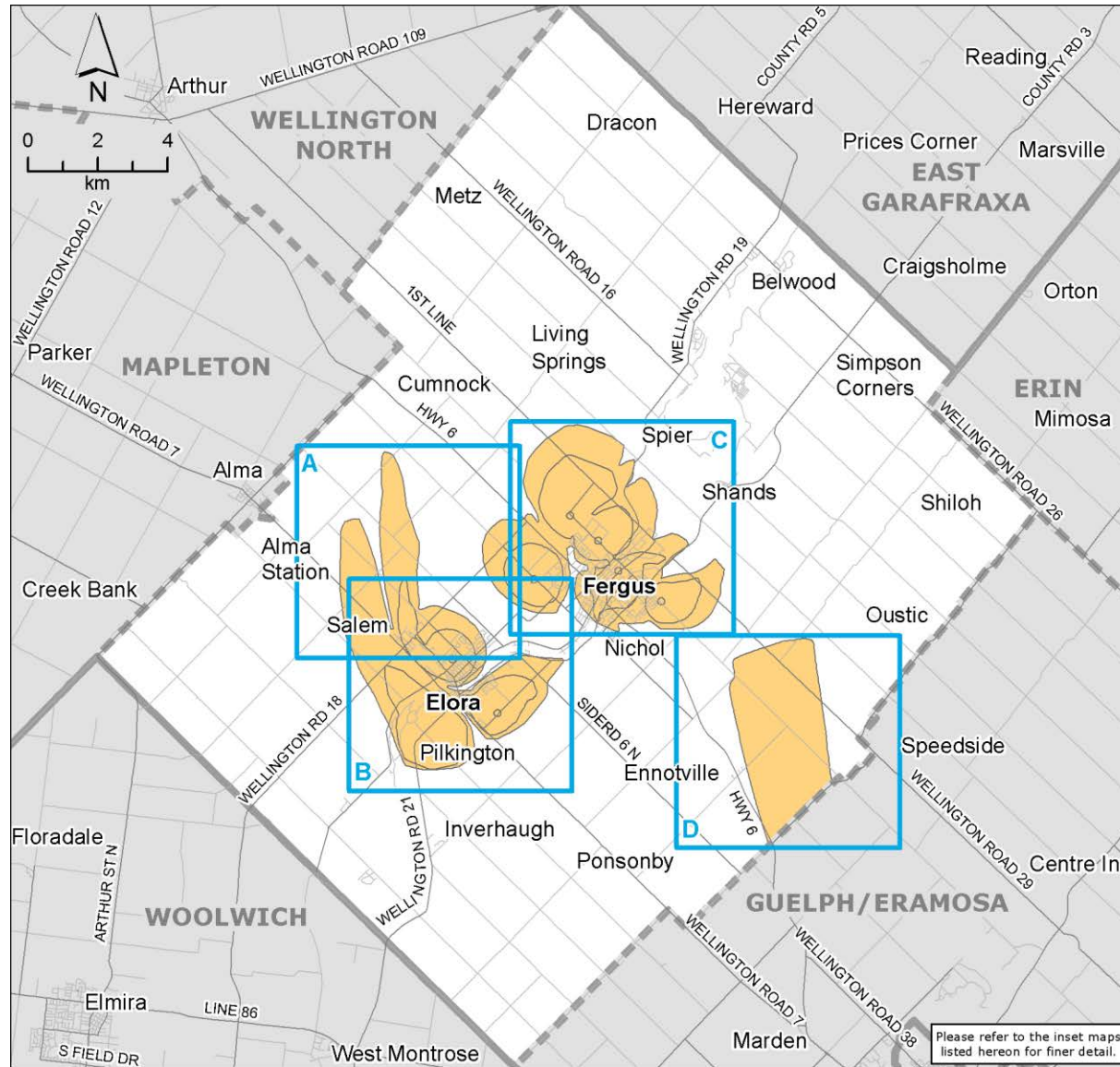
Wellhead Protection Zones:

- WHPA-A
- WHPA-B
- WHPA-C



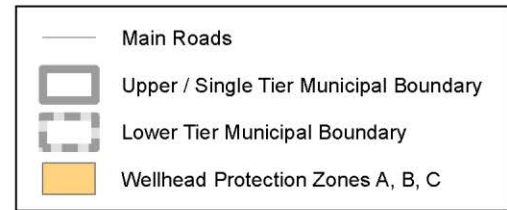
1. Updated November 17, 2014
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
 3. This map is for illustrative purposes only. Information contained hereon is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

7.9 Schedule D: County of Wellington, Township of Centre Wellington, Index Map



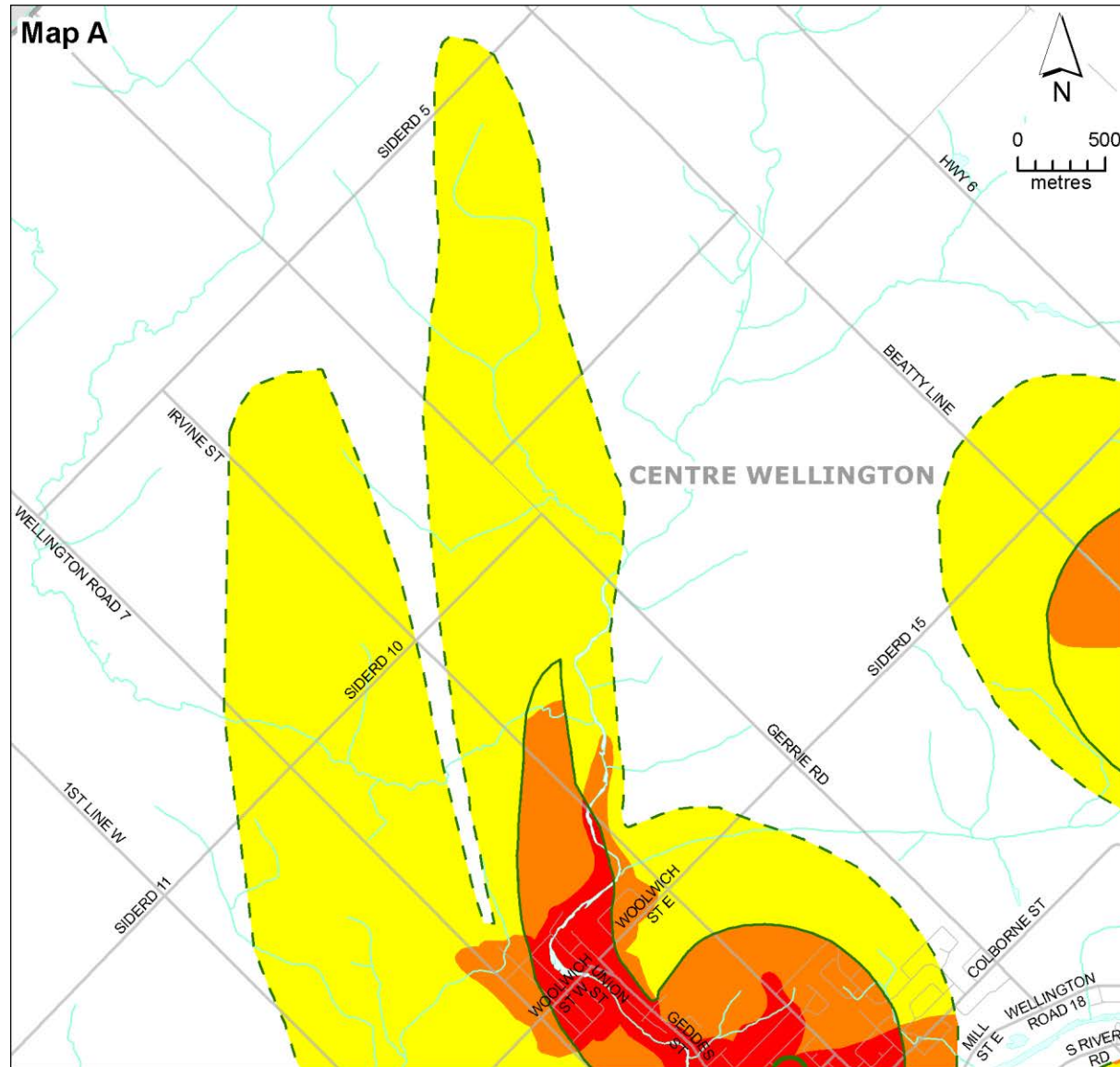
Significant Drinking Water Threat Policy Applicability

Index Map - Wellhead Protection Zones



1. Updated September 26, 2019
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
 3. This map is for illustrative purposes only. Information contained hereon is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

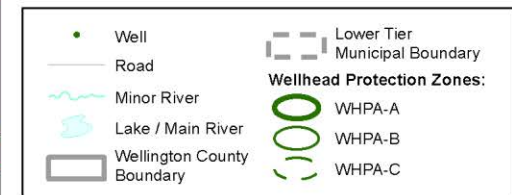
7.10 Schedule E: County of Wellington, Centre Wellington Well Supply, Map A



Significant Drinking Water Threat Policy Applicability

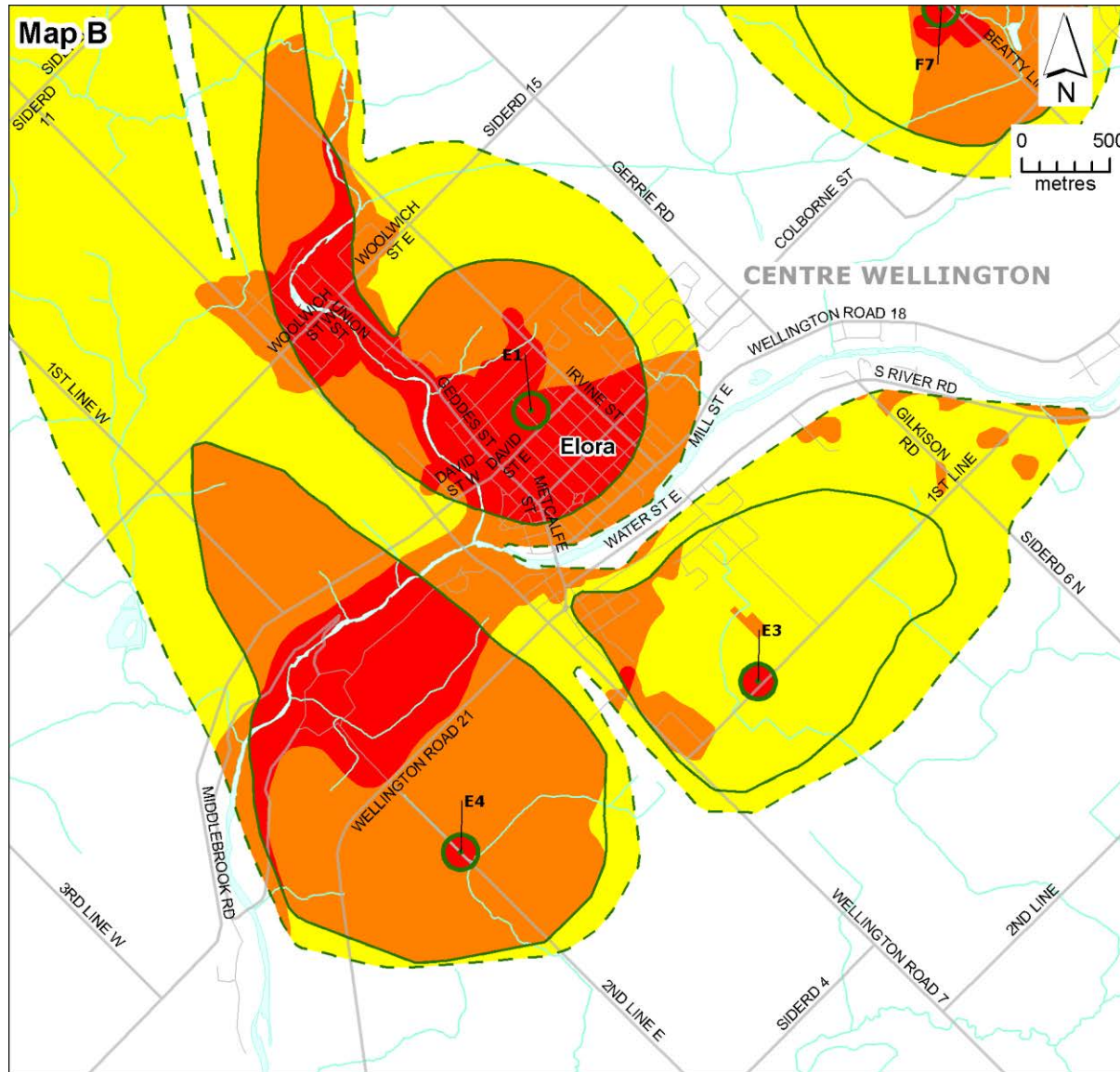
Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	10		
2. Sewage Systems		8	
3, 4. Agricultural Source Material	10		
6, 7. Non-Agricultural Source Material*	10		
8, 9. Commercial Fertilizer*	10		
10, 11. Pesticide	10		
12, 13. Road Salt*	10		
14. Storage of Snow	10		
15. Fuel	10		
16. DNAPLs		8	2,4,6
17. Organic Solvents	10		
18. Aircraft De-icing	10		
21. Livestock Area	10		
22. Oil Pipelines	10		

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
 *Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.



1. Updated September 26, 2019
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 3. This map is for illustrative purposes only. Information contained herein is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

7.11 Schedule F: County of Wellington, Centre Wellington Well, Map B



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	10	8	2,4,6
2. Sewage Systems	10	8	2,4,6
3, 4. Agricultural Source Material	10	8	2,4,6
6, 7. Non-Agricultural Source Material*	10	8	2,4,6
8, 9. Commercial Fertilizer*	10	8	2,4,6
10, 11. Pesticide	10	8	2,4,6
12, 13. Road Salt*	10	8	2,4,6
14. Storage of Snow	10	8	2,4,6
15. Fuel	10	8	2,4,6
16. DNAPLs	10	8	2,4,6
17. Organic Solvents	10	8	2,4,6
18. Aircraft De-icing	10	8	2,4,6
21. Livestock Area	10	8	2,4,6
22. Oil Pipelines	10	8	2,4,6

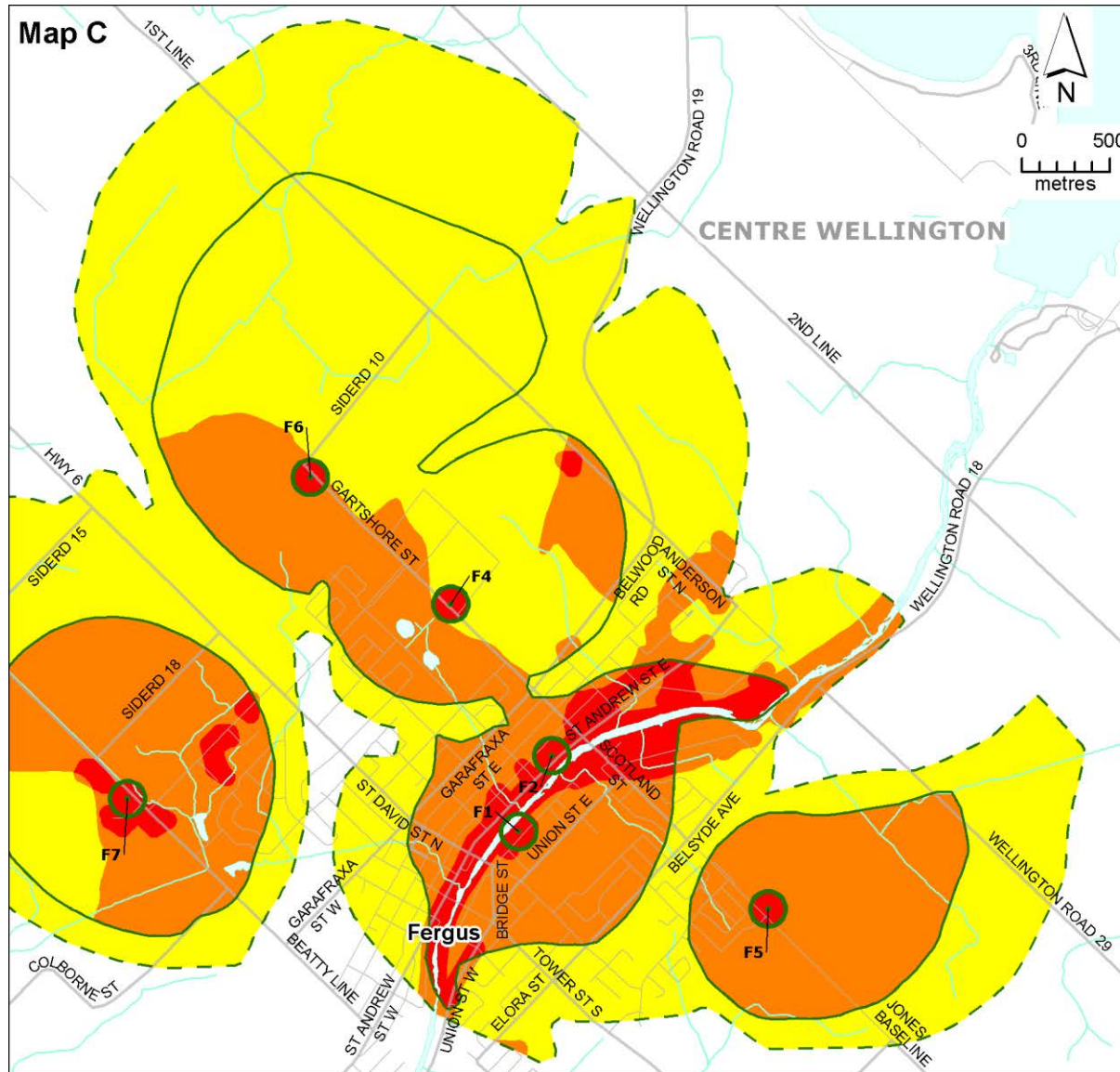
Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
*Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.

Well
 Road
 Lower Tier Municipal Boundary
 Minor River
 Lake / Main River
 Wellington County Boundary
Wellhead Protection Zones:
 WHPA-A
 WHPA-B
 WHPA-C



1. Updated September 26, 2019
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
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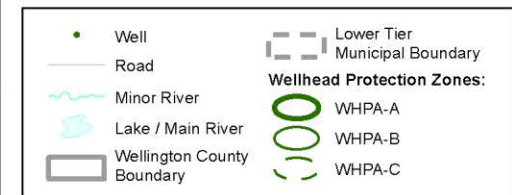
7.12 Schedule G: County of Wellington, Centre Wellington Well Supply, Map C



Significant Drinking Water Threat Policy Applicability

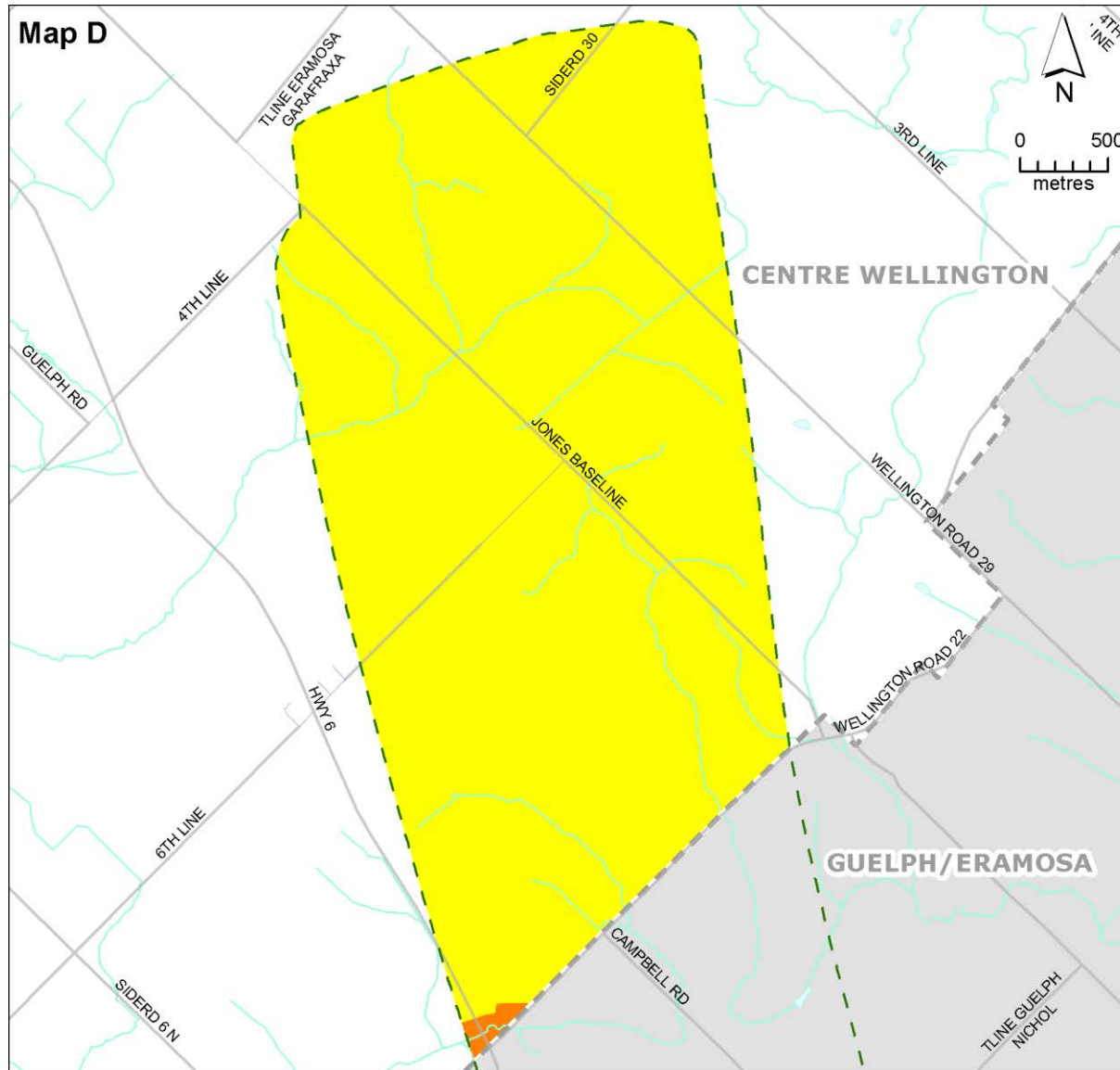
Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal			
2. Sewage Systems			
3, 4. Agricultural Source Material			
6, 7. Non-Agricultural Source Material*			
8, 9. Commercial Fertilizer*			
10, 11. Pesticide			
12, 13. Road Salt*			
14. Storage of Snow			
15. Fuel			
16. DNAPLs			
17. Organic Solvents			
18. Aircraft De-icing			
21. Livestock Area			
22. Oil Pipelines			

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
*Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.



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 3. This map is for illustrative purposes only. Information contained herein is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

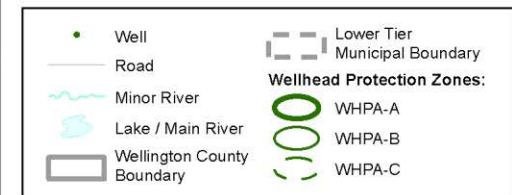
7.13 Schedule H: County of Wellington, Centre Wellington Well Supply, Map D



Significant Drinking Water Threat Policy Applicability

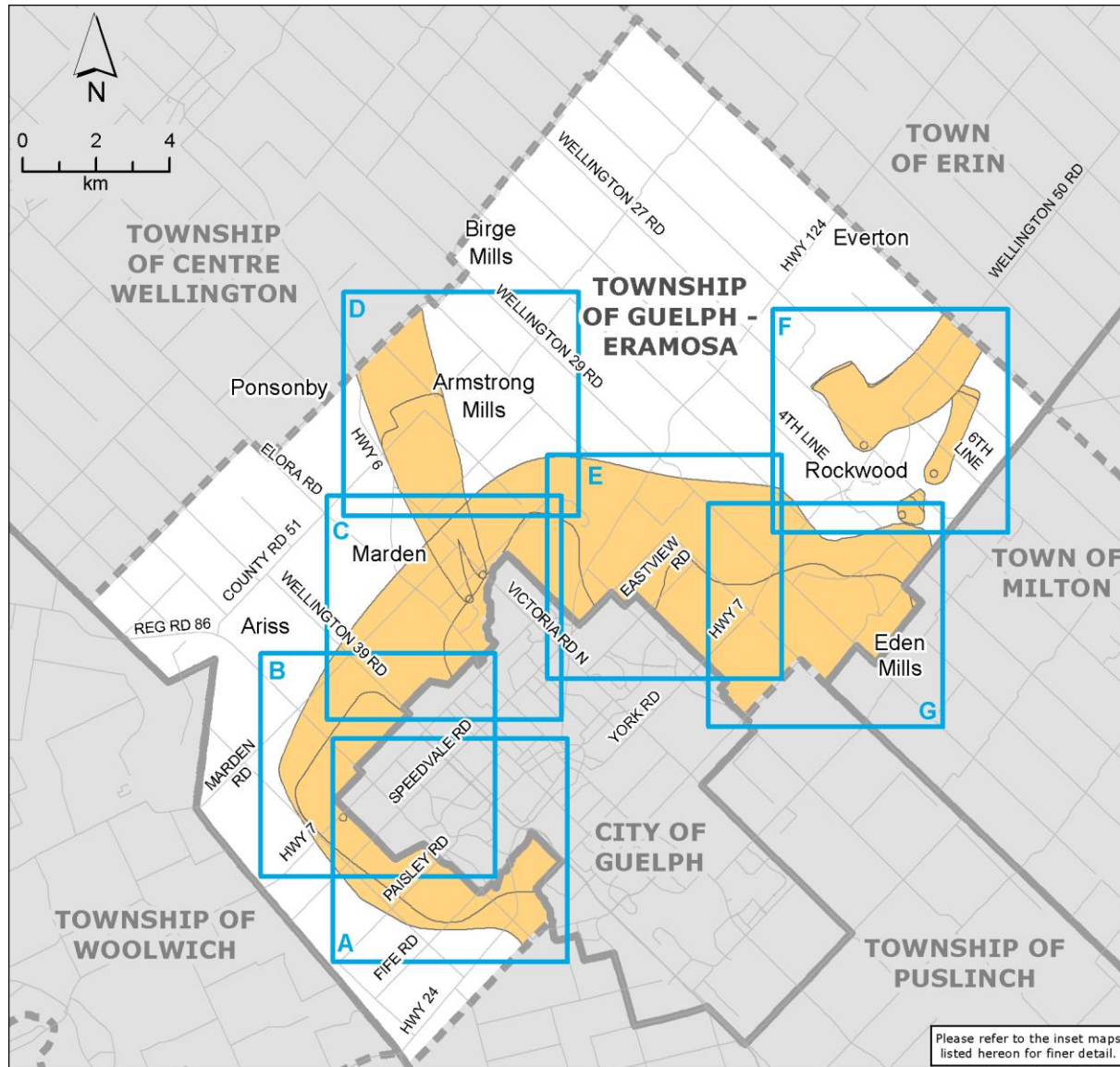
Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal			
2. Sewage Systems			
3, 4. Agricultural Source Material			
6, 7. Non-Agricultural Source Material*			
8, 9. Commercial Fertilizer*			
10, 11. Pesticide			
12, 13. Road Salt*			
14. Storage of Snow			
15. Fuel			
16. DNAPLs			
17. Organic Solvents			
18. Aircraft De-icing			
21. Livestock Area			
22. Oil Pipelines			

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
 *Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.



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7.14 Schedule I: County of Wellington, Township of Guelph-Eramosa, Index Map



Significant Drinking Water Threat Policy Applicability

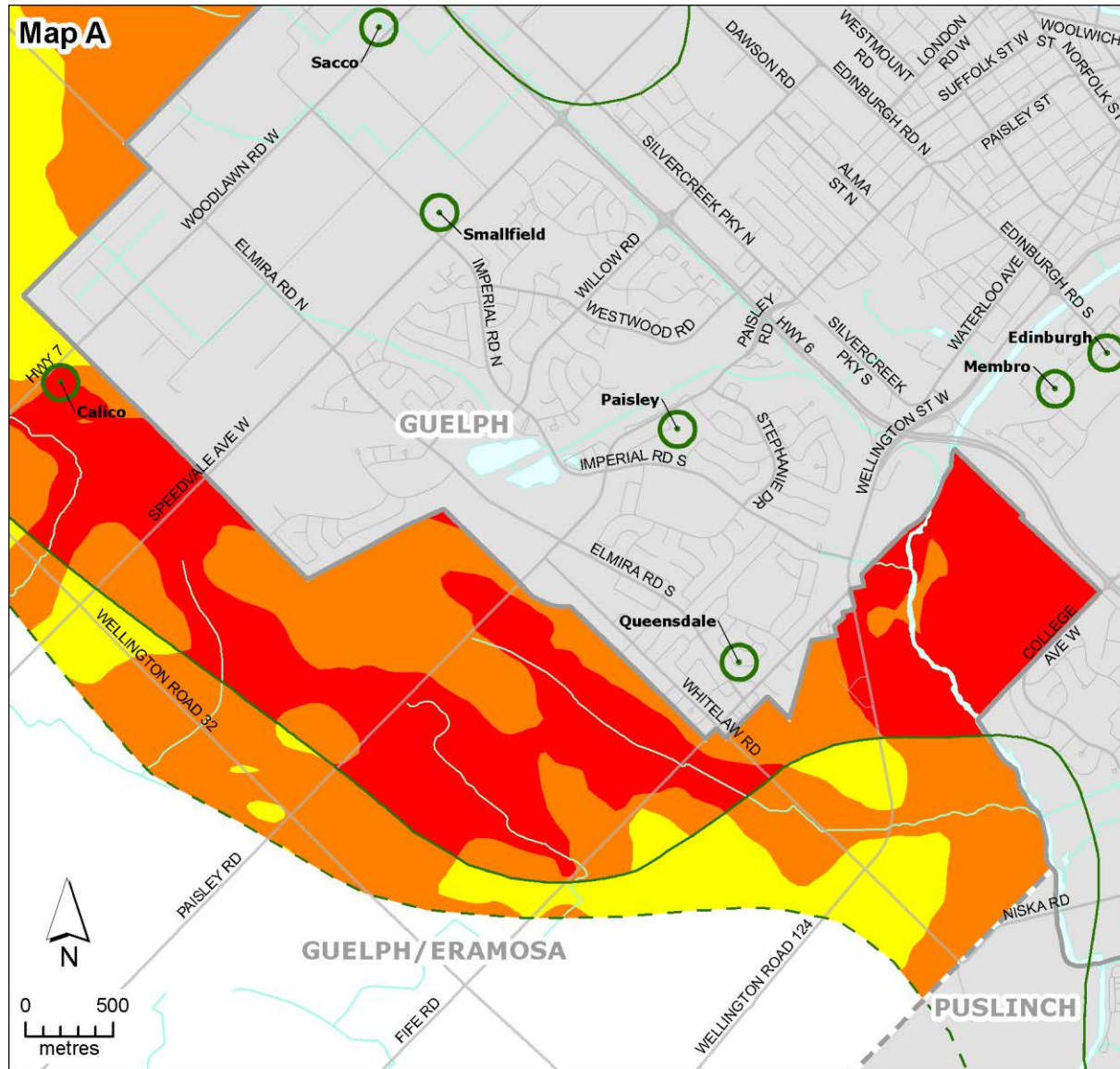
Index Map - Wellhead Protection Zones

	Main Roads
	Upper / Single Tier Municipal Boundary
	Lower Tier Municipal Boundary
	Wellhead Protection Zones A, B, C



1. Updated September 18, 2019
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
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7.15 Schedule J: County of Wellington, Township of Guelph-Eramosa, Map A



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	10	8	2,4,6
2. Sewage Systems	10	8	2,4,6
3, 4. Agricultural Source Material	10	8	2,4,6
6, 7. Non-Agricultural Source Material*	10	8	2,4,6
8, 9. Commercial Fertilizer*	10	8	2,4,6
10, 11. Pesticide	10	8	2,4,6
12, 13. Road Salt*	10	8	2,4,6
14. Storage of Snow	10	8	2,4,6
15. Fuel	10	8	2,4,6
16. DNAPLs	10	8	2,4,6
17. Organic Solvents	10	8	2,4,6
18. Aircraft De-icing	10	8	2,4,6
21. Livestock Area	10	8	2,4,6
22. Oil Pipelines	10	8	2,4,6

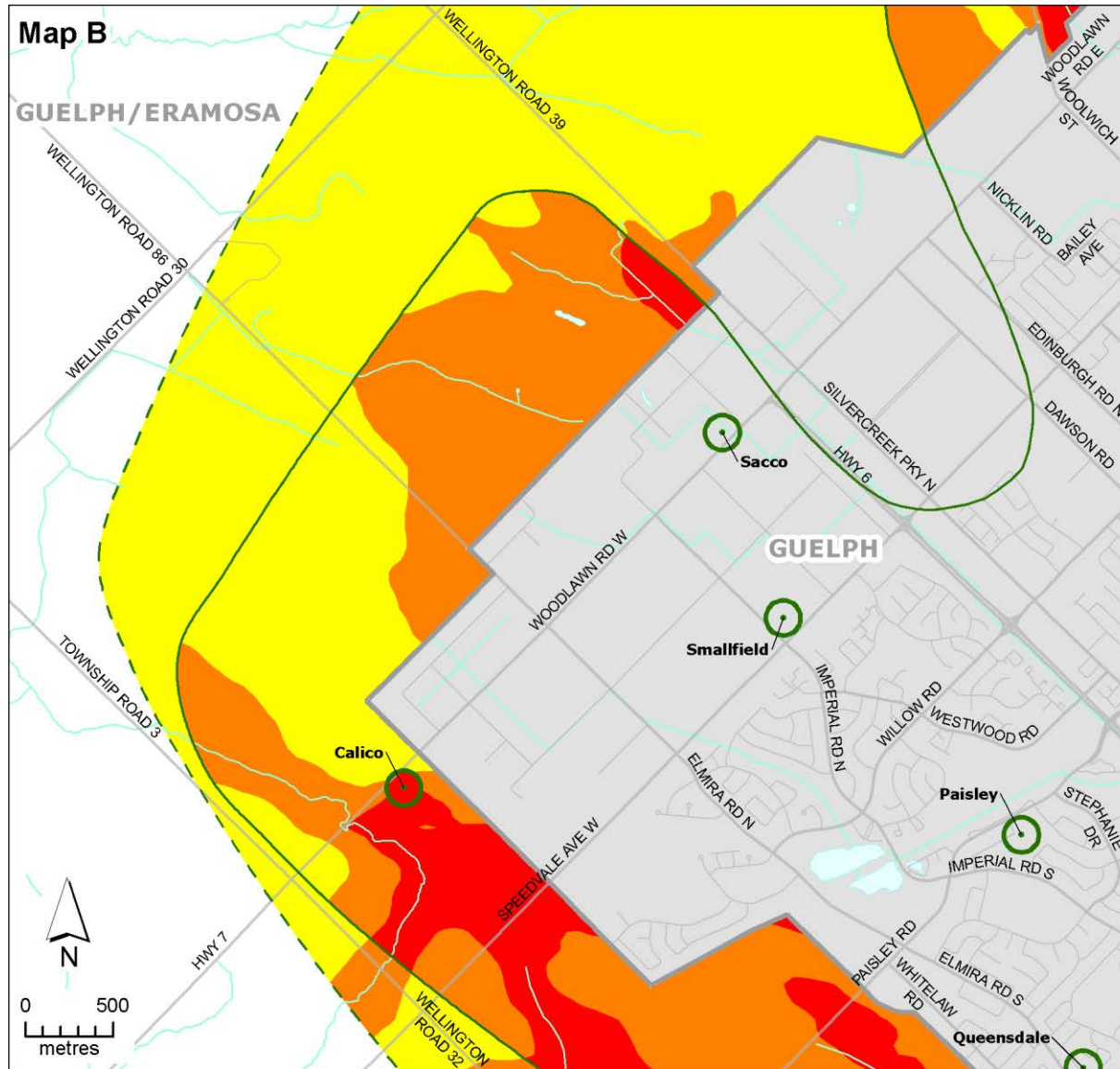
Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
*Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.

- Well
- Road
- Minor River
- Lake / Main River
- Wellington County Boundary
- Lower Tier Municipal Boundary
- Wellhead Protection Zones:**
 - WHPA-A
 - WHPA-B
 - WHPA-C



1. Updated September 19, 2019
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
 3. This map is for illustrative purposes only. Information contained herein is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

7.16 Schedule K: County of Wellington, Township of Guelph-Eramosa, Map B



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	█		
2. Sewage Systems	█		
3, 4. Agricultural Source Material	█		
6, 7. Non-Agricultural Source Material*	█		
8, 9. Commercial Fertilizer*	█		
10, 11. Pesticide	█		
12, 13. Road Salt*	█		
14. Storage of Snow	█		
15. Fuel	█		
16. DNAPLs	█	█	█
17. Organic Solvents	█		
18. Aircraft De-icing	█		
21. Livestock Area	█		
22. Oil Pipelines	█		

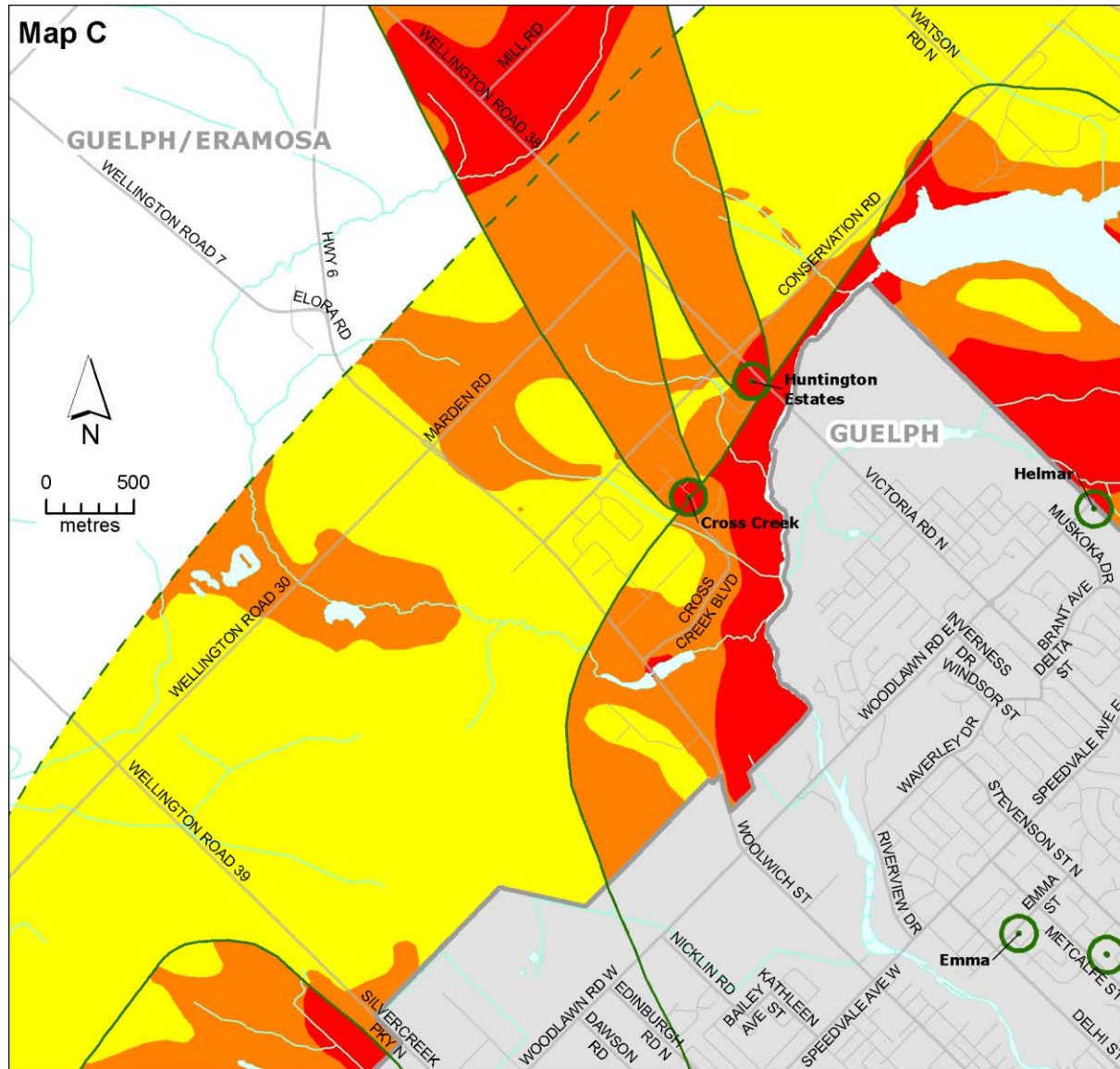
Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
*Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.

Well
 Road
 Lower Tier Municipal Boundary
 Minor River
 Lake / Main River
 Wellington County Boundary
 WHPA-A
 WHPA-B
 WHPA-C



1. Updated September 19, 2019
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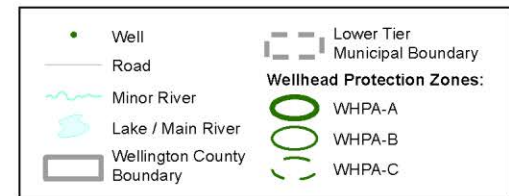
7.17 Schedule L: County of Wellington, Township of Guelph-Eramosa, Map C



Significant Drinking Water Threat Policy Applicability

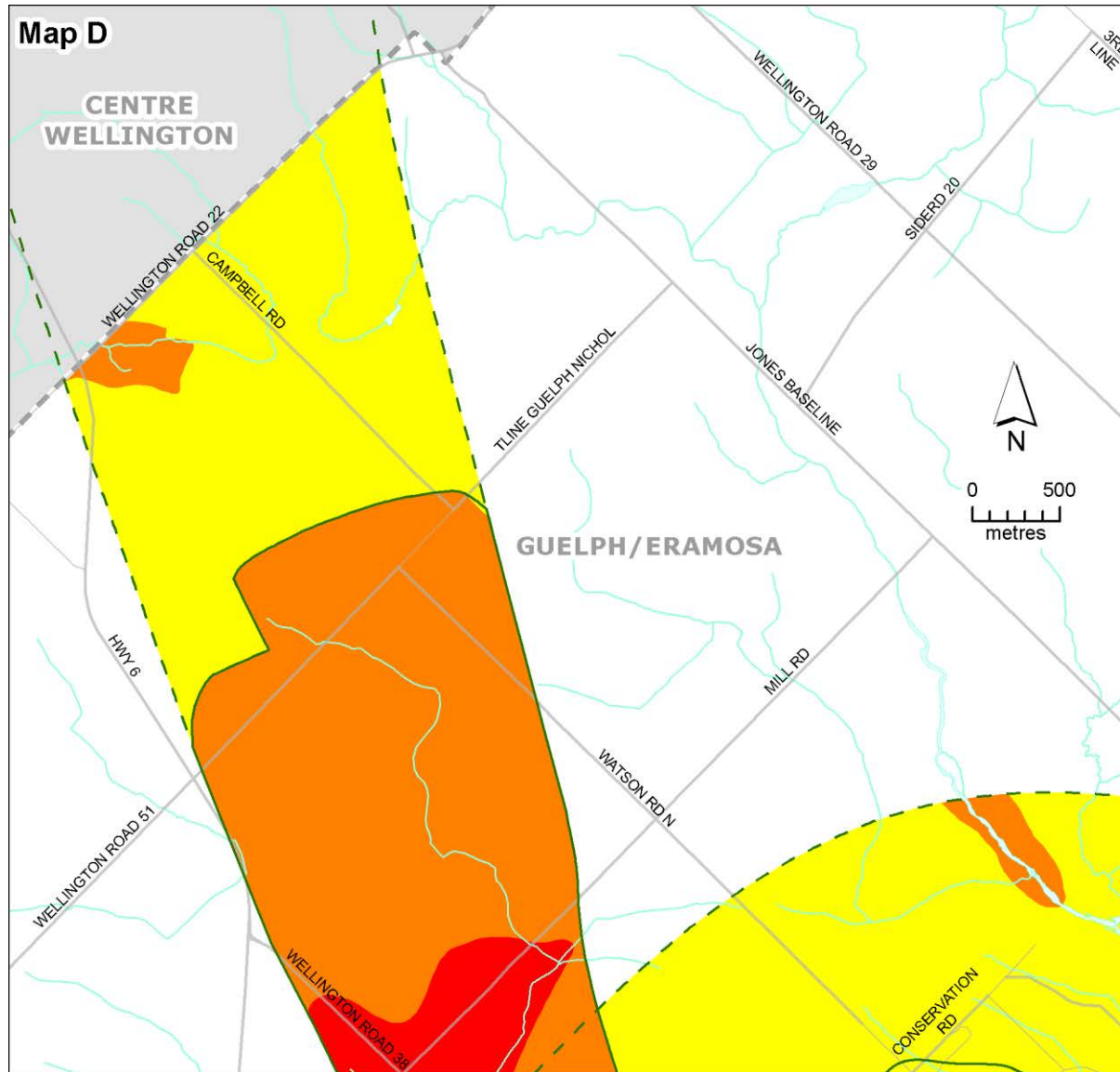
Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	█		
2. Sewage Systems	█		
3, 4. Agricultural Source Material	█		
6, 7. Non-Agricultural Source Material*	█		
8, 9. Commercial Fertilizer*	█		
10, 11. Pesticide	█		
12, 13. Road Salt*	█		
14. Storage of Snow	█		
15. Fuel	█		
16. DNAPLs	█	█	█
17. Organic Solvents	█		
18. Aircraft De-icing	█		
21. Livestock Area	█		
22. Oil Pipelines	█		

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
*Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.



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 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
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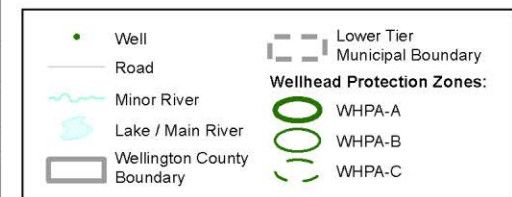
7.18 Schedule M: County of Wellington, Township of Guelph-Eramosa, Map D



Significant Drinking Water Threat Policy Applicability

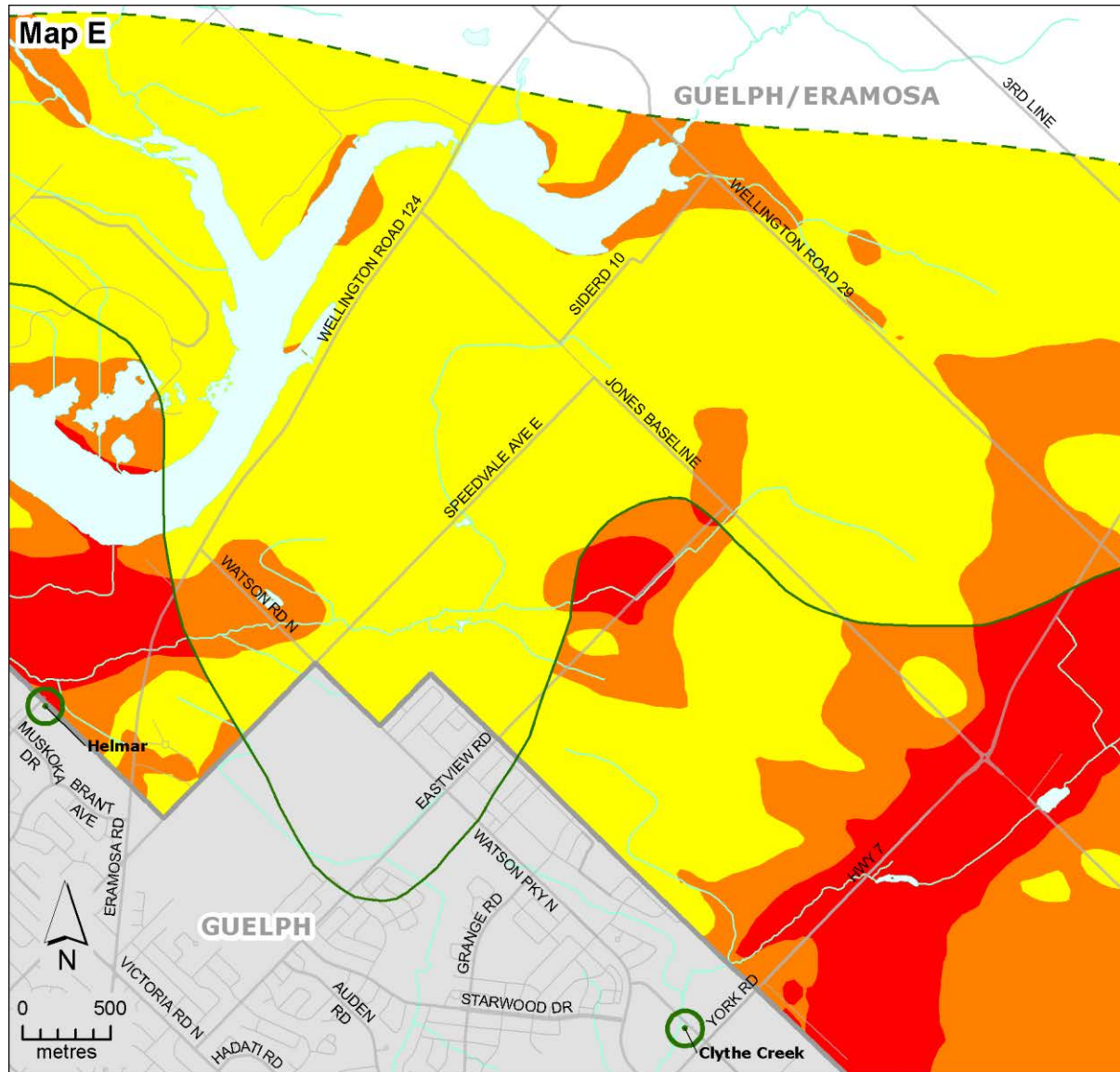
Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	█		
2. Sewage Systems		█	
3, 4. Agricultural Source Material	█		
6, 7. Non-Agricultural Source Material*	█		
8, 9. Commercial Fertilizer*	█		
10, 11. Pesticide	█		
12, 13. Road Salt*	█		
14. Storage of Snow	█		
15. Fuel	█		
16. DNAPLs		█	█
17. Organic Solvents	█		
18. Aircraft De-icing	█		
21. Livestock Area	█		
22. Oil Pipelines	█		

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
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7.19 Schedule N: County of Wellington, Township of Guelph-Eramosa, Map E



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal			
2. Sewage Systems			
3, 4. Agricultural Source Material			
6, 7. Non-Agricultural Source Material*			
8, 9. Commercial Fertilizer*			
10, 11. Pesticide			
12, 13. Road Salt*			
14. Storage of Snow			
15. Fuel			
16. DNAPLs			
17. Organic Solvents			
18. Aircraft De-icing			
21. Livestock Area			
22. Oil Pipelines			

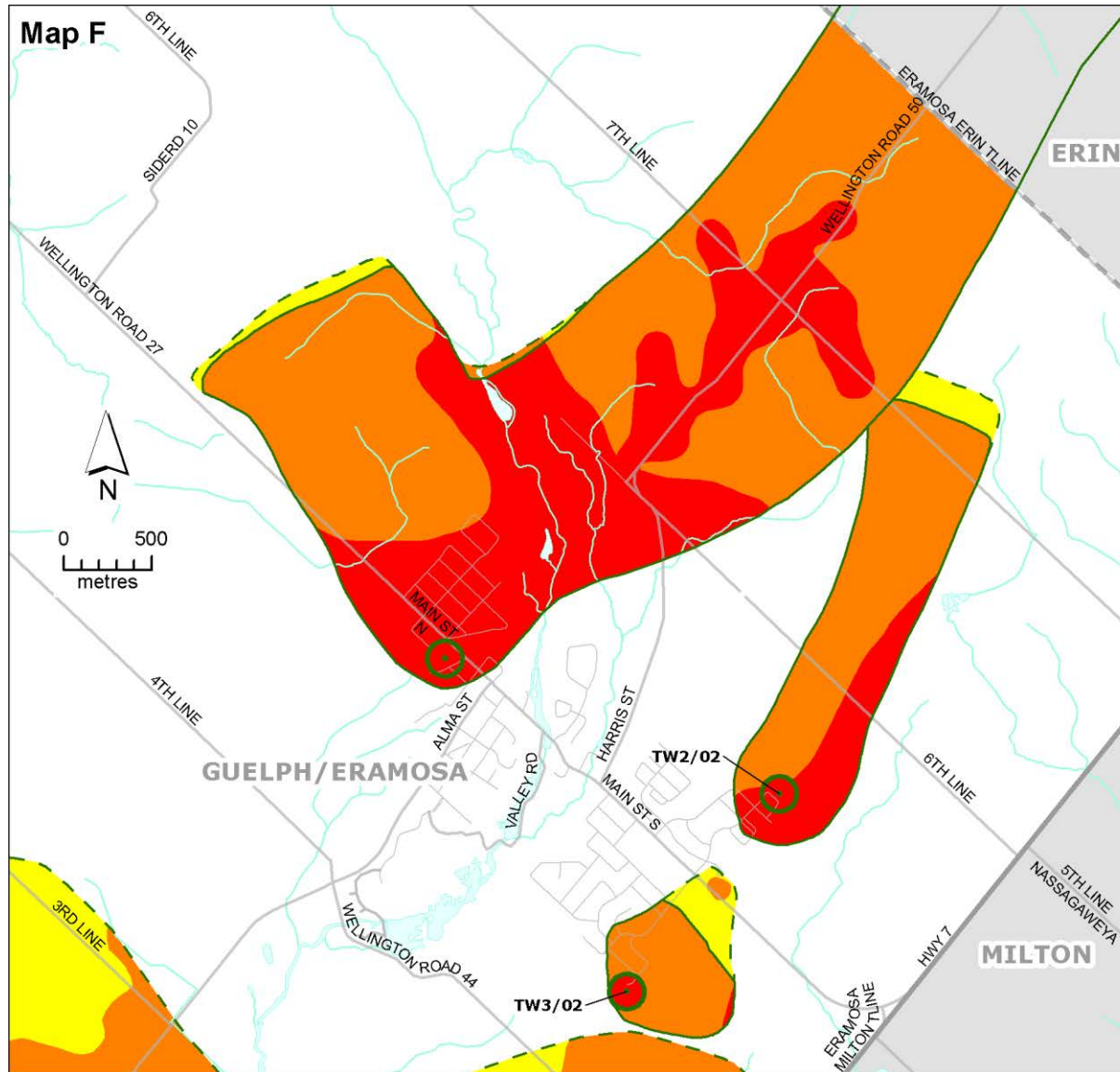
Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
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- Well
- Road
- Minor River
- Lake / Main River
- Wellington County Boundary
- Lower Tier Municipal Boundary
- Wellhead Protection Zones:**
 - WHPA-A
 - WHPA-B
 - WHPA-C



1. Updated September 19, 2019
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
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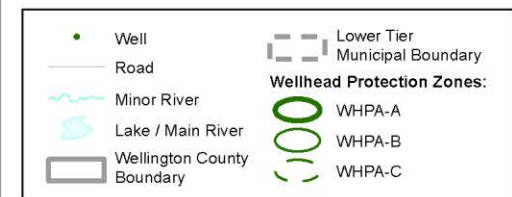
7.20 Schedule O: County of Wellington, Township of Guelph-Eramosa, Map F



Significant Drinking Water Threat Policy Applicability

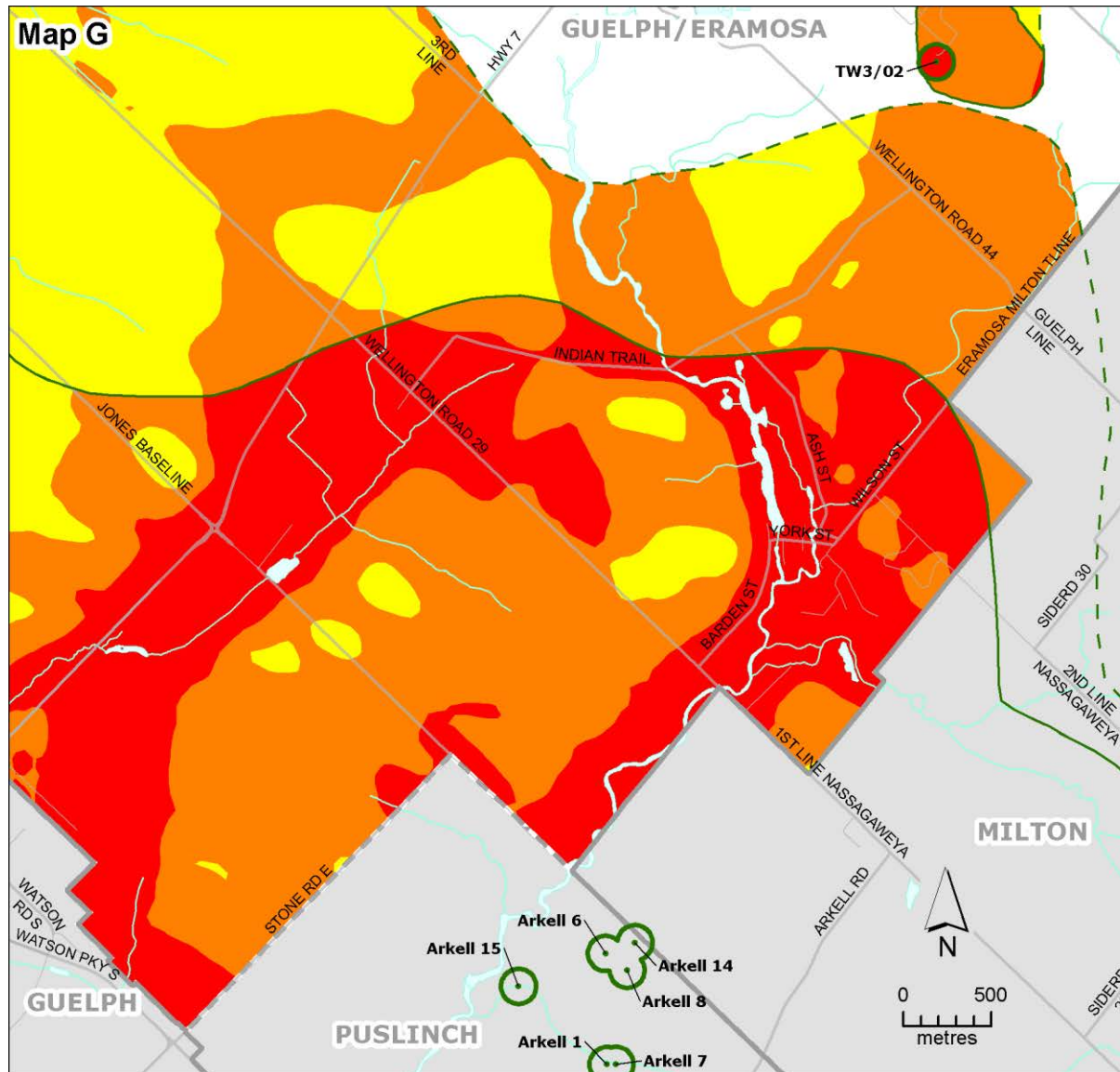
Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	█		
2. Sewage Systems	█		
3, 4. Agricultural Source Material	█		
6, 7. Non-Agricultural Source Material*	█		
8, 9. Commercial Fertilizer*	█		
10, 11. Pesticide	█		
12, 13. Road Salt*	█		
14. Storage of Snow	█		
15. Fuel	█		
16. DNAPLs	█	█	█
17. Organic Solvents	█		
18. Aircraft De-icing	█		
21. Livestock Area	█		
22. Oil Pipelines	█		

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
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1. Updated September 19, 2019
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
 3. This map is for illustrative purposes only. Information contained herein is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

7.21 Schedule P: County of Wellington, Township of Guelph-Eramosa, Map G



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	10	8	2,4,6
2. Sewage Systems	10	8	2,4,6
3, 4. Agricultural Source Material	10	8	2,4,6
6, 7. Non-Agricultural Source Material*	10	8	2,4,6
8, 9. Commercial Fertilizer*	10	8	2,4,6
10, 11. Pesticide	10	8	2,4,6
12, 13. Road Salt*	10	8	2,4,6
14. Storage of Snow	10	8	2,4,6
15. Fuel	10	8	2,4,6
16. DNAPLs	10	8	2,4,6
17. Organic Solvents	10	8	2,4,6
18. Aircraft De-icing	10	8	2,4,6
21. Livestock Area	10	8	2,4,6
22. Oil Pipelines	10	8	2,4,6

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan. *Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.

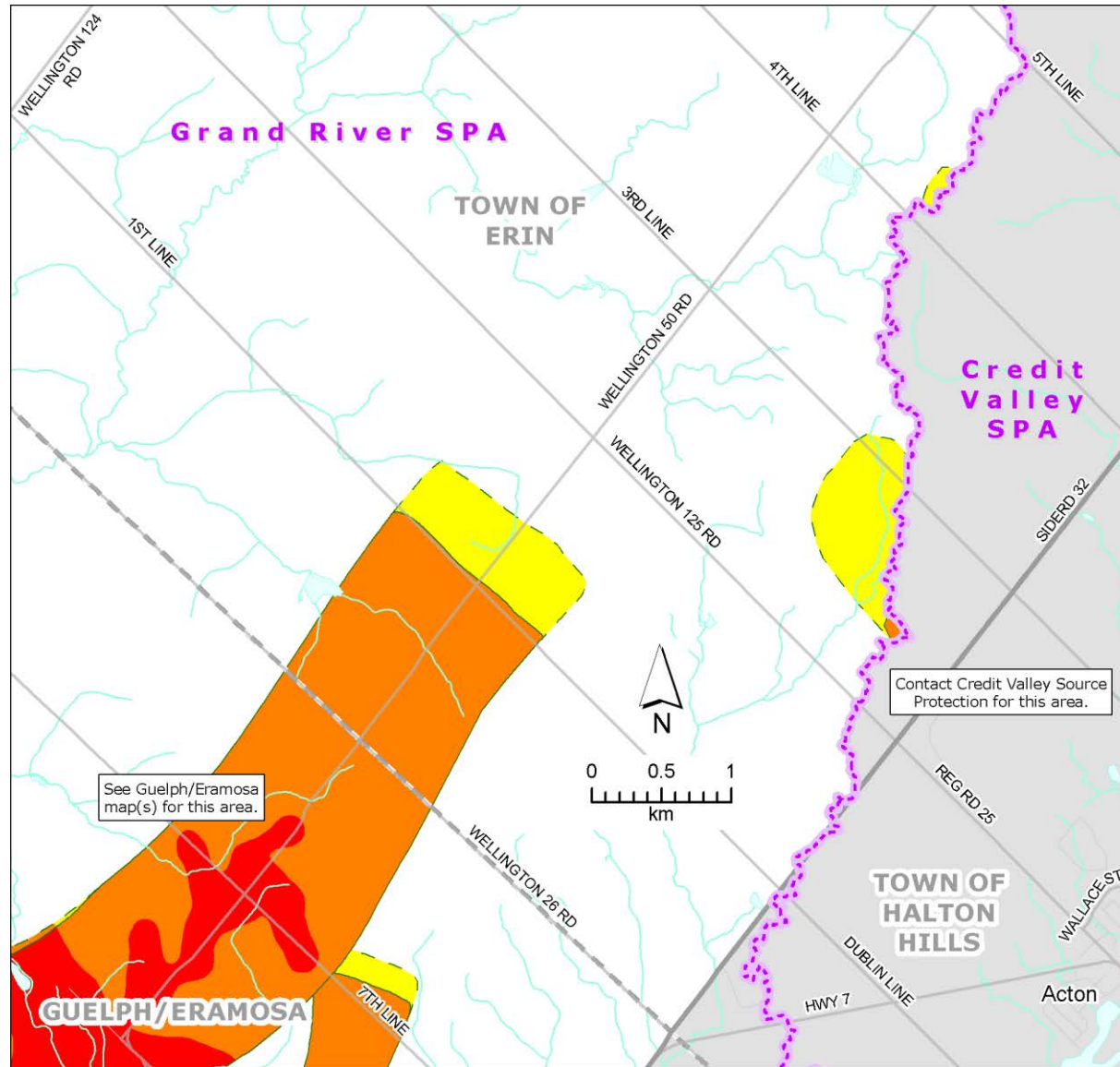
Legend for symbols:

- Well
- Road
- Minor River
- Lake / Main River
- Wellington County Boundary
- Lower Tier Municipal Boundary
- Wellhead Protection Zones:
 - WHPA-A
 - WHPA-B
 - WHPA-C



1. Updated September 19, 2019
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
 3. This map is for illustrative purposes only. Information contained herein is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

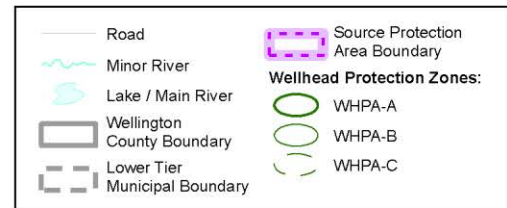
7.22 Schedule Q: County of Wellington, Town of Erin, Groundwater Vulnerability Areas



Significant Drinking Water Threat Policy Applicability

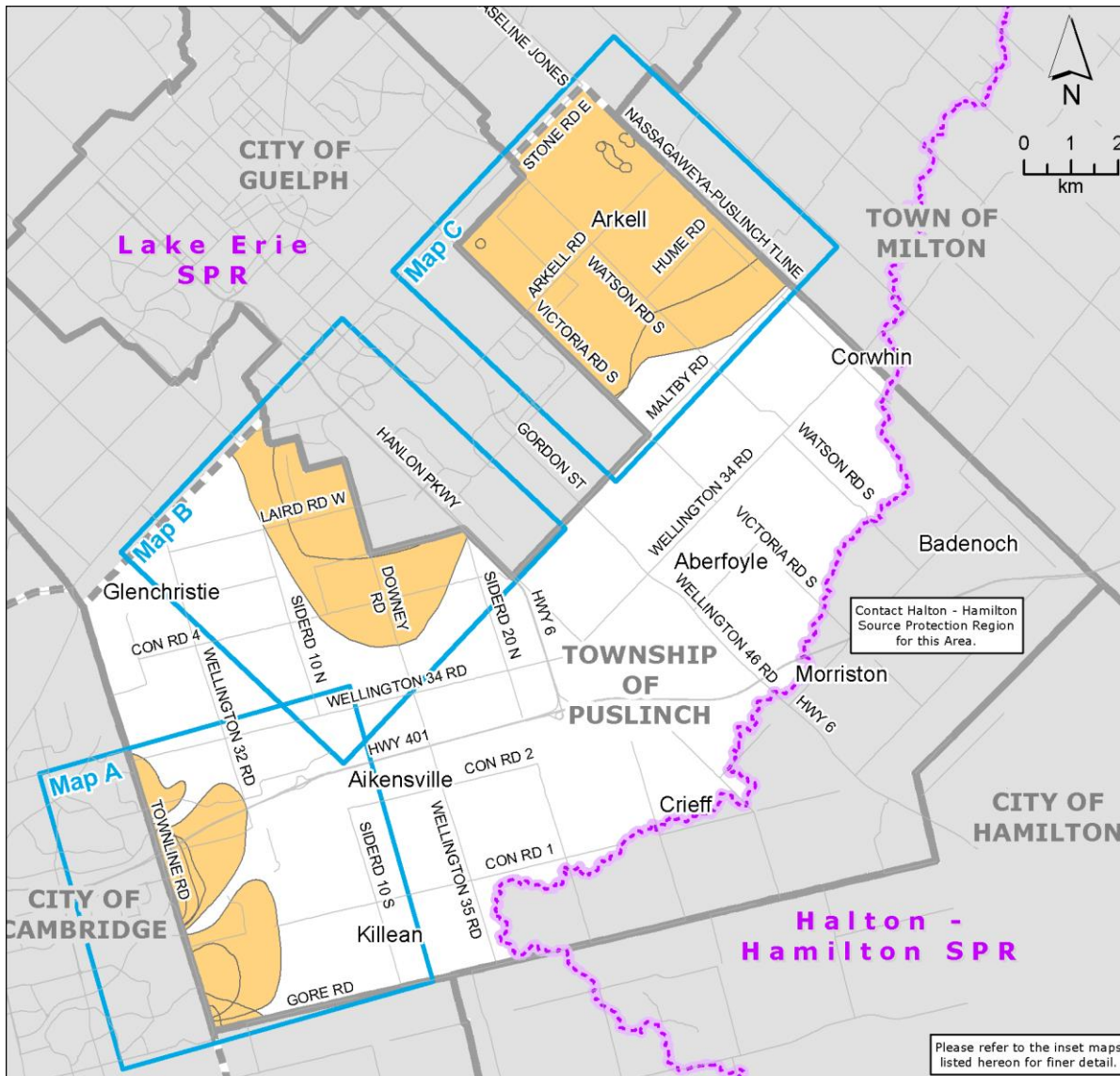
Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	█	█	█
2. Sewage Systems	█	█	
3, 4. Agricultural Source Material	█		
6, 7. Non-Agricultural Source Material*	█		
8, 9. Commercial Fertilizer*	█		
10, 11. Pesticide	█		
12, 13. Road Salt*	█		
14. Storage of Snow	█		
15. Fuel	█		
16. DNAPLs	█	█	█
17. Organic Solvents	█		
18. Aircraft De-icing	█		
21. Livestock Area	█		
22. Oil Pipelines	█		

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
*Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.



1. Updated September 26, 2019
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
 3. This map is for illustrative purposes only. Information contained hereon is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

7.23 Schedule R: County of Wellington, Township of Puslinch, Index Map



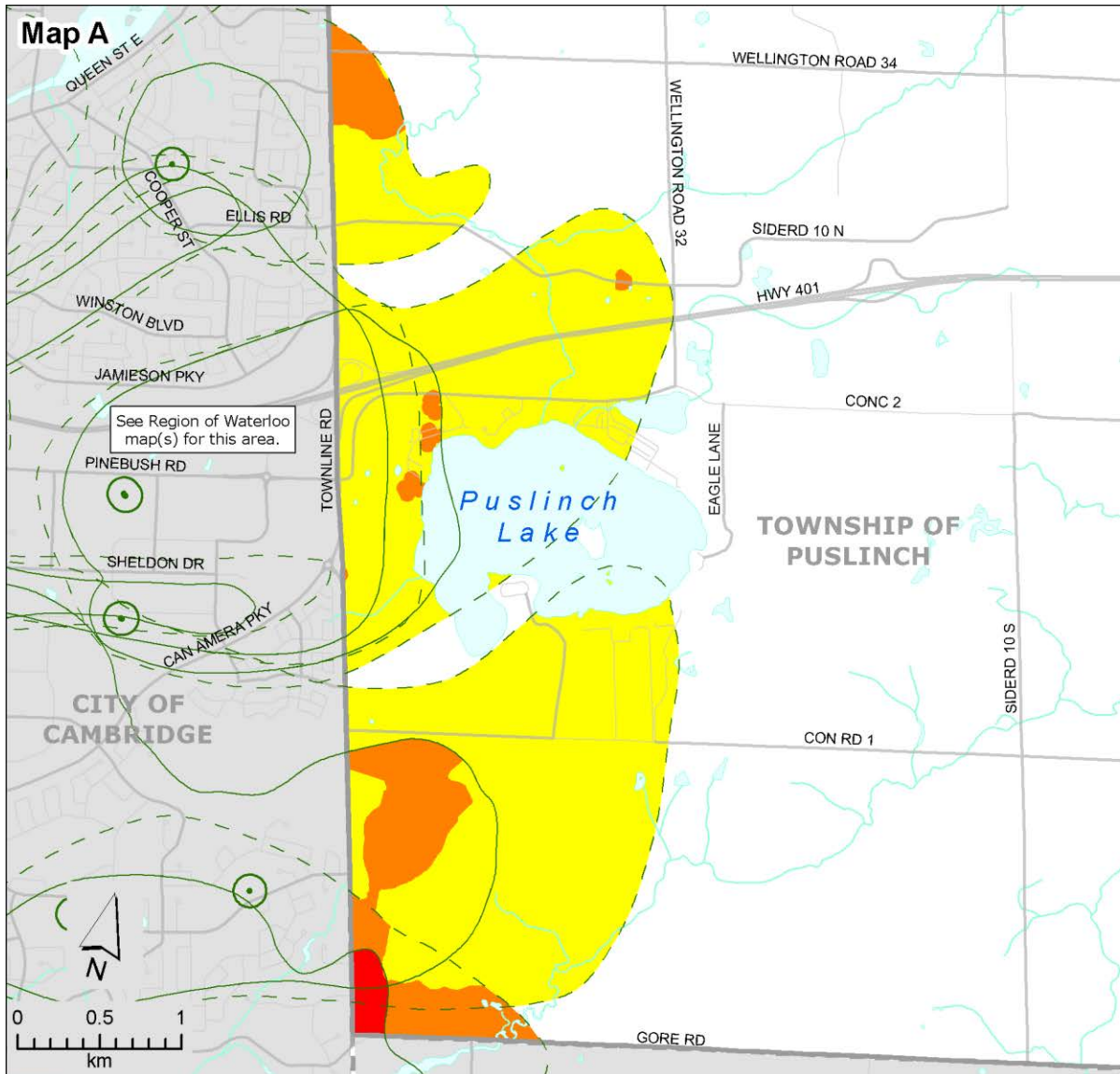
Significant Drinking Water Threat Policy Applicability

Index Map - Wellhead Protection Zones



1. Updated February 6, 2019
2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
3. This map is for illustrative purposes only. Information contained herein is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

7.24 Schedule S: County of Wellington, Township of Puslinch, Map A



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	█		
2. Sewage Systems	█		
3, 4. Agricultural Source Material	█		
6, 7. Non-Agricultural Source Material*	█		
8, 9. Commercial Fertilizer*	█		
10, 11. Pesticide	█		
12, 13. Road Salt*	█		
14. Storage of Snow	█		
15. Fuel	█		
16. DNAPLs	█	█	█
17. Organic Solvents	█		
18. Aircraft De-icing	█		
21. Livestock Area	█		
22. Oil Pipelines	█		

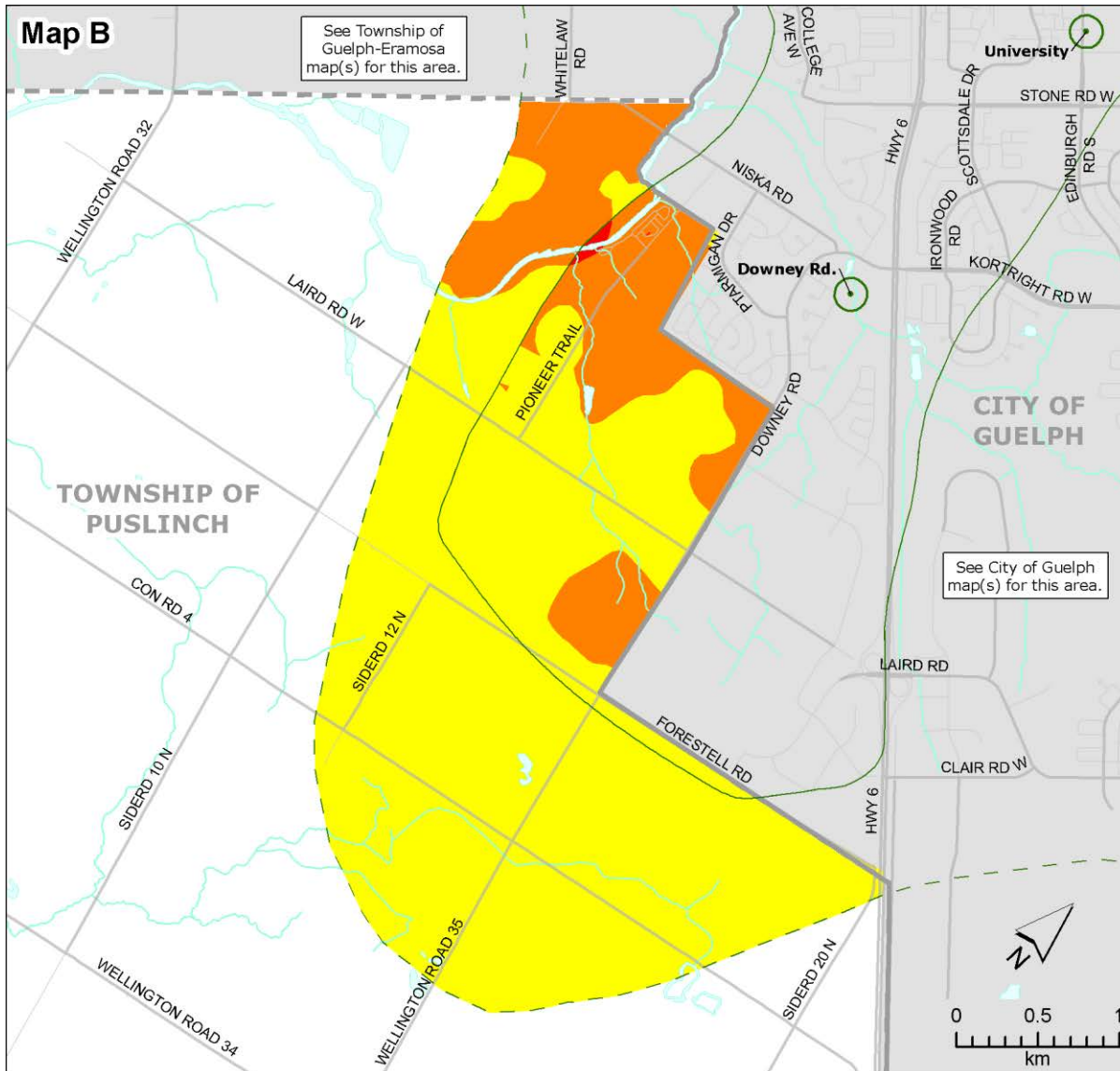
Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
 *Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.

- Well
- Road
- ~ Minor River
- ▭ Lake / Main River
- ▭ Wellington County Boundary
- ▭ Lower Tier Municipal Boundary
- Wellhead Protection Zones:**
- WHPA-A
- WHPA-B
- WHPA-C



1. Updated February 7, 2019
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
 3. This map is for illustrative purposes only. Information contained hereon is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

7.25 Schedule T: County of Wellington, Township of Puslinch, Map B



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	10	8	2,4,6
2. Sewage Systems	10	8	2,4,6
3, 4. Agricultural Source Material	10	8	2,4,6
6, 7. Non-Agricultural Source Material*	10	8	2,4,6
8, 9. Commercial Fertilizer*	10	8	2,4,6
10, 11. Pesticide	10	8	2,4,6
12, 13. Road Salt*	10	8	2,4,6
14. Storage of Snow	10	8	2,4,6
15. Fuel	10	8	2,4,6
16. DNAPLs	10	8	2,4,6
17. Organic Solvents	10	8	2,4,6
18. Aircraft De-icing	10	8	2,4,6
21. Livestock Area	10	8	2,4,6
22. Oil Pipelines	10	8	2,4,6

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
 *Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.

Well

Road

Minor River

Lake / Main River

Boundary

Lower Tier Municipal Boundary

Wellhead Protection Zones:

WHPA-A

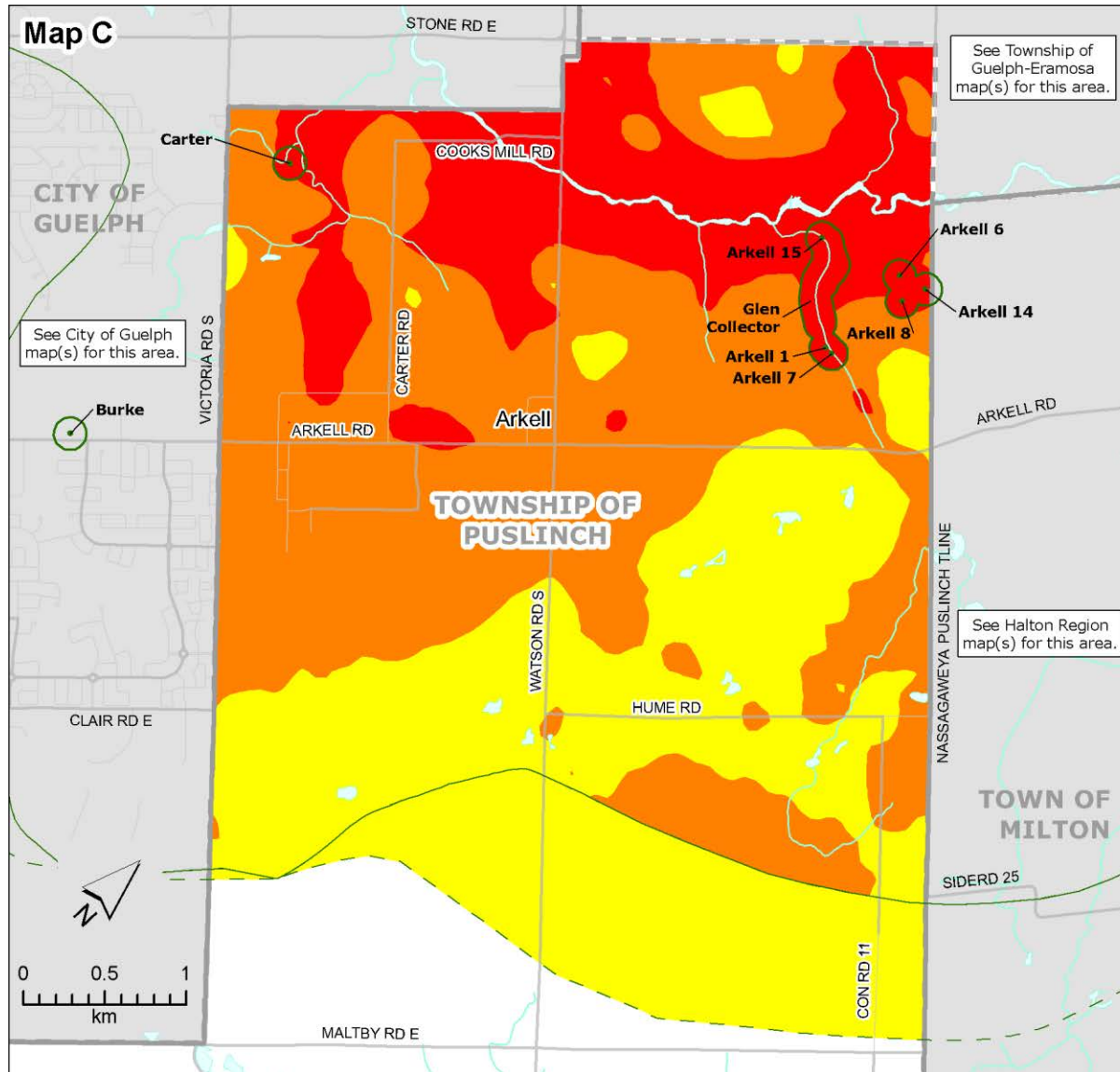
WHPA-B

WHPA-C



1. Updated February 7, 2019
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
 3. This map is for illustrative purposes only. Information contained herein is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

7.26 Schedule U: County of Wellington, Township of Puslinch, Map C



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	8	2,4,6
1. Waste Disposal	█	█	█
2. Sewage Systems	█	█	
3, 4. Agricultural Source Material	█		
6, 7. Non-Agricultural Source Material*	█		
8, 9. Commercial Fertilizer*	█		
10, 11. Pesticide	█		
12, 13. Road Salt*	█		
14. Storage of Snow	█		
15. Fuel	█		
16. DNAPLs		█	█
17. Organic Solvents	█		
18. Aircraft De-icing	█		
21. Livestock Area	█		
22. Oil Pipelines	█		

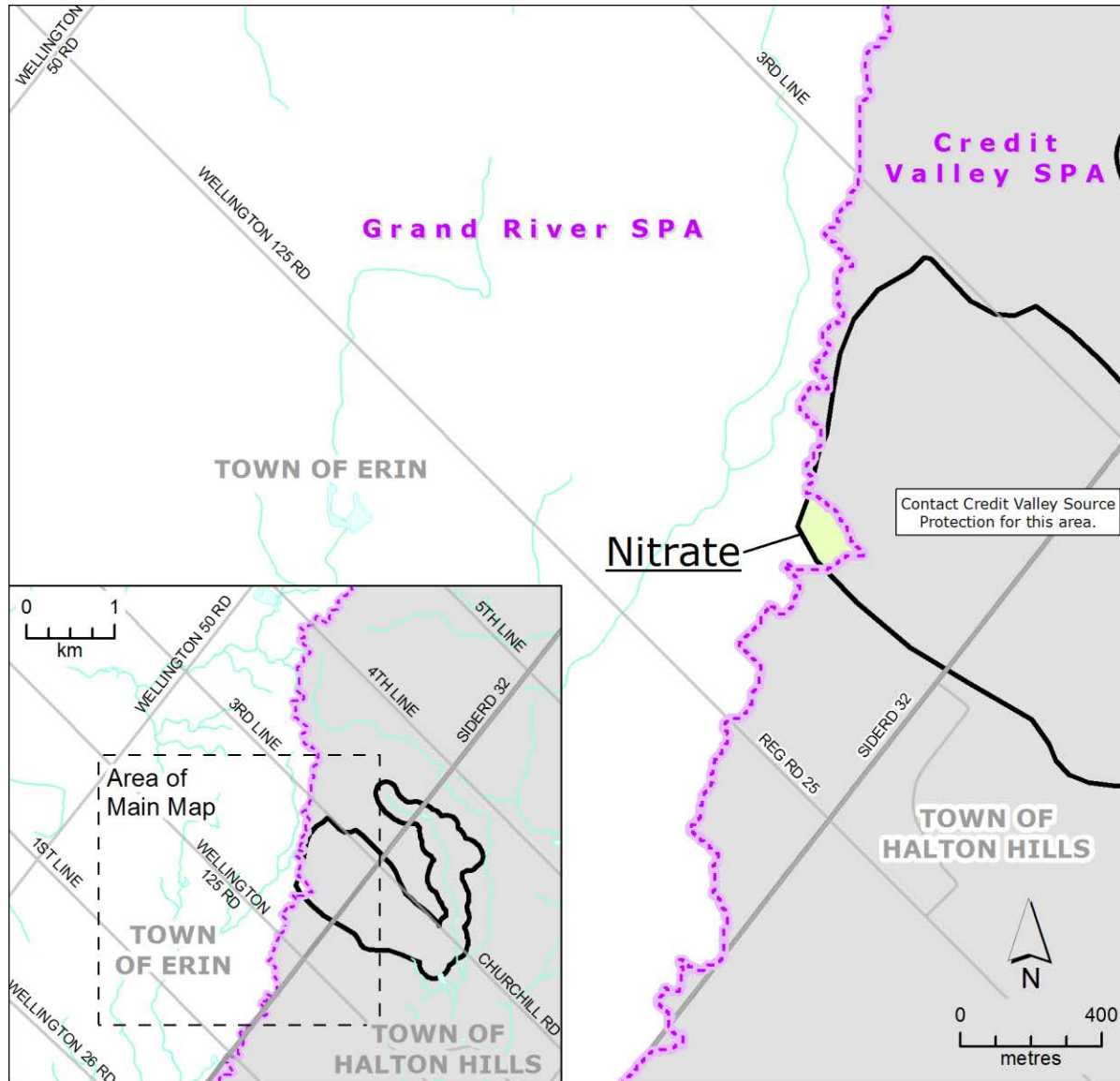
Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within Non-GUDI Wellhead Protection Zones on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.
 *Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of this plan for further details.

- Well
- Road
- ~ Minor River
- ~ Lake / Main River
- ▭ Wellington County Boundary
- ▭ Lower Tier Municipal Boundary
- Wellhead Protection Zones:**
- WHPA-A
- WHPA-B
- WHPA-C



1. Updated February 7, 2019
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
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7.27 Schedule V: County of Wellington, Town of Erin, Issue Contributing Areas



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Identified Issue			
	Chloride	Nitrate	Sodium	TCE
1. Waste Disposal		✓		✓
2. Sewage Systems	✓	✓	✓	✓
3, 4. Agricultural Source Material		✓		
6, 7. Non-Agricultural Source Material		✓		
8, 9. Commercial Fertilizer		✓		
12, 13. Road Salt	✓		✓	
14. Storage of Snow	✓	✓	✓	
16. DNAPLs				✓
21. Livestock Area		✓		

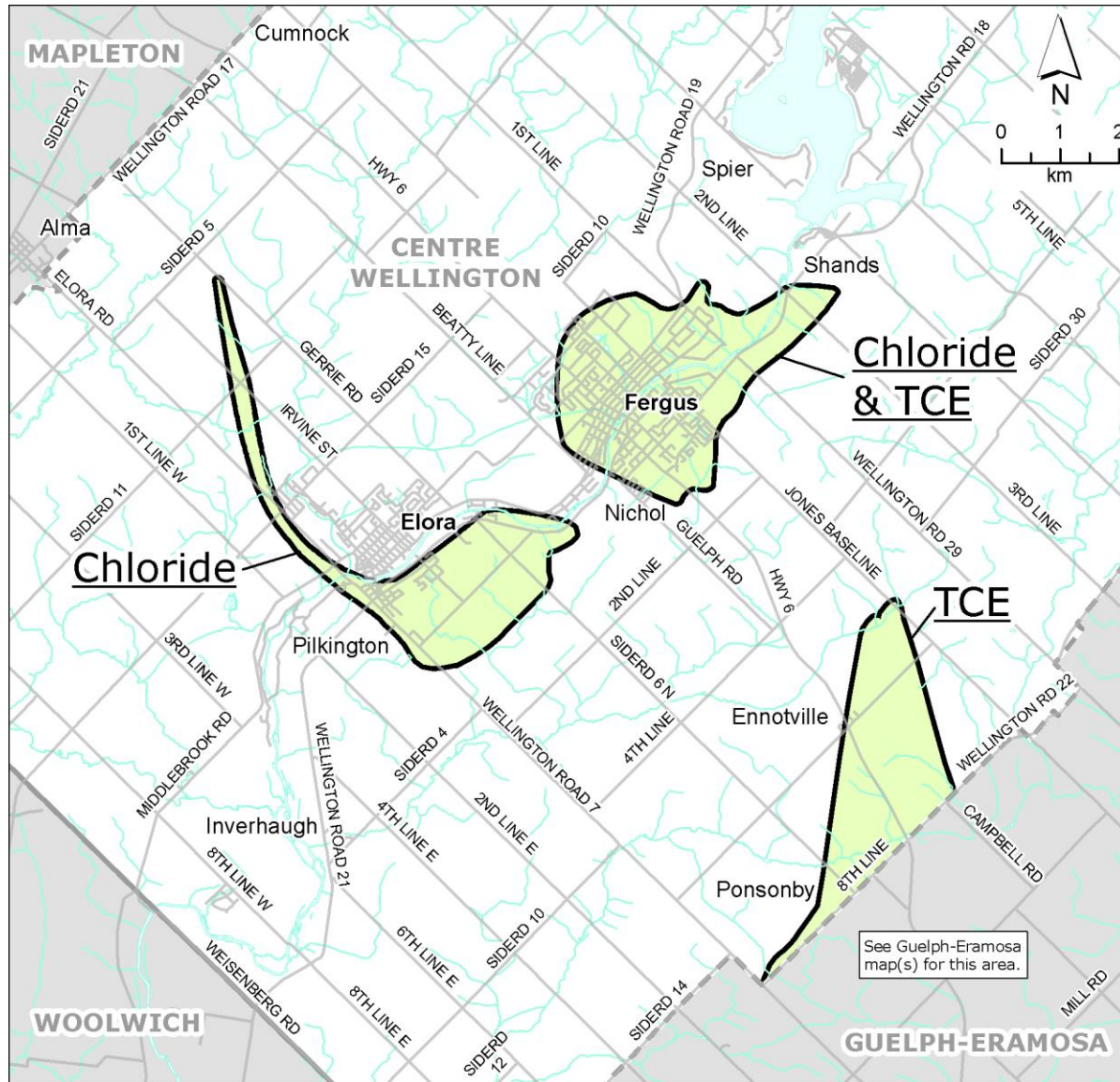
Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) in the Issue Contributing Area(s) shown on this map. For details refer to the text of the Source Protection Plan and the Ministry of the Environment Drinking Water Threats Tables.

Roads	Source Protection Area Boundary
Minor Rivers	Davidson Issue Contributing Area
Lakes / Main Rivers	Issue
Wellington County Boundary	Associated Issue Parameter



1. Updated November 14, 2014
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
 3. This map is for illustrative purposes only. Information contained herein is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

7.28 Schedule W: County of Wellington, Township of Centre Wellington, Issue Contributing Areas



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Identified Issue			
	Chloride	Nitrate	Sodium	TCE
1. Waste Disposal		Y		Y
2. Sewage Systems	Y	Y	Y	Y
3, 4. Agricultural Source Material		Y		
6, 7. Non-Agricultural Source Material		Y		
8, 9. Commercial Fertilizer		Y		
12, 13. Road Salt	Y		Y	
14. Storage of Snow	Y	Y	Y	
16. DNAPLs				Y
21. Livestock Area		Y		

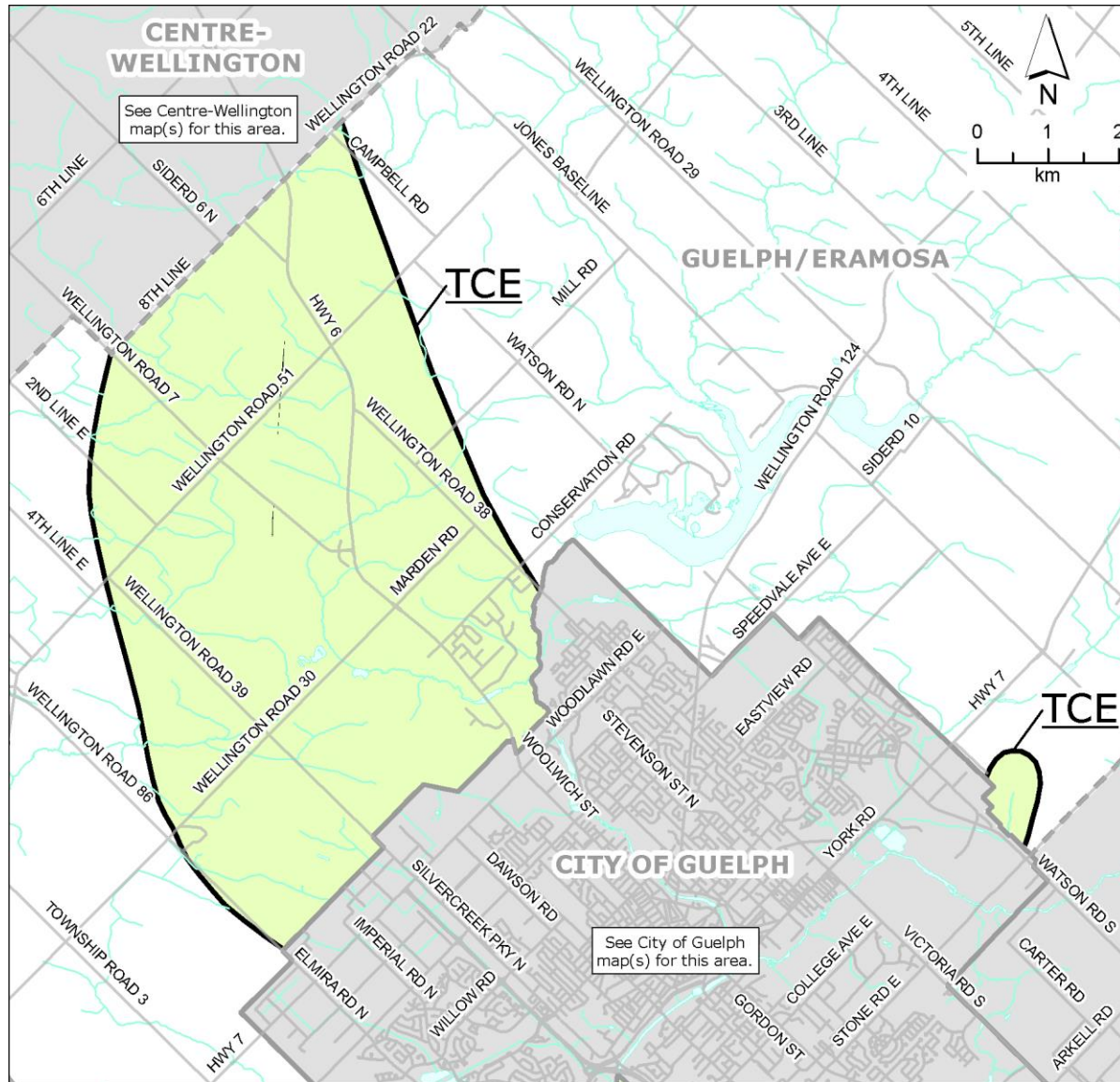
Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) in the Issue Contributing Area(s) shown on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.

- Roads
- Minor Rivers
- Lakes / Main Rivers
- Wellington County Boundary
- Lower Tier Boundary
- Issue Contributing Area
- Associated Issue Parameter



1. Updated September 26, 2019
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
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7.29 Schedule X: County of Wellington, Township of Guelph-Eramosa, Issue Contributing Areas



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Identified Issue			
	Chloride	Nitrate	Sodium	TCE
1. Waste Disposal		Y		Y
2. Sewage Systems	Y	Y	Y	Y
3, 4. Agricultural Source Material		Y		
6, 7. Non-Agricultural Source Material		Y		
8, 9. Commercial Fertilizer		Y		
12, 13. Road Salt	Y		Y	
14. Storage of Snow	Y	Y	Y	
16. DNAPLs				Y
21. Livestock Area		Y		

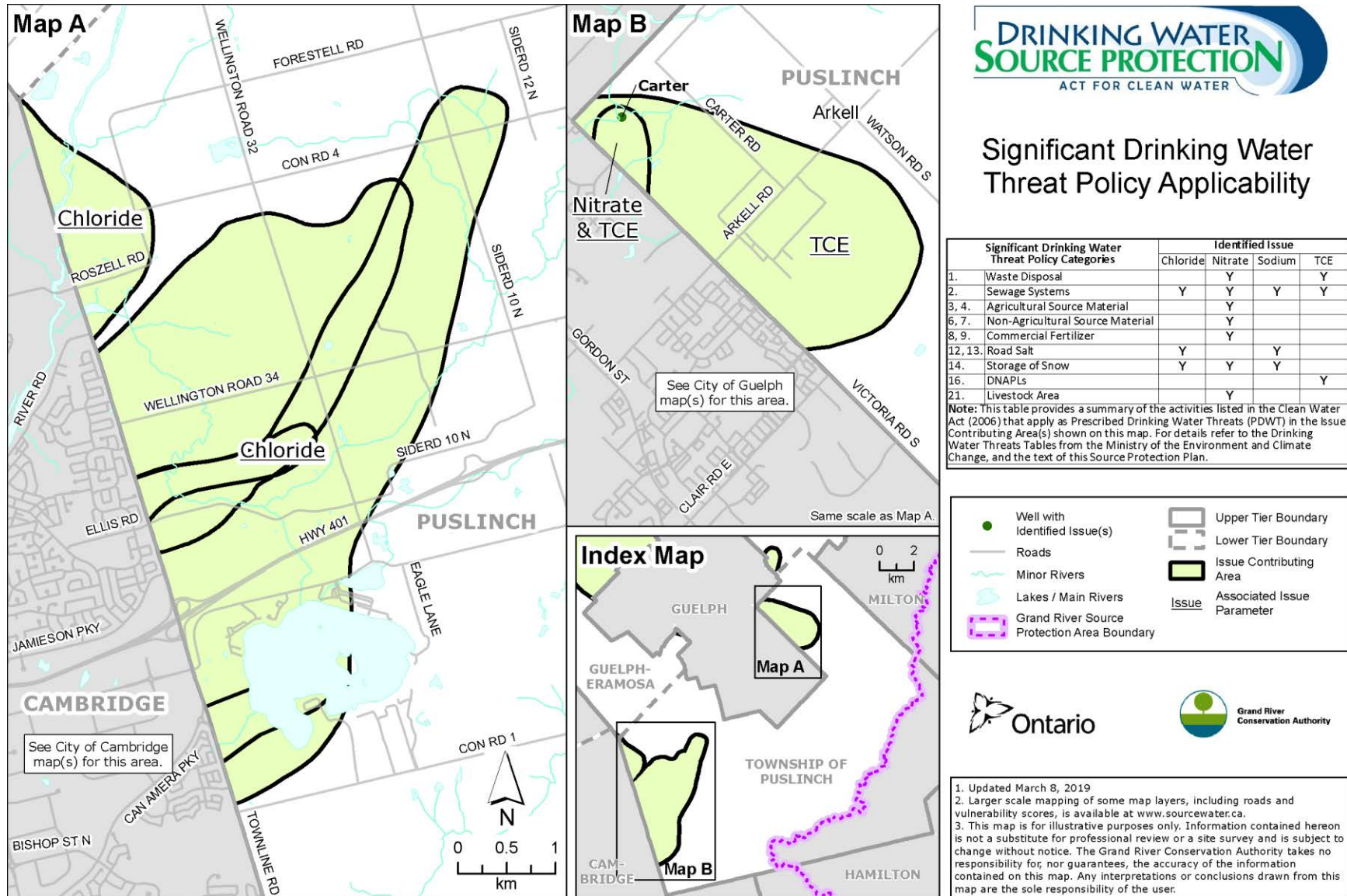
Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) in the Issue Contributing Area(s) shown on this map. For details refer to the Drinking Water Threats Tables from the Ministry of the Environment and Climate Change, and the text of this Source Protection Plan.

- Roads
- Minor Rivers
- Lakes / Main Rivers
- Wellington County Boundary
- Lower Tier Boundary
- Issue Contributing Area
- Associated Issue Parameter

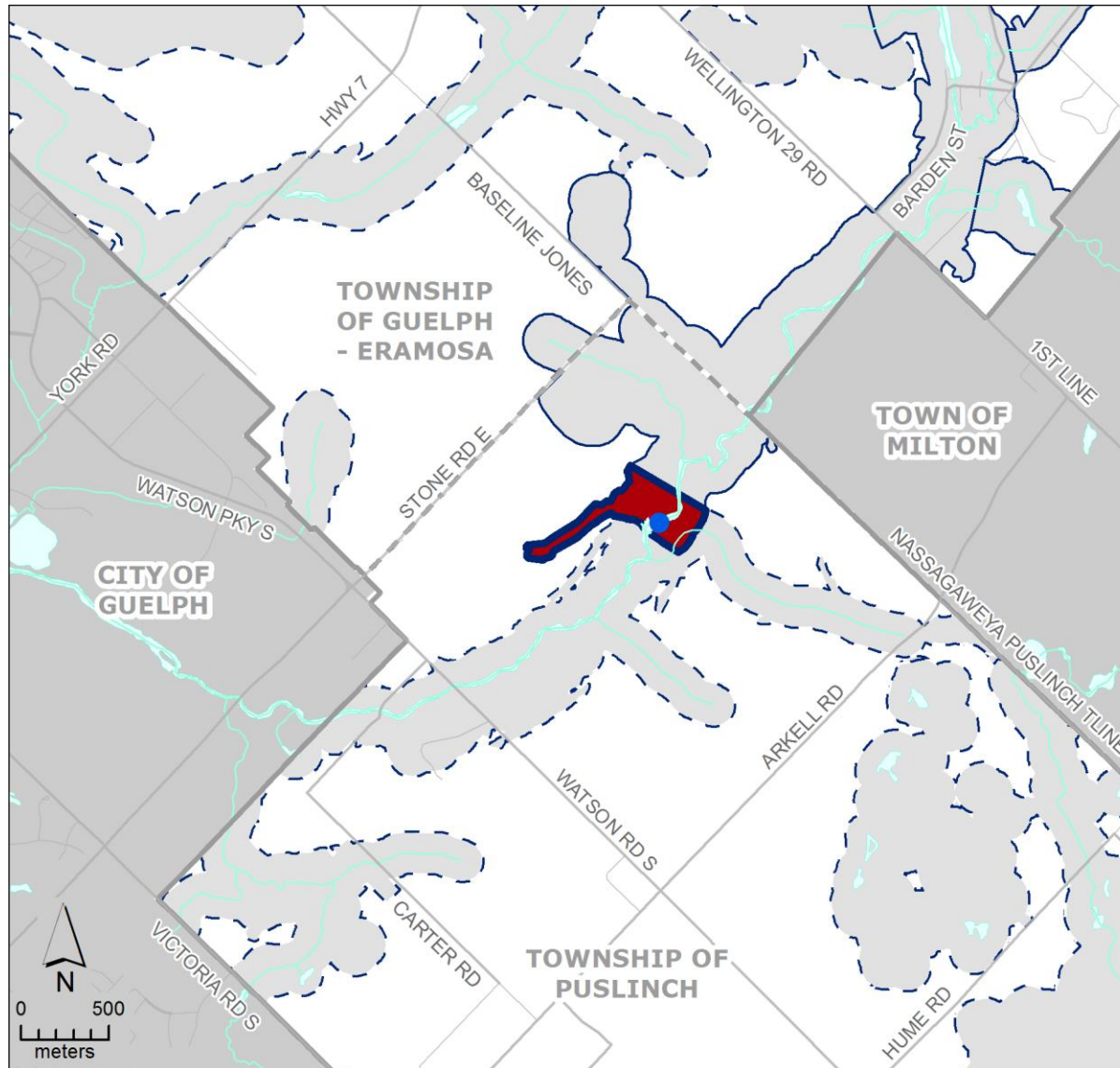


1. Updated September 26, 2019
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
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7.30 Schedule Y: County of Wellington, Township of Puslinch, Issue Contributing Areas



7.31 Schedule Z: County of Wellington, Intake Protection Zones



Significant Drinking Water Threat Policy Applicability

Significant Drinking Water Threat Policy Categories	Vulnerability Scores on Map		
	10	9	8
1. Waste Disposal	█		
2. Sewage Systems	█		
3, 4. Agricultural Source Material		█	
6, 7. Non-Agricultural Source Material*		█	
8, 9. Commercial Fertilizer*		█	
10, 11. Pesticide		█	
12, 13. Road Salt*		█	
14. Storage of Snow		█	
15. Fuel			█
16. DNAPLs			█
17. Organic Solvents			█
18. Aircraft De-icing			█
21. Livestock Area			█

Note: This table provides a summary of the activities listed in the Clean Water Act (2006) that apply as Prescribed Drinking Water Threats (PDWT) within the Intake Protection Zones shown on this map. For details refer to the text of the Source Protection Plan and the Ministry of the Environment Drinking Water Threats Tables.
 *Application of Commercial Fertilizer, Non-Agricultural Source Material, and Road Salt may not be a significant drinking water threat in some areas due to the % managed land, livestock density, and/or % impervious surface calculations for these areas. See the text of the plan for further details.

● Intake
 Roads
 Minor Rivers
 Lakes / Main Rivers
 Wellington County Boundary

Municipal Boundary
Intake Protection Zones:
 IPZ-1
 IPZ-2
 IPZ-3



1. Updated November 17, 2014
 2. Larger scale mapping of some map layers, including roads and vulnerability scores, is available at www.sourcewater.ca.
 3. This map is for illustrative purposes only. Information contained hereon is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.

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THE CORPORATION OF THE TOWNSHIP OF MAPLETON
PUBLIC WORKS REPORT PW2019-30

TO: Mayor Davidson and Members of Council
FROM: Sam Mattina, Director of Public Works
RE: Public Works Department Staff Compliment Increase
DATE: October 22, 2019

RECOMMENDATION:

THAT Township of Mapleton Council receive Public Works Report PW2019-30 dated October 22, 2019 regarding Public Works Department Staff Compliment Increase.

AND FURTHER THAT Council approve the outlined plan to increase Public Works Department staff compliment in order to effectively and efficiently deliver Council approved services to the public.

BACKGROUND:

The services provided by the Public Works Department total approximately 69% of the Corporations total Operating budget of approximately \$9 million and are guided by the Township of Mapleton Strategic Master Plan developed and adopted by Council in 2019.

There are two significant issues currently affecting the department and prompting this report.

The first is the ever increasing age of the current staffing compliment and the second is the ability to year upon year, supplement the existing staff compliment with winter seasonal workers, in order to safely deliver winter control services to the community. This Report will endeavor to provide a solution to both issues by requesting a staff compliment increase. The requested increase, if approved, will effectively increase our ability to deliver Council approved services to the community, reduce municipal third party liability as well as position ourselves to continue to deliver those services in the future.

PREVIOUS PERTINENT REPORTS:

None

DISCUSSION;

The Public Works Department performs physical inspections and year round maintenance work on all Township infrastructure, systems and assets, comprised of Roads, Sidewalks, Bridges, Municipal Facilities, Fleet, Water and Wastewater Treatment, Water and Wastewater Distribution and Collection, Storm Water, Parks, Playgrounds, Recreation venues and Cemeteries. The total value of the assets under

the department purview is estimated at three hundred and fifty four million, four hundred and twenty three thousand, three hundred and sixty seven dollars, \$354,423,367.00. Additionally, the department administers the 10 year capital repair and replacement program for the assets mentioned above valued at approximately \$54 million dollars, as well as the continuous development, implementation and administration of the Corporations Asset Management Plan.

The Public Works Department, Roads Division, operates with 6 full time operators in summer, supplemented by 6 seasonal operators and various private contractors from November to April, to deliver winter control services to the community. The winter control services being provided are legislated by the Ontario government as mandatory requirements under Regulation 239/02 as amended by Regulation 336/18 (Attachment #1) and are targeted primarily to road and sidewalk winter maintenance service delivery. The provision for winter road maintenance requires the township to implement a winter shift schedule for staff, in order to deliver the maintenance service efficiently, effectively and foremost safely.

In order to do this the Township must hire 6 additional staff from mid-November until mid to late April every year. It is becoming increasingly difficult, year upon year, to recruit individuals willing and able to take on these seasonal employment positions, as the position requires qualified licensed and skilled drivers to perform this work, many of which are and require to be employed full time. This year, as is every year, a job posting for the six required seasonal workers was posted and advertised in mid-September and closed in early October. The Township received only two submissions to the recruitment post. Of the two submissions received, only one possessed the required "DZ" designated driver's license. The prior year employed seasonal operators were approached and asked to return for this season, however many of them have conflicting personal or health reasons for not being able to return. We were able to get a commitment from only two of the five previous employees of their willingness and ability to return. As a result we require an additional four operators to achieve the six staff compliment required to safely deliver the roads winter program this upcoming winter season.

Having this additional staff compliment as permanent full time equivalents, will allow the Public Works Department to comply with all legislated requirements with respect to delivery of services as well as plan for the future for staff retirements and business continuity.

The Public Works operating budget currently contains funding for six winter seasonal operators working 22 weeks at 42 hours per week. This request for additional FTE's will utilize the existing 22 weeks of funding in the current operating budget and request 30 additional weeks of funding at 42 hours per week. This will effectively result in 52 weeks of funding for the year and support a full time employee.

There are numerous maintenance tasks performed by the Public Works Roads Staff throughout the year that are legislated through Regulation 239/02 and would benefit from the added manpower. Those year round tasks include;

- Road Patrol
- Debris removal from roads
- Gravel Road grading

- Intersection sweeping
- Sign maintenance and inspection
- Bridge maintenance and inspection

The additional tasks that this staff request will support include the following;

- Enhanced roadside cleaning in Drayton wrt leaf pickup from gutters,
- weed clearing along gutter lines as it occurs in the downtown core,
- enhanced downtown housekeeping in Drayton and Moorefield, (flower planter watering, garbage can maintenance and litter control,
- Road Patrol, Legislated requirement as stipulated in the Minimum Maintenance Standards Ontario Regulation 366/18),
- After hours on call rotation
- Water and Wastewater Operations. Legislation requires that although our water and wastewater systems are operated by a third party, we must have a licensed operator on staff. In order to plan for the future, we must recruit and train two staff members to take on this role when current staff (one staff) retire within the next 5 years.
- Sidewalk surface discontinuity repairs, (currently contracted out).
- Hot Mix Asphalt patching, (currently contracted out)
- Winter control for sidewalks, (partially contracted out, Current value approx. \$10,000).
- Parking lot winter control, (partially contracted out at a value of \$60,000).
- Between storm snow removal in Downtowns; (currently contracted out at a value of \$30,000).

Non legislated tasks include;

- Culvert inspections and maintenance, (under 3m span).
- Guard rail inspections and repairs; (currently contracted out).
- Roadside tree trimming, (safety and cosmetic)
- Emerald Ash Borer issue. We have a large inventory that is affected.

Staff has recently procured a Road Patrol program which will work with our current GPS program to facilitate compliance with the legislated requirement. In addition a work order system has been budgeted for in order assist in preparing annual work plans for the operation and maintenance of the township assets and to track and quantify the work that is required and what is actually performed. This future work order system will then allow the ability to track, quantify and report accomplishments to council and further provide management with the ability to justify any future resource requirements.

CONSULTATION:

None

FINANCIAL IMPLICATIONS:

This request is asking to utilize existing payroll funding within Public Works Operating budget for 4 of the 6 seasonal employees to permit the hiring of 4 new FTE's in 2019 and to preapprove the funding for 2020, pre budget presentation and deliberation. The 2019 operating budget contains funding for 6 weeks of the proposed 52 week funding required. The 2020 budget already contains funding for the remaining the 22 weeks.

The cost impact is for the remaining 32 weeks of funding for the year to support this initiative.

The cost implications associated with this request are as follows; (4fte X 42hrs/wk X 32wks X (26.94/hr X 1.4burden)) = \$202,761.22. (\$50,690.30 per FTE).

If consideration is given to the services currently provided where the Township procures the resources, savings in those areas alone will be more than enough to offset the cost of this initiative.

Funding for this initiative will be sourced from various winter service accounts within the Public Works Operating budget and result in net savings to the overall operating budget.

SUMMARY:

Having this additional staff compliment as permanent full time equivalents, will allow the Public Works Department to comply with all legislated requirements with respect to effective, efficient and safe delivery of year round services to the community as well as succession planning and business continuity.

COMMUNICATION:

None

STRATEGIC PLAN:

Municipal Infrastructure:

Goal: Maintaining and upgrading municipal infrastructure to serve local residents and businesses and to encourage growth

Objective 1.3 Maintain the high quality of our transportation network

Municipal Administration:

Goal: Building and Supporting a strong and efficient Municipal Administration

Objective 4.1 The Township will support and sustain a strong municipal staff team

Attachments:

Attach #1; Municipal Act 2001, Ontario Regulation 239/02

Prepared by:
Sam Mattina, CET, CMMIII
Director of Public Works

Reviewed By:
Manny Baron
CAO

Municipal Act, 2001
Loi de 2001 sur les municipalités

ONTARIO REGULATION 239/02
MINIMUM MAINTENANCE STANDARDS FOR MUNICIPAL HIGHWAYS

Consolidation Period: From May 3, 2018 to the [e-Laws currency date](#).

Last amendment: 366/18.

Legislative History: 288/03, 613/06, 23/10, 47/13, 366/18.

This Regulation is made in English only.

Definitions

1. (1) In this Regulation,

“bicycle facility” means the on-road and in-boulevard cycling facilities listed in Book 18 of the Ontario Traffic Manual;

“bicycle lane” means,

- (a) a portion of a roadway that has been designated by pavement markings or signage for the preferential or exclusive use of cyclists, or
- (b) a portion of a roadway that has been designated for the exclusive use of cyclists by signage and a physical or marked buffer;

“cm” means centimetres;

“day” means a 24-hour period;

“encroachment” means anything that is placed, installed, constructed or planted within the highway that was not placed, installed, constructed or planted by the municipality;

“ice” means all kinds of ice, however formed;

“motor vehicle” has the same meaning as in subsection 1 (1) of the *Highway Traffic Act*, except that it does not include a motor assisted bicycle;

“non-paved surface” means a surface that is not a paved surface;

“Ontario Traffic Manual” means the Ontario Traffic Manual published by the Ministry of Transportation, as amended from time to time;

“paved surface” means a surface with a wearing layer or layers of asphalt, concrete or asphalt emulsion;

“pothole” means a hole in the surface of a roadway caused by any means, including wear or subsidence of the road surface or subsurface;

“roadway” has the same meaning as in subsection 1 (1) of the *Highway Traffic Act*;

“shoulder” means the portion of a highway that provides lateral support to the roadway and that may accommodate stopped motor vehicles and emergency use;

“sidewalk” means the part of the highway specifically set aside or commonly understood to be for pedestrian use, typically consisting of a paved surface but does not include crosswalks, medians, boulevards, shoulders or any part of the sidewalk where cleared snow has been deposited;

“significant weather event” means an approaching or occurring weather hazard with the potential to pose a significant danger to users of the highways within a municipality;

“snow accumulation” means the natural accumulation of any of the following that, alone or together, covers more than half a lane width of a roadway:

1. Newly-fallen snow.
2. Wind-blown snow.
3. Slush;

“substantial probability” means a significant likelihood considerably in excess of 51 per cent;

“surface” means the top of a sidewalk, roadway or shoulder;

“utility” includes any air, gas, water, electricity, cable, fiber-optic, telecommunication or traffic control system or subsystem, fire hydrants, sanitary sewers, storm sewers, property bars and survey monuments;

“utility appurtenance” includes maintenance holes and hole covers, water shut-off covers and boxes, valves, fittings, vaults, braces, pipes, pedestals, and any other structures or items that form part of or are an accessory part of any utility;

“weather” means air temperature, wind and precipitation.

“weather hazard” means the weather hazards determined by Environment Canada as meeting the criteria for the issuance of an alert under its Public Weather Alerting Program. O. Reg. 239/02, s. 1 (1); O. Reg. 23/10, s. 1 (1); O. Reg. 47/13, s. 1; O. Reg. 366/18, s. 1 (1, 2).

(2) For the purposes of this Regulation, every highway or part of a highway under the jurisdiction of a municipality in Ontario is classified in the Table to this section as a Class 1, Class 2, Class 3, Class 4, Class 5 or Class 6 highway, based on the speed limit applicable to it and the average daily traffic on it. O. Reg. 239/02, s. 1 (2); O. Reg. 366/18, s. 1 (3).

(3) For the purposes of subsection (2) and the Table to this section, the average daily traffic on a highway or part of a highway under municipal jurisdiction shall be determined,

(a) by counting and averaging the daily two-way traffic on the highway or part of the highway; or

(b) by estimating the average daily two-way traffic on the highway or part of the highway. O. Reg. 239/02, s. 1 (3); O. Reg. 23/10, s. 1 (2); O. Reg. 366/18, s. 1 (3).

(4) For the purposes of this Regulation, unless otherwise indicated in a provision of this Regulation, a municipality is deemed to be aware of a fact if, in the absence of actual knowledge of the fact, circumstances are such that the municipality ought reasonably to be aware of the fact. O. Reg. 366/18, s. 1 (4).

TABLE
CLASSIFICATION OF HIGHWAYS

Column 1 Average Daily Traffic (number of motor vehicles)	Column 2 91 - 100 km/h speed limit	Column 3 81 - 90 km/h speed limit	Column 4 71 - 80 km/h speed limit	Column 5 61 - 70 km/h speed limit	Column 6 51 - 60 km/h speed limit	Column 7 41 - 50 km/h speed limit	Column 8 1 - 40 km/h speed limit
53,000 or more	1	1	1	1	1	1	1
23,000 - 52,999	1	1	1	2	2	2	2
15,000 - 22,999	1	1	2	2	2	3	3
12,000 - 14,999	1	1	2	2	2	3	3
10,000 - 11,999	1	1	2	2	3	3	3
8,000 - 9,999	1	1	2	3	3	3	3
6,000 - 7,999	1	2	2	3	3	4	4
5,000 - 5,999	1	2	2	3	3	4	4
4,000 - 4,999	1	2	3	3	3	4	4
3,000 - 3,999	1	2	3	3	3	4	4
2,000 - 2,999	1	2	3	3	4	5	5
1,000 - 1,999	1	3	3	3	4	5	5
500 - 999	1	3	4	4	4	5	5
200 - 499	1	3	4	4	5	5	6
50 - 199	1	3	4	5	5	6	6
0 - 49	1	3	6	6	6	6	6

O. Reg. 366/18, s. 1 (5).

Application

2. (1) This Regulation sets out the minimum standards of repair for highways under municipal jurisdiction for the purpose of clause 44 (3) (c) of the Act. O. Reg. 288/03, s. 1.

(2) REVOKED: O. Reg. 23/10, s. 2.

(3) This Regulation does not apply to Class 6 highways. O. Reg. 239/02, s. 2 (3).

Purpose

2.1 The purpose of this Regulation is to clarify the scope of the statutory defence available to a municipality under clause 44 (3) (c) of the Act by establishing maintenance standards which are non-prescriptive as to the methods or materials to be used in complying with the standards but instead describe a desired outcome. O. Reg. 366/18, s. 2.

MAINTENANCE STANDARDS

Patrolling

3. (1) The standard for the frequency of patrolling of highways to check for conditions described in this Regulation is set out in the Table to this section. O. Reg. 23/10, s. 3 (1); O. Reg. 366/18, s. 3 (2).

(2) If it is determined by the municipality that the weather monitoring referred to in section 3.1 indicates that there is a substantial probability of snow accumulation on roadways, ice formation on roadways or icy roadways, the standard for patrolling highways is, in addition to that set out in subsection (1), to patrol highways that the municipality selects as representative of its highways, at intervals deemed necessary by the municipality, to check for such conditions. O. Reg. 47/13, s. 2; O. Reg. 366/18, s. 3 (2).

(3) Patrolling a highway consists of observing the highway, either by driving on or by electronically monitoring the highway, and may be performed by persons responsible for patrolling highways or by persons responsible for or performing highway maintenance activities. O. Reg. 23/10, s. 3 (1).

(4) This section does not apply in respect of the conditions described in section 10, subsections 11 (0.1) and 12 (1) and section 16.1, 16.2, 16.3 or 16.4. O. Reg. 23/10, s. 3 (1); O. Reg. 366/18, s. 3 (3).

TABLE
PATROLLING FREQUENCY

Class of Highway	Patrolling Frequency
1	3 times every 7 days
2	2 times every 7 days
3	once every 7 days
4	once every 14 days
5	once every 30 days

O. Reg. 239/02, s. 3, Table; O. Reg. 23/10, s. 3 (2).

Weather monitoring

3.1 (1) From October 1 to April 30, the standard is to monitor the weather, both current and forecast to occur in the next 24 hours, once every shift or three times per calendar day, whichever is more frequent, at intervals determined by the municipality. O. Reg. 47/13, s. 3; O. Reg. 366/18, s. 4.

(2) From May 1 to September 30, the standard is to monitor the weather, both current and forecast to occur in the next 24 hours, once per calendar day. O. Reg. 47/13, s. 3; O. Reg. 366/18, s. 4.

Snow accumulation, roadways

4. (1) Subject to section 4.1, the standard for addressing snow accumulation on roadways is,

- (a) after becoming aware of the fact that the snow accumulation on a roadway is greater than the depth set out in the Table to this section, to deploy resources as soon as practicable to address the snow accumulation; and
- (b) after the snow accumulation has ended, to address the snow accumulation so as to reduce the snow to a depth less than or equal to the depth set out in the Table within the time set out in the Table,
 - (i) to provide a minimum lane width of the lesser of three metres for each lane or the actual lane width, or
 - (ii) on a Class 4 or Class 5 highway with two lanes, to provide a total width of at least five metres. O. Reg. 47/13, s. 4; O. Reg. 366/18, s. 5 (1).

(2) If the depth of snow accumulation on a roadway is less than or equal to the depth set out in the Table to this section, the roadway is deemed to be in a state of repair with respect to snow accumulation. O. Reg. 47/13, s. 4.

(3) For the purposes of this section, the depth of snow accumulation on a roadway and, if applicable, lane width under clause (1) (b), may be determined in accordance with subsection (4) by a municipal employee, agent or contractor, whose duties or responsibilities include one or more of the following:

- 1. Patrolling highways.
 - 2. Performing highway maintenance activities.
 - 3. Supervising staff who perform activities described in paragraph 1 or 2. O. Reg. 47/13, s. 4; O. Reg. 366/18, s. 5 (2).
- (4) The depth of snow accumulation on a roadway and lane width may be determined by,
- (a) performing an actual measurement;
 - (b) monitoring the weather; or
 - (c) performing a visual estimate. O. Reg. 47/13, s. 4; O. Reg. 366/18, s. 5 (3).
- (5) For the purposes of this section, addressing snow accumulation on a roadway includes,
- (a) plowing the roadway;

- (b) salting the roadway;
- (c) applying abrasive materials to the roadway;
- (d) applying other chemical or organic agents to the roadway;
- (e) any combination of the methods described in clauses (a) to (d). O. Reg. 366/18, s. 5 (4).
- (6) This section does not apply to that portion of the roadway,
 - (a) designated for parking;
 - (b) consisting of a bicycle lane or other bicycle facility; or
 - (d) used by a municipality for snow storage. O. Reg. 366/18, s. 5 (4).

TABLE
SNOW ACCUMULATION - ROADWAYS

Class of Highway	Depth	Time
1	2.5 cm	4 hours
2	5 cm	6 hours
3	8 cm	12 hours
4	8 cm	16 hours
5	10 cm	24 hours

O. Reg. 47/13, s. 4; O. Reg. 366/18, s. 5 (5).

Snow accumulation on roadways, significant weather event

4.1 (1) If a municipality declares a significant weather event relating to snow accumulation, the standard for addressing snow accumulation on roadways until the declaration of the end of the significant weather event is,

- (a) to monitor the weather in accordance with section 3.1; and
- (b) if deemed practicable by the municipality, to deploy resources to address snow accumulation on roadways, starting from the time that the municipality deems appropriate to do so. O. Reg. 366/18, s. 7.

(2) If the municipality complies with subsection (1), all roadways within the municipality are deemed to be in a state of repair with respect to snow accumulation until the applicable time in the Table to section 4 expires following the declaration of the end of the significant weather event by the municipality. O. Reg. 366/18, s. 7.

(3) Following the end of the weather hazard in respect of which a significant weather event was declared by a municipality under subsection (1), the municipality shall,

- (a) declare the end of the significant weather event when the municipality determines it is appropriate to do so; and
- (b) address snow accumulation on roadways in accordance with section 4. O. Reg. 366/18, s. 7.

Snow accumulation, bicycle lanes

4.2 (1) Subject to section 4.3, the standard for addressing snow accumulation on bicycle lanes is,

- (a) after becoming aware of the fact that the snow accumulation on a bicycle lane is greater than the depth set out in the Table to this section, to deploy resources as soon as practicable to address the snow accumulation; and
- (b) after the snow accumulation has ended, to address the snow accumulation so as to reduce the snow to a depth less than or equal to the depth set out in the Table to this section to provide a minimum bicycle lane width of the lesser of 1 metre or the actual bicycle lane width. O. Reg. 366/18, s. 7.

(2) If the depth of snow accumulation on a bicycle lane is less than or equal to the depth set out in the Table to this section, the bicycle lane is deemed to be in a state of repair in respect of snow accumulation. O. Reg. 366/18, s. 7.

(3) For the purposes of this section, the depth of snow accumulation on a bicycle lane and, if applicable, lane width under clause (1) (b), may be determined in the same manner as set out in subsection 4 (4) and by the persons mentioned in subsection 4 (3), with necessary modifications. O. Reg. 366/18, s. 7.

(4) For the purposes of this section, addressing snow accumulation on a bicycle lane includes,

- (a) plowing the bicycle lane;
- (b) salting the bicycle lane;
- (c) applying abrasive materials to the bicycle lane;
- (d) applying other chemical or organic agents to the bicycle lane;
- (e) sweeping the bicycle lane; or

(f) any combination of the methods described in clauses (a) to (e). O. Reg. 366/18, s. 7.

TABLE
SNOW ACCUMULATION – BICYCLE LANES

Column 1 Class of Highway or Adjacent Highway	Column 2 Depth	Column 3 Time
1	2.5 cm	8 hours
2	5 cm	12 hours
3	8 cm	24 hours
4	8 cm	24 hours
5	10 cm	24 hours

O. Reg. 366/18, s. 7.

Snow accumulation on bicycle lanes, significant weather event

4.3 (1) If a municipality declares a significant weather event relating to snow accumulation, the standard for addressing snow accumulation on bicycle lanes until the declaration of the end of the significant weather event is,

- (a) to monitor the weather in accordance with section 3.1; and
- (b) if deemed practicable by the municipality, to deploy resources to address snow accumulation on bicycle lanes, starting from the time that the municipality deems appropriate to do so. O. Reg. 366/18, s. 7.

(2) If the municipality complies with subsection (1), all bicycle lanes within the municipality are deemed to be in a state of repair with respect to snow accumulation until the applicable time in the Table to section 4.2 expires following the declaration of the end of the significant weather event by the municipality. O. Reg. 366/18, s. 7.

(3) Following the end of the weather hazard in respect of which a significant weather event was declared by a municipality under subsection (1), the municipality shall,

- (a) declare the end of the significant weather event when the municipality determines it is appropriate to do so; and
- (b) address snow accumulation on bicycle lanes in accordance with section 4.2. O. Reg. 366/18, s. 7.

Ice formation on roadways and icy roadways

5. (1) The standard for the prevention of ice formation on roadways is doing the following in the 24-hour period preceding an alleged formation of ice on a roadway:

- 1. Monitor the weather in accordance with section 3.1.
- 2. Patrol in accordance with section 3.
- 3. If the municipality determines, as a result of its activities under paragraph 1 or 2, that there is a substantial probability of ice forming on a roadway, treat the roadway, if practicable, to prevent ice formation within the time set out in Table 1 to this section, starting from the time that the municipality determines is the appropriate time to deploy resources for that purpose. O. Reg. 366/18, s. 8.

(2) If the municipality meets the standard set out in subsection (1) and, despite such compliance, ice forms on a roadway, the roadway is deemed to be in a state of repair until the applicable time set out in Table 2 to this section expires after the municipality becomes aware of the fact that the roadway is icy. O. Reg. 366/18, s. 8.

(3) Subject to section 5.1, the standard for treating icy roadways is to treat the icy roadway within the time set out in Table 2 to this section, and an icy roadway is deemed to be in a state of repair until the applicable time set out in Table 2 to this section expires after the municipality becomes aware of the fact that a roadway is icy. O. Reg. 366/18, s. 8.

(4) For the purposes of this section, treating a roadway means applying material to the roadway, including but not limited to, salt, sand or any combination of salt and sand. O. Reg. 366/18, s. 8.

(5) For greater certainty, this section applies in respect of ice formation on bicycle lanes on a roadway, but does not apply to other types of bicycle facilities. O. Reg. 366/18, s. 8.

TABLE 1
ICE FORMATION PREVENTION

Class of Highway	Time
1	6 hours
2	8 hours
3	16 hours
4	24 hours
5	24 hours

O. Reg. 366/18, s. 8.

TABLE 2
TREATMENT OF ICY ROADWAYS

Class of Highway	Time
1	3 hours
2	4 hours
3	8 hours
4	12 hours
5	16 hours

O. Reg. 366/18, s. 8.

Icy roadways, significant weather event

5.1 (1) If a municipality declares a significant weather event relating to ice, the standard for treating icy roadways until the declaration of the end of the significant weather event is,

- (a) to monitor the weather in accordance with section 3.1; and
- (b) if deemed practicable by the municipality, to deploy resources to treat icy roadways, starting from the time that the municipality deems appropriate to do so. O. Reg. 366/18, s. 8.

(2) If the municipality complies with subsection (1), all roadways within the municipality are deemed to be in a state of repair with respect to any ice which forms or may be present until the applicable time in Table 2 to section 5 expires after the declaration of the end of the significant weather event by the municipality. O. Reg. 366/18, s. 8.

(3) Following the end of the weather hazard in respect of which a significant weather event was declared by a municipality under subsection (1), the municipality shall,

- (a) declare the end of the significant weather event when the municipality determines it is appropriate to do so; and
- (b) treat icy roadways in accordance with section 5. O. Reg. 366/18, s. 8.

Potholes

6. (1) If a pothole exceeds both the surface area and depth set out in Table 1, 2 or 3 to this section, as the case may be, the standard is to repair the pothole within the time set out in Table 1, 2 or 3, as appropriate, after becoming aware of the fact. O. Reg. 239/02, s. 6 (1); O. Reg. 366/18, s. 8 (1).

(1.1) For the purposes of this section, the surface area and depth of a pothole may be determined in accordance with subsections (1.2) and (1.3), as applicable, by a municipal employee, agent or contractor whose duties or responsibilities include one or more of the following:

- 1. Patrolling highways.
- 2. Performing highway maintenance activities.
- 3. Supervising staff who perform activities described in paragraph 1 or 2. O. Reg. 366/18, s. 8 (2).

(1.2) The depth and surface area of a pothole may be determined by,

- (a) performing an actual measurement; or
- (b) performing a visual estimate. O. Reg. 366/18, s. 8 (2).

(1.3) For the purposes of this section, the surface area of a pothole does not include any area that is merely depressed and not yet broken fully through the surface of the roadway. O. Reg. 366/18, s. 8 (2).

(2) A pothole is deemed to be in a state of repair if its surface area or depth is less than or equal to that set out in Table 1, 2 or 3, as appropriate. O. Reg. 239/02, s. 6 (2); O. Reg. 47/13, s. 6.

TABLE 1
POTHOLES ON PAVED SURFACE OF ROADWAY

Class of Highway	Surface Area	Depth	Time
1	600 cm ²	8 cm	4 days
2	800 cm ²	8 cm	4 days
3	1000 cm ²	8 cm	7 days
4	1000 cm ²	8 cm	14 days
5	1000 cm ²	8 cm	30 days

O. Reg. 239/02, s. 6, Table 1.

TABLE 2
POTHOLES ON NON-PAVED SURFACE OF ROADWAY

Class of Highway	Surface Area	Depth	Time
3	1500 cm ²	8 cm	7 days
4	1500 cm ²	10 cm	14 days
5	1500 cm ²	12 cm	30 days

O. Reg. 239/02, s. 6, Table 2.

TABLE 3
POTHOLES ON PAVED OR NON-PAVED SURFACE OF SHOULDER

Class of Highway	Surface Area	Depth	Time
1	1500 cm ²	8 cm	7 days
2	1500 cm ²	8 cm	7 days
3	1500 cm ²	8 cm	14 days
4	1500 cm ²	10 cm	30 days
5	1500 cm ²	12 cm	60 days

O. Reg. 239/02, s. 6, Table 3.

Shoulder drop-offs

7. (1) If a shoulder drop-off is deeper than 8 cm, for a continuous distance of 20 metres or more, the standard is to repair the shoulder drop-off within the time set out in the Table to this section after becoming aware of the fact. O. Reg. 366/18, s. 9 (1).

(2) A shoulder drop-off is deemed to be in a state of repair if its depth is less than 8 cm. O. Reg. 366/18, s. 9 (1).

(3) In this section,

“shoulder drop-off” means the vertical differential, where the paved surface of the roadway is higher than the surface of the shoulder, between the paved surface of the roadway and the paved or non-paved surface of the shoulder. O. Reg. 239/02, s. 7 (3).

TABLE
SHOULDER DROP-OFFS

Class of Highway	Time
1	4 days
2	4 days
3	7 days
4	14 days
5	30 days

O. Reg. 366/18, s. 9 (2).

Cracks

8. (1) If a crack on the paved surface of a roadway is greater than 5 cm wide and 5 cm deep for a continuous distance of three metres or more, the standard is to repair the crack within the time set out in the Table to this section after becoming aware of the fact. O. Reg. 366/18, s. 10 (1).

(2) A crack is deemed to be in a state of repair if its width or depth is less than or equal to 5 cm. O. Reg. 366/18, s. 10 (1).

TABLE
CRACKS

Column 1 Class of Highway	Column 2 Time
1	30 days
2	30 days
3	60 days
4	180 days
5	180 days

O. Reg. 366/18, s. 10 (2).

Debris

9. (1) If there is debris on a roadway, the standard is to deploy resources, as soon as practicable after becoming aware of the fact, to remove the debris. O. Reg. 239/02, s. 9 (1); O. Reg. 366/18, s. 11.

(2) In this section,

“debris” means any material (except snow, slush or ice) or object on a roadway,

(a) that is not an integral part of the roadway or has not been intentionally placed on the roadway by a municipality, and

(b) that is reasonably likely to cause damage to a motor vehicle or to injure a person in a motor vehicle. O. Reg. 239/02, s. 9 (2); O. Reg. 47/13, s. 9.

Luminaires

10. (0.1) REVOKED: O. Reg. 366/18, s. 12.

(1) The standard for the frequency of inspecting all luminaires to check to see that they are functioning is once per calendar year, with each inspection taking place not more than 16 months from the previous inspection. O. Reg. 366/18, s. 12.

(2) For conventional illumination, if three or more consecutive luminaires on the same side of a highway are not functioning, the standard is to repair the luminaires within the time set out in the Table to this section after becoming aware of the fact. O. Reg. 366/18, s. 12.

(3) For conventional illumination and high mast illumination, if 30 per cent or more of the luminaires on any kilometre of highway are not functioning, the standard is to repair the luminaires within the time set out in the Table to this section after becoming aware of the fact. O. Reg. 366/18, s. 12.

(4) Despite subsection (2), for high mast illumination, if all of the luminaires on consecutive poles on the same side of a highway are not functioning, the standard is to deploy resources as soon as practicable after becoming aware of the fact to repair the luminaires. O. Reg. 366/18, s. 12.

(5) Despite subsections (1), (2) and (3), for conventional illumination and high mast illumination, if more than 50 per cent of the luminaires on any kilometre of a Class 1 highway with a speed limit of 90 kilometres per hour or more are not functioning, the standard is to deploy resources as soon as practicable after becoming aware of the fact to repair the luminaires. O. Reg. 366/18, s. 12.

(6) Luminaires are deemed to be in a state of repair,

(a) for the purpose of subsection (2), if the number of non-functioning consecutive luminaires on the same side of a highway does not exceed two;

(b) for the purpose of subsection (3), if more than 70 per cent of luminaires on any kilometre of highway are functioning;

(c) for the purpose of subsection (4), if one or more of the luminaires on consecutive poles on the same side of a highway are functioning;

(d) for the purpose of subsection (5), if more than 50 per cent of luminaires on any kilometre of highway are functioning. O. Reg. 366/18, s. 12.

(7) In this section,

“conventional illumination” means lighting, other than high mast illumination, where there are one or more luminaires per pole;

“high mast illumination” means lighting where there are three or more luminaires per pole and the height of the pole exceeds 20 metres;

“luminaire” means a complete lighting unit consisting of,

(a) a lamp, and

(b) parts designed to distribute the light, to position or protect the lamp and to connect the lamp to the power supply. O. Reg. 239/02, s. 10 (7).

TABLE
LUMINAIRES

Class of Highway	Time
1	7 days
2	7 days
3	14 days
4	14 days
5	14 days

Signs

11. (0.1) The standard for the frequency of inspecting signs of a type listed in subsection (2) to check to see that they meet the retro-reflectivity requirements of the Ontario Traffic Manual is once per calendar year, with each inspection taking place not more than 16 months from the previous inspection. O. Reg. 23/10, s. 7 (1); O. Reg. 47/13, s. 11 (1); O. Reg. 366/18, s. 13.

(0.2) A sign that has been inspected in accordance with subsection (0.1) is deemed to be in a state of repair with respect to the retro-reflectivity requirements of the Ontario Traffic Manual until the next inspection in accordance with that subsection, provided that the municipality does not acquire actual knowledge that the sign has ceased to meet these requirements. O. Reg. 47/13, s. 11 (2).

(1) If any sign of a type listed in subsection (2) is illegible, improperly oriented, obscured or missing, the standard is to deploy resources as soon as practicable after becoming aware of the fact to repair or replace the sign. O. Reg. 239/02, s. 11 (1); O. Reg. 23/10, s. 7 (2); O. Reg. 366/18, s. 13.

(2) This section applies to the following types of signs:

1. Checkerboard.
2. Curve sign with advisory speed tab.
3. Do not enter.
- 3.1 Load Restricted Bridge.
- 3.2 Low Bridge.
- 3.3 Low Bridge Ahead.
4. One Way.
5. School Zone Speed Limit.
6. Stop.
7. Stop Ahead.
8. Stop Ahead, New.
9. Traffic Signal Ahead, New.
10. Two-Way Traffic Ahead.
11. Wrong Way.
12. Yield.
13. Yield Ahead.
14. Yield Ahead, New. O. Reg. 239/02, s. 11 (2); O. Reg. 23/10, s. 7 (3).

Regulatory or warning signs

12. (1) The standard for the frequency of inspecting regulatory signs or warning signs to check to see that they meet the retro-reflectivity requirements of the Ontario Traffic Manual is once per calendar year, with each inspection taking place not more than 16 months from the previous inspection. O. Reg. 23/10, s. 8; O. Reg. 47/13, s. 12 (1); O. Reg. 366/18, s. 13.

(1.1) A regulatory sign or warning sign that has been inspected in accordance with subsection (1) is deemed to be in a state of repair with respect to the retro-reflectivity requirements of the Ontario Traffic Manual until the next inspection in accordance with that subsection, provided that the municipality does not acquire actual knowledge that the sign has ceased to meet these requirements. O. Reg. 47/13, s. 12 (2).

(2) If a regulatory sign or warning sign is illegible, improperly oriented, obscured or missing, the standard is to repair or replace the sign within the time set out in the Table to this section after becoming aware of the fact. O. Reg. 23/10, s. 8; O. Reg. 366/18, s. 13.

(3) In this section,

“regulatory sign” and “warning sign” have the same meanings as in the Ontario Traffic Manual, except that they do not include a sign listed in subsection 11 (2) of this Regulation. O. Reg. 23/10, s. 8.

TABLE
REGULATORY AND WARNING SIGNS

Class of Highway	Time
1	7 days
2	14 days

3	21 days
4	30 days
5	30 days

O. Reg. 239/02, s. 12, Table.

Traffic control signal systems

13. (1) If a traffic control signal system is defective in any way described in subsection (2), the standard is to deploy resources as soon as practicable after becoming aware of the defect to repair the defect or replace the defective component of the traffic control signal system. O. Reg. 239/02, s. 13 (1); O. Reg. 366/18, s. 13.

(2) This section applies if a traffic control signal system is defective in any of the following ways:

1. One or more displays show conflicting signal indications.
2. The angle of a traffic control signal or pedestrian control indication has been changed in such a way that the traffic or pedestrian facing it does not have clear visibility of the information conveyed or that it conveys confusing information to traffic or pedestrians facing other directions.
3. A phase required to allow a pedestrian or vehicle to safely travel through an intersection fails to occur.
4. There are phase or cycle timing errors interfering with the ability of a pedestrian or vehicle to safely travel through an intersection.
5. There is a power failure in the traffic control signal system.
6. The traffic control signal system cabinet has been displaced from its proper position.
7. There is a failure of any of the traffic control signal support structures.
8. A signal lamp or a pedestrian control indication is not functioning.
9. Signals are flashing when flashing mode is not a part of the normal signal operation. O. Reg. 239/02, s. 13 (2).

(3) Despite subsection (1) and paragraph 8 of subsection (2), if the posted speed of all approaches to the intersection or location of the non-functioning signal lamp or pedestrian control indication is less than 80 kilometres per hour and the signal that is not functioning is a green or a pedestrian “walk” signal, the standard is to repair or replace the defective component by the end of the next business day. O. Reg. 239/02, s. 13 (3); O. Reg. 366/18, s. 13.

(4) In this section and section 14,

“cycle” means a complete sequence of traffic control indications at a location;

“display” means the illuminated and non-illuminated signals facing the traffic;

“indication” has the same meaning as in the *Highway Traffic Act*;

“phase” means a part of a cycle from the time where one or more traffic directions receive a green indication to the time where one or more different traffic directions receive a green indication;

“power failure” means a reduction in power or a loss in power preventing the traffic control signal system from operating as intended;

“traffic control signal” has the same meaning as in the *Highway Traffic Act*;

“traffic control signal system” has the same meaning as in the *Highway Traffic Act*. O. Reg. 239/02, s. 13 (4).

Traffic control signal system sub-systems

14. (1) The standard is to inspect, test and maintain the following traffic control signal system sub-systems once per calendar year, with each inspection taking place not more than 16 months from the previous inspection:

1. The display sub-system, consisting of traffic signal and pedestrian crossing heads, physical support structures and support cables.
2. The traffic control sub-system, including the traffic control signal cabinet and internal devices such as timer, detection devices and associated hardware, but excluding conflict monitors.
3. The external detection sub-system, consisting of detection sensors for all vehicles, including emergency and railway vehicles and pedestrian push- buttons. O. Reg. 239/02, s. 14 (1); O. Reg. 47/13, s. 13 (1); O. Reg. 366/18, s. 13.

(1.1) A traffic control signal system sub-system that has been inspected, tested and maintained in accordance with subsection (1) is deemed to be in a state of repair until the next inspection in accordance with that subsection, provided that the municipality does not acquire actual knowledge that the traffic control signal system sub-system has ceased to be in a state of repair. O. Reg. 47/13, s. 13 (2).

(2) The standard is to inspect, test and maintain conflict monitors every five to seven months and at least twice per calendar year. O. Reg. 239/02, s. 14 (2); O. Reg. 47/13, s. 13 (3); O. Reg. 366/18, s. 13.

(2.1) A conflict monitor that has been inspected, tested and maintained in accordance with subsection (2) is deemed to be in a state of repair until the next inspection in accordance with that subsection, provided that the municipality does not acquire actual knowledge that the conflict monitor has ceased to be in a state of repair. O. Reg. 47/13, s. 13 (4).

(3) In this section,

“conflict monitor” means a device that continually checks for conflicting signal indications and responds to a conflict by emitting a signal. O. Reg. 239/02, s. 14 (3).

Bridge deck spalls

15. (1) If a bridge deck spall exceeds both the surface area and depth set out in the Table to this section, the standard is to repair the bridge deck spall within the time set out in the Table after becoming aware of the fact. O. Reg. 239/02, s. 15 (1); O. Reg. 366/18, s. 13.

(2) A bridge deck spall is deemed to be in a state of repair if its surface area or depth is less than or equal to that set out in the Table. O. Reg. 239/02, s. 15 (2); O. Reg. 47/13, s. 14.

(3) In this section,

“bridge deck spall” means a cavity left by one or more fragments detaching from the paved surface of the roadway or shoulder of a bridge. O. Reg. 239/02, s. 15 (3).

TABLE
BRIDGE DECK SPALLS

Class of Highway	Surface Area	Depth	Time
1	600 cm ²	8 cm	4 days
2	800 cm ²	8 cm	4 days
3	1,000 cm ²	8 cm	7 days
4	1,000 cm ²	8 cm	7 days
5	1,000 cm ²	8 cm	7 days

O. Reg. 239/02, s. 15, Table.

Roadway surface discontinuities

16. (1) If a surface discontinuity on a roadway, other than a surface discontinuity on a bridge deck, exceeds the height set out in the Table to this section, the standard is to repair the surface discontinuity within the time set out in the Table after becoming aware of the fact. O. Reg. 23/10, s. 9; O. Reg. 366/18, s. 13.

(1.1) A surface discontinuity on a roadway, other than a surface discontinuity on a bridge deck, is deemed to be in a state of repair if its height is less than or equal to the height set out in the Table to this section. O. Reg. 47/13, s. 15.

(2) If a surface discontinuity on a bridge deck exceeds five centimetres, the standard is to deploy resources as soon as practicable after becoming aware of the fact to repair the surface discontinuity on the bridge deck. O. Reg. 23/10, s. 9; O. Reg. 366/18, s. 13.

(2.1) A surface discontinuity on a bridge deck is deemed to be in a state of repair if its height is less than or equal to five centimetres. O. Reg. 47/13, s. 15.

(3) In this section,

“surface discontinuity” means a vertical discontinuity creating a step formation at joints or cracks in the paved surface of the roadway, including bridge deck joints, expansion joints and approach slabs to a bridge. O. Reg. 23/10, s. 9.

TABLE
SURFACE DISCONTINUITIES

Class of Highway	Height	Time
1	5 cm	2 days
2	5 cm	2 days
3	5 cm	7 days
4	5 cm	21 days
5	5 cm	21 days

O. Reg. 239/02, s. 16, Table.

Sidewalk surface discontinuities

16.1 (1) The standard for the frequency of inspecting sidewalks to check for surface discontinuity is once per calendar year, with each inspection taking place not more than 16 months from the previous inspection. O. Reg. 23/10, s. 10; O. Reg. 47/13, s. 16 (1); O. Reg. 366/18, s. 13.

(1.1) A sidewalk that has been inspected in accordance with subsection (1) is deemed to be in a state of repair with respect to any surface discontinuity until the next inspection in accordance with that subsection, provided that the municipality does not acquire actual knowledge of the presence of a surface discontinuity in excess of two centimetres. O. Reg. 47/13, s. 16 (2).

(2) If a surface discontinuity on or within a sidewalk exceeds two centimetres, the standard is to treat the surface discontinuity within 14 days after acquiring actual knowledge of the fact. O. Reg. 366/18, s. 14.

(2.1) REVOKED: O. Reg. 366/18, s. 14.

(3) A surface discontinuity on or within a sidewalk is deemed to be in a state of repair if it is less than or equal to two centimetres. O. Reg. 366/18, s. 14.

(4) For the purpose of subsection (2), treating a surface discontinuity on or within a sidewalk means taking reasonable measures to protect users of the sidewalk from the discontinuity, including making permanent or temporary repairs, alerting users' attention to the discontinuity or preventing access to the area of discontinuity. O. Reg. 366/18, s. 14.

(5) In this section,

“surface discontinuity” means a vertical discontinuity creating a step formation at any joint or crack in the surface of the sidewalk or any vertical height difference between a utility appurtenance found on or within the sidewalk and the surface of the sidewalk. O. Reg. 366/18, s. 14.

Encroachments, area adjacent to sidewalk

16.2 (1) The standard for the frequency of inspecting an area adjacent to a sidewalk to check for encroachments is once per calendar year, with each inspection taking place not more than 16 months from the previous inspection. O. Reg. 366/18, s. 15.

(2) The area adjacent to a sidewalk that has been inspected in accordance with subsection (1) is deemed to be in a state of repair in respect of any encroachment present. O. Reg. 366/18, s. 15.

(3) For greater certainty, the area adjacent to a sidewalk begins at the outer edges of a sidewalk and ends at the lesser of the limit of the highway, the back edge of a curb if there is a curb and a maximum of 45 cm. O. Reg. 366/18, s. 15.

(4) The area adjacent to a sidewalk is deemed to be in a state of repair in respect of any encroachment present unless the encroachment is determined by a municipality to be highly unusual given its character and location or to constitute a significant hazard to pedestrians. O. Reg. 366/18, s. 15.

(5) If a municipality determines that an encroachment is highly unusual given its character and location or constitutes a significant hazard to pedestrians, the standard is to treat the encroachment within 28 days after making such a determination, and the encroachment is deemed in a state of repair for 28 days from the time of the determination by the municipality. O. Reg. 366/18, s. 15.

(6) For the purpose of subsection (4), treating an encroachment means taking reasonable measures to protect users, including making permanent or temporary repairs, alerting users' attention to the encroachment or preventing access to the area of the encroachment. O. Reg. 366/18, s. 15.

Snow accumulation on sidewalks

16.3 (1) Subject to section 16.4, the standard for addressing snow accumulation on a sidewalk after the snow accumulation has ended is,

- a) to reduce the snow to a depth less than or equal to 8 centimetres within 48 hours; and
- b) to provide a minimum sidewalk width of 1 metre. O. Reg. 366/18, s. 15.

(2) If the depth of snow accumulation on a sidewalk is less than or equal to 8 centimetres, the sidewalk is deemed to be in a state of repair in respect of snow accumulation. O. Reg. 366/18, s. 15.

(3) If the depth of snow accumulation on a sidewalk exceeds 8 centimetres while the snow continues to accumulate, the sidewalk is deemed to be in a state of repair with respect to snow accumulation, until 48 hours after the snow accumulation ends. O. Reg. 366/18, s. 15.

(4) For the purposes of this section, the depth of snow accumulation on a sidewalk may be determined in the same manner as set out in subsection 4 (4) and by the persons mentioned in subsection 4 (3) with necessary modifications. O. Reg. 366/18, s. 15.

(5) For the purposes of this section, addressing snow accumulation on a sidewalk includes,

- (a) plowing the sidewalk;
- (b) salting the sidewalk;
- (c) applying abrasive materials to the sidewalk;
- (d) applying other chemical or organic agents to the sidewalk; or
- (e) any combination of the methods described in clauses (a) to (d). O. Reg. 366/18, s. 15.

Snow accumulation on sidewalks, significant weather event

16.4 (1) If a municipality declares a significant weather event relating to snow accumulation, the standard for addressing snow accumulation on sidewalks until the declaration of the end of the significant weather event is,

- (a) to monitor the weather in accordance with section 3.1; and
- (b) if deemed practicable by the municipality, to deploy resources to address snow accumulation on sidewalks starting from the time that the municipality deems appropriate to do so. O. Reg. 366/18, s. 15.

(2) If the municipality complies with subsection (1), all sidewalks within the municipality are deemed to be in a state of repair with respect to any snow present until 48 hours following the declaration of the end of the significant weather event by the municipality. O. Reg. 366/18, s. 15.

(3) Following the end of the weather hazard in respect of which a significant weather event was declared by a municipality under subsection (1), the municipality shall,

- (a) declare the end of the significant weather event when the municipality determines it is appropriate to do so; and
- (b) address snow accumulation on sidewalks in accordance with section 16.3. O. Reg. 366/18, s. 15.

Ice formation on sidewalks and icy sidewalks

16.5 (1) Subject to section 16.6, the standard for the prevention of ice formation on sidewalks is to,

- (a) monitor the weather in accordance with section 3.1 in the 24-hour period preceding an alleged formation of ice on a sidewalk; and
- (b) treat the sidewalk if practicable to prevent ice formation or improve traction within 48 hours if the municipality determines that there is a substantial probability of ice forming on a sidewalk, starting from the time that the municipality determines is the appropriate time to deploy resources for that purpose. O. Reg. 366/18, s. 15.

(2) If ice forms on a sidewalk even though the municipality meets the standard set out in subsection (1), the sidewalk is deemed to be in a state of repair in respect of ice until 48 hours after the municipality first becomes aware of the fact that the sidewalk is icy. O. Reg. 366/18, s. 15.

(3) The standard for treating icy sidewalks after the municipality becomes aware of the fact that a sidewalk is icy is to treat the icy sidewalk within 48 hours, and an icy sidewalk is deemed to be in a state of repair for 48 hours after it has been treated. O. Reg. 366/18, s. 15.

(4) For the purposes of this section, treating a sidewalk means applying materials including salt, sand or any combination of salt and sand to the sidewalk. O. Reg. 366/18, s. 15.

Icy sidewalks, significant weather event

16.6 (1) If a municipality declares a significant weather event relating to ice, the standard for addressing ice formation or ice on sidewalks until the declaration of the end of the significant weather event is,

- (a) to monitor the weather in accordance with section 3.1; and
- (b) if deemed practicable by the municipality, to deploy resources to treat the sidewalks to prevent ice formation or improve traction, or treat the icy sidewalks, starting from the time that the municipality deems appropriate to do so. O. Reg. 366/18, s. 15.

(2) If the municipality complies with subsection (1), all sidewalks within the municipality are deemed to be in a state of repair with respect to any ice which forms or is present until 48 hours after the declaration of the end of the significant weather event by the municipality. O. Reg. 366/18, s. 15.

(3) Following the end of the weather hazard in respect of which a significant weather event was declared by a municipality under subsection (1), the municipality shall,

- (a) declare the end of the significant weather event when the municipality determines it is appropriate to do so; and
- (b) address the prevention of ice formation on sidewalks or treat icy sidewalks in accordance with section 16.5. O. Reg. 366/18, s. 15.

Winter sidewalk patrol

16.7 (1) If it is determined by the municipality that the weather monitoring referred to in section 3.1 indicates that there is a substantial probability of snow accumulation on sidewalks in excess of 8 cm, ice formation on sidewalks or icy sidewalks, the standard for patrolling sidewalks is to patrol sidewalks that the municipality selects as representative of its sidewalks at intervals deemed necessary by the municipality. O. Reg. 366/18, s. 15.

(2) Patrolling a sidewalk consists of visually observing the sidewalk, either by driving by the sidewalk on the adjacent roadway or by driving or walking on the sidewalk or by electronically monitoring the sidewalk, and may be performed by persons responsible for patrolling roadways or sidewalks or by persons responsible for performing roadway or sidewalk maintenance activities. O. Reg. 366/18, s. 15.

Closure of a highway

16.8 (1) When a municipality closes a highway or part of a highway pursuant to its powers under the Act, the highway is deemed to be in a state of repair in respect of all conditions described in this Regulation from the time of the closure until the highway is re-opened by the municipality. O. Reg. 366/18, s. 15.

(2) For the purposes of subsection (1), a highway or part of a highway is closed on the earlier of,

- (a) when a municipality passes a by-law to close the highway or part of the highway; and
- (b) when a municipality has taken such steps as it determines necessary to temporarily close the highway or part of a highway. O. Reg. 366/18, s. 15.

Declaration of significant weather event

16.9. A municipality declaring the beginning of a significant weather event or declaring the end of a significant weather event under this Regulation shall do so in one or more of the following ways:

- 1. By posting a notice on the municipality's website.
- 2. By making an announcement on a social media platform, such as Facebook or Twitter.
- 3. By sending a press release or similar communication to internet, newspaper, radio or television media.
- 4. By notification through the municipality's police service.
- 5. By any other notification method required in a by-law of the municipality. O. Reg. 366/18, s. 15.

REVIEW OF REGULATION

Review

17. (1) The Minister of Transportation shall conduct a review of this Regulation and Ontario Regulation 612/06 (Minimum Maintenance Standards for Highways in the City of Toronto) made under the *City of Toronto Act, 2006* every five years. O. Reg. 613/06, s. 2.

(2) Despite subsection (1), the first review after the completion of the review started before the end of 2007 shall be started five years after the day Ontario Regulation 23/10 is filed. O. Reg. 23/10, s. 11.

18. OMITTED (PROVIDES FOR COMING INTO FORCE OF PROVISIONS OF THIS REGULATION). O. Reg. 239/02, s. 18.

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**THE CORPORATION OF THE TOWNSHIP OF MAPLETON
BY-LAW NUMBER 2019-091**

**Being a By-law to amend By-law 2010-080, being a
Zoning By-law for the Township of Mapleton**

**Part Lot 135, Plan 134 (Peel)
3 Peel Street West, Alma
ZBA 2019-12**

WHEREAS the Council of the Corporation of the Township of Mapleton deems it desirable to amend said By-law Number 2010-080, as amended.

NOW THEREFORE the Council of the Corporation of the Township of Mapleton enacts as follows:

1. That By-law Number 2010-080, is hereby amended by changing the zoning on the map forming Schedule 'A-4', as it applies to Part Lot 135, Plan 134 (Peel), with a municipal address of 3 PEet Street West, Alma as illustrated on Schedule 'A' attached to and forming part of this By-law from:

- **Central Commercial (C1) to Central Commercial Exception (C1-31.328)**

2. THAT Section 31, Exception Zone, is amended by the inclusion of the following new exception:

3.

31.328 PT LT 135, Plan 134 (Peel), 3 Peel Street West, Alma	In addition to the other uses permitted in the Central Commercial (C1) zone, the sale of alcohol and a bottle return is permitted.
--	--

4. That except as amended by this By-law, the subject lands, as shown on Schedule 'A' to this By-law, shall be subject to all other applicable regulations of By-law Number 2010-080, as amended.
5. This By-law shall come into effect on the final passing thereof by the Council of Corporation of the Township of Mapleton, subject to compliance with the provisions of the *Planning Act*, R.S.O. 1990, c. P.13, as amended.

READ a first, second and third time and passed this 22nd day of October, 2019.

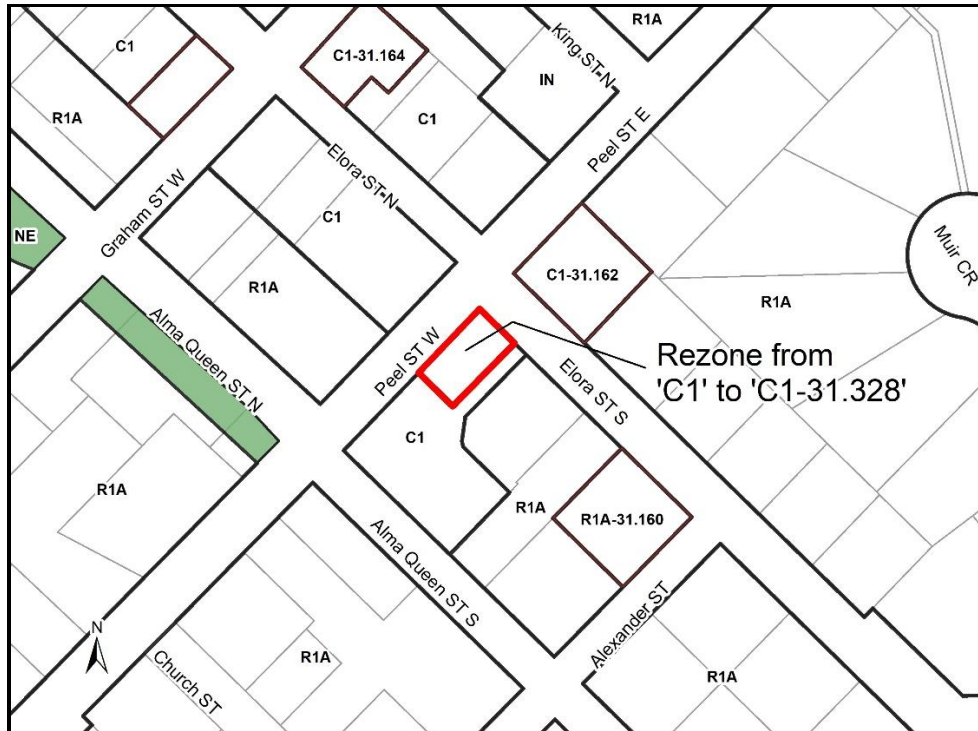
Mayor Gregg Davidson

Clerk Barb Schellenberger

THE TOWNSHIP OF MAPLETON

BY-LAW NUMBER 2019-091

Schedule "A"



Hatched area to be rezoned to a modified "C1-31.328" Zone

EXPLANATORY NOTE
BY-LAW NUMBER 2019-091

SUBJECT LAND

The subject land is legally described as Part Lot 135, Plan 134 (Peel), with a civic address of 3 Peel Street West, Alma. The property is approximately 673 m² (0.16 ac) in size and has an existing commercial/residential structure.

PURPOSE AND EFFECT

The purpose of the amendment is to rezone the subject lands to permit the sale of alcohol and a bottle return in addition to the uses permitted within the Central Commercial (C1) zone.

THE CORPORATION OF THE TOWNSHIP OF MAPLETON
BY-LAW NUMBER 2019-092

Being a By-law to amend By-law 2010-080, being a
Zoning By-law for the Township of Mapleton
ZBA 2019-06

WHEREAS the Council of the Corporation of the Township of Mapleton deems it desirable to amend said By-law Number 2010-080, as amended pursuant to Section 34 of The Planning Act, R.S.O. 1990, as amended.

NOW THEREFORE the Council of the Corporation of the Township of Mapleton enacts as follows:

1. THAT Section 5, Definitions, is amended by including the following new definitions in alphabetical order:

“AIR CONDITIONERS AND HEAT PUMPS, means equipment designed to heat or cool the interior of buildings and structures and which are normally located outside or on a roof.

PARKING SPACE ANGLED, means the orientation of a parking space in such a manner that the side of a motor vehicle, when parked, is at an angle other than parallel to the drive aisle, driveway, lane, or street which gives direct access to such parking space.

PARKING SPACE, BARRIER FREE ACCESSIBLE, means a parking space provided for the use of persons with disabilities pursuant to the Accessibility for Ontarians with Disabilities Act.

PARKING SPACE, PARALLEL, means the orientation of a parking space in such a manner that the side of a motor vehicle, when parked, is parallel to the drive aisle, driveway, lane, or street which gives direct access to such parking space.

PARKING SPACE, TANDEM, means the arrangement of two parking spaces such that it is necessary to traverse one parking space to gain access to the other from a lane, drive aisle, driveway, or street.

PARKING SPACE, VISITOR, means a parking space for the exclusive use of visitors to a premises.

STACKING LANE, means a continuous on-site queuing lane that includes stacking spaces for motor vehicles which is separated from other vehicular traffic and pedestrian circulation by barriers, markings, or signs.

STACKING SPACE, means a rectangular space that may be provided in succession and is designed to be used for the temporary queuing of a motor vehicle in a stacking lane.”

2. THAT Section 5.32, Definitions – Building, is amended by adding the words **“and shall include a tarped/coverall structure”** after the word *chattels*.
3. THAT Section 5.73, Definitions – Day Nursery, is amended by deleting the words **“The Day Nurseries Act”** and replacing it with the words **“Child Care and Early Years Act”**.
4. THAT Section 5.80, Definitions – Existing, is amended by deleting the words **“except as provided for in Section 6.36 Wellhead Protection”** after the words *By-law*.
5. THAT Section 5.96, Definitions – Floor Area, is amended by deleting the words **“private”** after the words *excluding any* and replacing it with the word **“attached”**; and further amending the second paragraph by deleting it in its entirety and replacing it with the following wording:

“Notwithstanding the above section, in the case of a home industry and/or accessory structure, the basement or cellar shall be included in the total floor area.”

6. THAT Section 5.133, Definitions – Livestock, is amended by deleting the words the definition in its entirety and replacing it with the following: **“ means dairy, beef, swine, poultry, horses, goat, sheep, ratites, furbearing animals, deer and elk, game animals and birds.”**
7. THAT Section 5.138.3, Definitions – Lot Coverage, is amended by adding the following words to the end of the definition **“ The area of an outdoor swimming pool, open and unenclosed porches, uncovered decks, balconies and steps shall not be calculated in determining lot coverage.”**
8. THAT Section 5.215.1, Definitions – Attic, is amended by deleting the words **“2.3 m (7.5 ft)”** and replacing them with **“ 2 m (6.56 ft);** and further adding the words to the end of the definition, **“Note: in the case of an accessory structure the dwarf wall measurement is less than 2 m (6.56 ft) at its highest point”.**
9. THAT Section 5.215.5, Definitions – First Storey or Ground Floor, is amended by deleting the definition in its entirety and replacing it with the following:

“5.215.5 FIRST STOREY or GROUND FLOOR, means the storey having its floor level closest to the finished grade and its ceiling more than 1.8 metres above grade.”
10. THAT Section 5.216, Definitions – Street, is amended by adding the words **“year round”** after the word *maintained*.
11. THAT Section 5, Definitions is amended by removing numbers 5.1 thru to 5.238.
12. THAT Section 6.1.3 (b), Height, is amended by deleting the words **“and shall not exceed one storey”** after the word *(22 ft)*.
13. THAT Section 6.1.4 (b), Lot Coverage, is amended by deleting the words/numbers **“92.9 m² (1000.0 ft²) ground floor area”** and replacing it with **“185.8 m² (2000.0 ft²) total floor area”**
14. THAT Section 6.1.5, Establishment of an Accessory Building or Use, is amended by removing c) in its entirety and replacing it with:

“c) A tarped/coverall structure when used as an accessory structure, shall be required to comply to section 6.1 accessory uses.”
15. THAT Section 6.1, Accessory Uses, is amended by adding a new subsection **6.1.7** as follows:

“6.1.7 AIR CONDITIONERS, HEAT PUMPS, POOL PUMPS, FILTERS AND HEATERS
Air conditioners, heat pumps, filters and heaters are permitted in conjunction with a permitted use provided:
a) They are not located in the front yard.
b) They are located a minimum of 1m from the interior side lot line and no closer than the required exterior side yard for the main building, and,
c) They are located no closer to a Residential Zone boundary than the minimum setback required for main buildings in Non-Residential Zones from Residential Zone boundaries.”
16. THAT Section 6.6 a), Common Amenity Area, is amended by deleting the word **“outdoor”** after the word *common*.
17. THAT Section 6.7 a), Day Lighting (Sight) Triangle, is amended by deleting the words **“9.0 m (29.5 ft)”** after the words *measuring* and replacing with the words **“7.5 m (24.6 ft)”**.

- 18. THAT Section 6.7 c), Day Lighting (Sight) Triangle, is amended by adding the words **“or lanes”** at the end of the sentence.
- 19. THAT Section 6.10, Frontage on a Public Street, is amended by deleting the word **“PUBLIC”** from the title and replacing it with the word **“A”**.
- 20. THAT Section 6.14 b), Home Industry, is amended by adding the words **“a contractors yard”** after the word *gas*.
- 21. THAT Section 6.24, One Building Per Lot, is amended by adding a new subsection 6.24 d), as follows:
“d) Model homes at a ratio of two model homes/hectare to a maximum of 4. A model home agreement will be required.”
- 22. THAT Section 6.27.1, Size of Parking Spaces, is amended by deleting the paragraph in its entirety and replacing it with the following table:

Parking Space Type	Minimum Dimensions	
	Width	Length
Angled	2.9 m (9.5 ft)	5.5 m (18 ft)
Parallel	2.7 m (8.8 ft)	6.5 m (21.3ft)
Private Garage - interior	3 m (9.8 ft)	6 m (19.6 ft)

- 23. THAT Section 6.27.2, Access to Parking Spaces, is amended by adding the following paragraphs after the first sentence:

“All driveways and parking aisles shall have a minimum unobstructed width of 6 m (19.6 ft.) where two-way traffic is permitted and 3 m (9.8 ft.) where one-way direction of traffic flow is permitted, which is clearly indicated by signs, pavement markings or both.

Notwithstanding the above the minimum width required for any driveway accessory to a single detached, semi-detached or street townhouse dwelling shall be 2.5 metres.”

- 24. THAT Section 6.27.4 d), Location of Parking Area and Spaces, is amended by adding the word **“also”** after the words *institutional zone may*.
- 25. THAT Section 6.27.5, Barrier Free Parking, is amended by deleting the entire section and replacing it with the following new criteria:

- “Barrier Free/Accessible Parking**
- a) Each space shall be hard surfaced.
 - b) Each space shall be appropriately identified by a sign which is clearly posted and visible at all times and which contains the International Symbol of Accessibility. Such sign shall be posted in a visible location other than on the parking surface.
 - c) Each space is to have a minimum 1.5 m wide access aisle, extending the full length of the parking space that allows persons with disabilities to get in and out of their vehicles adjacent to the parking space. The access aisle may be shared by two accessible spaces by locating the access aisle between the spaces. All access aisle shall be marked with high tonal contrast diagonal lines, which discourages parking in them, where the surface is asphalt, concrete or some other hard surface that can be painted.
 - d) Each space shall be either Type A or Type B as described below:
 - Type A Parking Space: minimum width of 3.4 m and minimum length of 5.5 m and signage that identifies the space as “van accessible”
 - Type B Parking Space: minimum width of 2.4 m and a minimum length of 5.5 m
 - Where an even number of parking spaces for the use of persons with Table 2 – Total Required Accessible Parking Spaces

- disabilities are required, an equal number of parking spaces that meet the requirements of a Type A parking space and a Type B parking space must be provided.
 - Where an odd number of parking spaces for the use of persons with disabilities are required, the number of parking spaces must be divided equally between parking spaces that meet the requirements of a Type A parking space and a Type B parking space, but the additional parking space, the odd-numbered space, may be a Type B parking space.
- e) The number of accessible spaces shall be determined in accordance with Table 2 below.

TABLE 2 – Total Required Barrier Free/Accessible Parking Spaces

Total Required Parking Spaces	Number of Accessible Parking Space
0-12	1 space - Must be Type A Parking Space
13 – 100	Four per cent of the total number of parking spaces.
101 – 200	One parking space plus an additional three per cent of parking spaces.
201 – 1000	Two parking spaces plus an additional two per cent of parking spaces.
Greater than 1000	Eleven parking spaces plus an additional one per cent of parking spaces.

26. THAT Section 6.27.8, Calculation of Parking Regulations, is amended by replacing the minimum number of parking spaces for Accessory Dwellings and Townhouse/Cluster as follows:

- Accessory Dwellings (**converted dwelling**) – 1/unit (**tandem parking may be permitted**)
- Townhouse/Cluster – **1 space per dwelling unit; plus 1 space for each 2 dwelling units for visitors only (also see section 6.27.9 – tandem parking)**

27. THAT Section 6.27, Parking Regulations, is amended by adding a new subsection **6.27.10** as follows:

“6.27.10 Tandem Parking

Notwithstanding section 6.27.2, every four tandem parking spaces located in a cluster townhouse development in R3 zone shall be deemed to equal one visitor parking space required by this by-law, provided that there must be a minimum of 1 visitor parking space for each 4 dwelling units and such spaces shall be identified as being reserved for the exclusive use of such visitors.”

28. THAT Section 6.28 ii), Parking/Storage of Commercial and Recreational Vehicles in a Residential zone, is amended by adding the words **“or exterior side yard”** after the words *front yard*.

29. THAT Section 6.29, Residential Conversions, is amended by removing the words **“(legally existing on the day of the passing of this By-law)”** after the word *dwelling* and adding the words **“or constructed”** after the word *converted*.

30. THAT Section 6.31.2 a) & b), Street Setback Standards and Exceptions, is amended by renumbering and relocating to section 6.22, as follows:

- **6.31.3 a) becomes 6.22 d)**

AND further that 6.31 **“AND EXCEPTIONS”** is removed from title.

AND further that 6.31.3 **“EXCEPTIONS”** heading is removed.

31. THAT Section 6.32, Temporary uses, Buildings and Structures, is amended by adding a new subsection 6.32 c) as follows:

- “c) A temporary building or trailer for conducting sales of new dwelling units is permitted in any Zone provided the sales building or trailer is**

located within a development site. The sales building or trailer shall be setback 30 metres from the lot line of any existing residential use abutting the development site and parking areas associated with the sales building or trailer shall be setback 6m from any existing residential use abutting the development site. Note a sales trailer agreement will be required.”

32. THAT Section 6.35.2, Uses Restricted in all Zones, is amended by deleting the following statement under bullet 3:

- Keeping of livestock in any urban area unless specifically permitted by a by-law of this municipality;

And replacing it with:

- **“No person shall, in any residential zone, keep or raise any livestock, bird, reptile, or wild animal including any tamed or domesticated wild animal. This provision shall not prevent the keeping of 3 dogs as per Township of Mapleton keeping of dogs by-law, on one lot.”**

33. THAT Section 6.36, Wellhead Protection, is amended by deleting the words **“or activity”** after the words *any use*.

34. THAT Section 6.36.1 a), b) c) and d), Existing, is deleted in its entirety.

35. THAT Section 8.1, Permitted Uses, is amended by removing **“Hobby Barn”**.

36. THAT Section 8.5, Reduced Lot Regulations, is amended by numbering the first paragraph **a)** and removing the words **“or a lot created by a consent, pursuant to the provisions of the Planning Act, and”** after the words *vacant lot*.

AND further that Section 8.5, is amended by adding a new section **b)** as follows:

- “b) A new lot created by consent or new parcels created by lot line adjustment pursuant to the provisions of the Planning Act, and which parcel (severed and/or retained lands) lacks either the required frontage or area, or both, and is 10 ha (25 ac) or less, shall be deemed to comply with the lot frontage and lot area regulations of Section 8.5.1 and 8.5.2.**

37. THAT Section 8.5.1, Permitted Uses, is amended by adding the following new uses to Section 8.5.1 under the permitted accessory uses section:

- **Bed and Breakfast in accordance with Section 6.2.**
- **Farming excluding new buildings and structures.**
- **Conversion of a single detached residential dwelling for one additional residential dwelling unit in accordance with Section 6.29.**

38. THAT Section 10.2.1, R1B Zone, LOT AREA, Minimum is amended by deleting the numbers/words **“650.3 m² (7000.0 ft²)”** and replacing with **“465.0 m² (5005.4 ft²)”**.

39. THAT Section 10.2.2, R1B Zone, LOT FRONTAGE, Minimum is amended by deleting the numbers/words **“20.1 m (66 ft.)”** and replacing with **“15 m (49.2 ft.)”**.

40. THAT Section 10.2.4, R1B Zone, Interior Side Yard, is amended by deleting 10.2.4 in its entirety and replacing with the following:

“10.2.4 INTERIOR SIDE YARD, Minimum 1.2 m (3.9 ft)”

41. THAT Section 11.2.1, R1C Zone, LOT AREA, Minimum is amended by deleting the numbers/words **“465.0 m² (5005.4 ft²)”** and replacing with **“371.6 m² (4000 ft²)”**.

42. THAT Section 11.2.2, R1C Zone, LOT FRONTAGE, Minimum is amended by deleting the numbers/words **“15 m (49 ft.)”** and replacing with **“12 m (39.3 ft.)”**.

43. THAT Section 11.2.4, R1C Zone, Interior Side Yard, is amended by deleting 11.2.4 in its entirety and replacing with the following:

“11.2.4 INTERIOR SIDE YARD, Minimum 1.2 m (3.9 ft)”

44. THAT Section 12, R2 Residential - Permitted uses, is amended by adding the words

“three or” at the beginning of Four Unit Street Townhouse.

45. THAT Section 12.2.1.1, R2 Zone, LOT AREA, Minimum is amended by deleting the numbers/words **“465.0 m² (5005.4 ft²)”** and replacing with **“371.6 m² (4000 ft²)”**.
46. THAT Section 12.2.1.2, R2 Zone, LOT FRONTAGE, Minimum is amended by deleting the numbers/words **“15 m (49 ft.)”** and replacing with **“12 m (39.3 ft.)”**.
47. THAT Section 12.2.1.4, R2 Zone, Interior Side Yard, is amended by deleting 12.2.1.4 in its entirety and replacing with the following:
“12.2.1.4 Interior Side Yard, Minimum 1.2 m (3.9 ft)”
48. THAT Section 12.2.2.2, R2 Zone, Lot Frontage, Minimum per dwelling, is amended by deleting the numbers/words **“18.3 m (60 ft.)”** and replacing with **“18 m (59 ft.)”**.
49. THAT Section 12.2.2.6, R2 Zone, Interior Side Yard, is amended by deleting 12.2.2.6 in its entirety and replacing with the following:
“12.2.2.6 Interior Side Yard, Minimum 1.2 m (3.9 ft)”
50. THAT Section 12.2.3.4, R2 Zone, Interior Side Yard, is amended by deleting 12.2.3.4 in its entirety and replacing with the following:
“12.2.3.4 Interior Side Yard, Minimum 1.2 m (3.9 ft)”
51. THAT Section 12.2.4.4, R2 Zone, Interior Side Yard, is amended by deleting 12.2.4.4 in its entirety and replacing with the following:
“12.2.4.4 Interior Side Yard, Minimum 1.2 m (3.9 ft)”
52. THAT Section 12.2.5.4, R2 Zone, Interior Side Yard, is amended by deleting 12.2.5.4 in its entirety and replacing with the following:
“12.2.5.4 Interior Side Yard, Minimum 1.2 m (3.9 ft)”
53. THAT Section 12.2.6.5, R2 Zone, Interior Side Yard, is amended by deleting 12.2.6.5 in its entirety and replacing with the following:
“12.2.6.6 Interior Side Yard, Minimum 1.2 m (3.9 ft)”
54. THAT Section 13.2.1.4, R3 Zone, Interior Side Yard, is amended by deleting 13.2.1.4 in its entirety and replacing with the following:
“13.2.1.4 Interior Side Yard, Minimum 1.2 m (3.9 ft)”
55. THAT Section 13.2.2.10, Distances Between Cluster Townhouses, is amended as follows:
 - a) deleting the numbers/words **“18.3m (60.0 ft)”** and replacing with **“12 m (39.3 ft)”**.
 - b) deleting the numbers/words **“12.2m (40.0 ft)”** and replacing with **“6 m (19.7 ft)”**.
 - c) deleting the numbers/words **“9.1 m (30.0 ft)”** and replacing with **“3 m (9.8 ft)”**.
56. THAT Section 13.2.3.10, Distances Between Apartment Buildings, is amended by changing subsection **“i), ii) and iii)”** to **“a), b) and c)”**.
57. THAT Section 13.2.3.10, Distances Between Apartment Buildings, is further amended as follows:
 - a) deleting the numbers/words **“18.3m (60.0 ft)”** and replacing with **“12 m (39.3 ft)”**.
 - b) deleting the numbers/words **“12.2m (40.0 ft)”** and replacing with **“6 m (19.7 ft)”**.
 - c) deleting the numbers/words **“9.1 m (30.0 ft)”** and replacing with **“3 m (9.8 ft)”**.
58. THAT Section 15.2.7, C1 Zone, Building Height Maximum, is amended by deleting 15.2.7 in its entirety and replacing with the following:
“6.2.7 Building Height, Minimum 6 m (19.7 ft)”.
59. THAT Section 20.5, Industrial Zone Landscaping Requirements, is amended by adding the words **“including exterior side yard,”** after the word *frontage*.
60. THAT Section 26.2, Conestoga Lake Zone Regulations, is amended by numbering the first two paragraphs as **a) and b)**;

AND further that the following new section c) is added:

“c) Accessory structures are required to comply with section 6.1 and are to be considered under the R1A residential provisions.”

61. THAT Section 27.1, Future Development Zone, Permitted Uses, is deleted in its entirety and replaced with the following:
 - **“Uses, building and structures lawfully existing on the date of passing of this by-law.”**
62. THAT Section 27.2, 27.3 and 27.4, Future Development Regulations, is deleted in its entirety and replaced with the following:
“27.2 Regulations – As existing on the date of passing of this by-law.”
63. THAT Section 28.3, Natural Environment Zone, is amended by adding the following new sub section d):
“d) Section 6.20.1 is applicable as it applies to setbacks to the NE zone.”
64. THAT Site Specific Exception 31.23 be amended by adding the following permitted use:
“iv) one additional residential unit is permitted in the basement.
65. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as Part Lot 3, Concession 13, Reference Plan 61R21495, parts 2 & 3 as shown on Schedule “A” attached to and forming part of this By-law from **Agricultural (A) to Natural Environment (NE)**.
66. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as Part Lot 19, Concession 11, Reference Plan 61R20731, parts 1 as shown on Schedule “B” attached to and forming part of this By-law from **Agricultural Exception (A-31.44) to Future Development (FD)**.
67. THAT Schedule ‘A-4’ – Alma - is amended by changing the zoning on the lands described as Plan 134 Lot 164, Part Lots 163, 180 and 181, Reference Plan 61R11958, parts 2 and 3 as shown on Schedule “C” attached to and forming part of this By-law from **Commercial (C1) to Residential (R1A)**.
68. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as East Part Lot 16, Concession 17 (M), Reference Plan 61R20731, parts 1 as shown on Schedule “D” attached to and forming part of this By-law from **Extractive Industrial Exception (31.176) to Extractive Industrial Exception (31.289)**.
69. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as Part Lot 17, Concession 1, Reference Plan 61R20731, parts 1 as shown on Schedule “E” attached to and forming part of this By-law from **Agricultural Exception (A-31.125) to Agricultural Exception (A-31.148)**.
70. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as Part Lot 10 and 11, Concession 10, as shown on Schedule “F” attached to and forming part of this By-law from **Agricultural Exception (A-31.79) to Agricultural**.
71. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as Part Lot 15, Concession 9, as shown on Schedule “G” attached to and forming part of this By-law from **Agricultural Exception (A-31.182) to Agricultural**.
72. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as Part Lot 17, Concession 4, as shown on Schedule “H” attached to and forming part of this By-law from **Agricultural Exception (A-31.141) to Agricultural**.
73. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as Part Lot 15, Concession 6, as shown on Schedule “I” attached to and forming part of this By-law from **Agricultural Exception (A-31.188) to Agricultural**.
74. THAT Schedule ‘A-1’ is amended by changing the zoning on the lands described as Part Lot 22, Concession 16, as shown on Schedule “J” attached to and forming part

of this By-law from **Agricultural Exception (A-31.186) to Agricultural.**

75. THAT Schedule 'A-1' is amended by changing the zoning on the lands described as Part Lot 7, Concession 9, as shown on Schedule "K" attached to and forming part of this By-law from **Agricultural Exception (A-31.116) to Agricultural.**

76. THAT Schedule 'A-1' is amended by changing the zoning on the lands described as Part Lot 4, Concession 12, as shown on Schedule "L" attached to and forming part of this By-law from **Agricultural Exception (A-31.209) to Agricultural.**

77. THAT Schedule 'A-1' is amended by changing the zoning on the lands described as Part Lot 19, Concession 1, as shown on Schedule "M" attached to and forming part of this By-law from **Agricultural Exception (A-31.241) to Agricultural.**

78. THAT Schedule 'A-1' is amended by changing the zoning on the lands described as Part Lot 17, Concession 15, as shown on Schedule "N" attached to and forming part of this By-law from **Agricultural Exception (A-31.127) to Agricultural.**

79. THAT Schedule 'A-1' is amended by changing the zoning on the lands described as Part Lot 2, Concession 13, as shown on Schedule "O" attached to and forming part of this By-law from **Agricultural Exception (A-31.107) to Agricultural.**

80. THAT Section 31 Exception Zone, be amended by deleting the text of site specific **31.7** in its entirety and replacing it with the following:

31.7 Surplus Farm Dwelling properties	Notwithstanding any other section of this by-law to the contrary, a residential dwelling shall be prohibited in this zone. Other agricultural uses, that are not accessory to a dwelling, are permitted. This restriction is a result of the subject lands obtaining a surplus farm dwelling severance to remove the existing dwelling from the overall farm parcel. It is intended to ensure that the lands are only used for agricultural purposes.
--	--

81. THAT Schedule "A" Map 1 - Mapleton By-law 66-01 is amended by changing the zoning on lands described in the chart below and as further identified on the corresponding Schedules forming part of this By-law to **A-31.7 and A:**

Property Description/Location	Zoning Change	Schedule attached to and forming part of the By-law
Pt Lots 18 & 19 Conc. 9	Rezoned from A-31.51 to A-31.7	aa
Pt Lots 18 & 19, Conc. 17	Rezoned from A-31.219 to A-31.7	bb
Pt Lots 2 & 3, Conc. 17	Rezoned from A-31.230 to A-31.7	cc
Pt Lot 4, Conc. 18 & 19	Rezoned from A-31.231 to A-31.7	dd
West Pt Lot 15, Conc. 14	Rezoned from A-31.238 to A-31.7 Rezoned from A-31.239 to A	ee
Pt Lot 15, Conc. 14	Rezoned from A-31.238 to A-31.7	ff
Pt Lot 10, Conc 7	Rezoned from A-31.247 to A-31.7	gg
Pt Lot 19, Conc. 14	Rezoned from A-31.254 to A-31.7 Rezoned from A-31.255 to A	hh
Pt Lots 18 & 19, Con 15	Rezoned from A-31.257 to A-31.7 Rezoned from A-31.258 to A	ii
Pt Lot 10, Con A	Rezoned from A-31.263 to A-31.7 Rezoned from A-31.262 to A	jj
Pt Lot 2, Con A	Rezoned from A-31.266 to A-31.7	kk
Pt Lot 12, Con 8	Rezoned from A-31.268 to A-31.7	ll
Pt Lot 10, Con 14	Rezoned from A-31.278 to A-31.7 Rezoned from A-31.279 to A	mm
Pt Lots 4 & 5, Con 13	Rezoned from A-31.287 to A-31.7	nn
Pt Lots 12 & 13, Con A	Rezoned from A-31.292 to A-31.7	oo

Pt Lot 5, Con 11	Rezone from A-31.299 to A-31.7	pp
Pt Lot 11, Con 10	Rezone from A-31.312 to A-31.7	qq
Pt Lot 1, Con 8	Rezone from A-31.320 to A-31.7 Rezone from A-31.321 to A	rr

82. THAT Section 31 Exception Zone, be amended by deleting the following site specific Zones in their entirety:

31.79	31.241	31.238
31.182	31.127	31.239
3.141	31.107	31.247
31.188	31.51	31.254
31.186	31.219	31.255
31.116	31.230	31.257
31.209	31.231	31.258
31.262	31.263	31.266
31.268	31.278	31.279
31.287	31.292	31.299
31.312	31.320	31.321

83. THAT except as amended by this By-law, the land as shown on the attached Schedules shall be subject to all applicable regulations of the Township of Mapleton Zoning By-law 2010-080, as amended.
84. THAT upon enactment of this Township Comprehensive Zoning Bylaw Housekeeping Amendment by Council, site specific Zoning By-law Amendment and Minor Variance applications will continue to be received, processed and considered by Council and the Committee of Adjustment.
85. THAT this By-law Amendment shall come into effect upon the final passing thereof pursuant to Section 34(21) and Section 34(22) of The Planning Act, R.S.O., 1990, as amended, or where applicable, pursuant to Sections 34(30) and (31) of the Planning Act, R.S.O., 1990, as amended.

READ a first, second and third time and passed this day of , 2019.

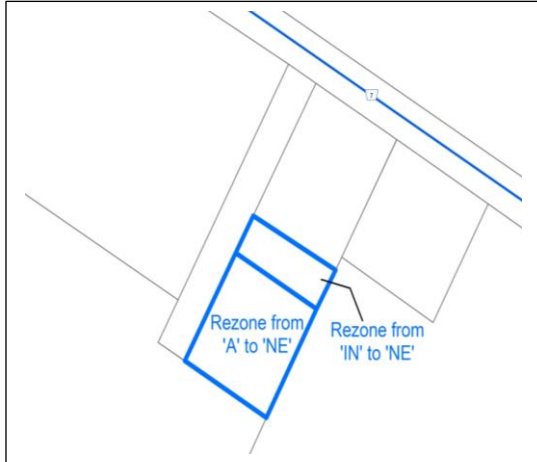
Mayor Gregg Davidson

Clerk Barb Schellenberger

THE TOWNSHIP OF MAPLETON

BY-LAW NO 2019-092.

Schedule "A"



Schedule "B"



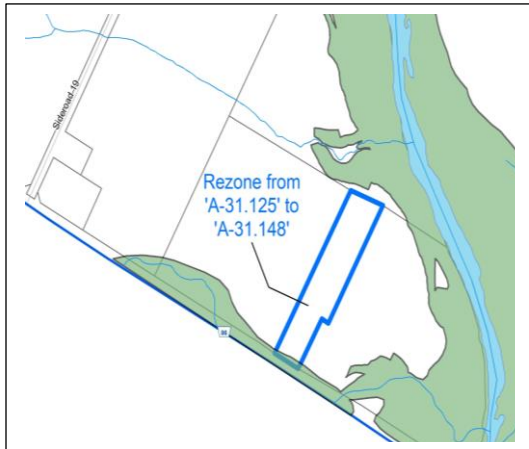
Schedule "C"



Schedule "D"



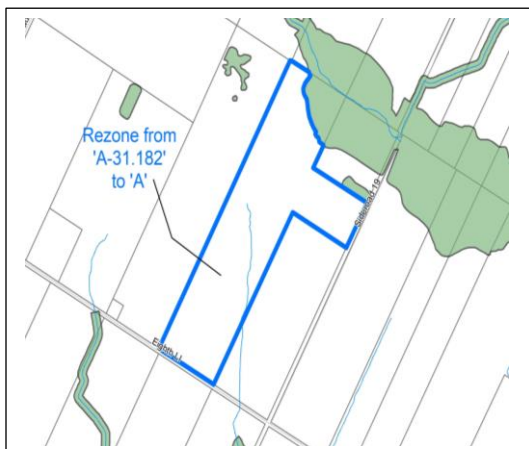
Schedule "E"



Schedule "F"



Schedule "G"



Schedule "H"



THE TOWNSHIP OF MAPLETON

BY-LAW NO 2019-092.

Schedule "I"



Schedule "J"



Schedule "K"



Schedule "L"



Schedule "M"



Schedule "N"



Schedule "O"



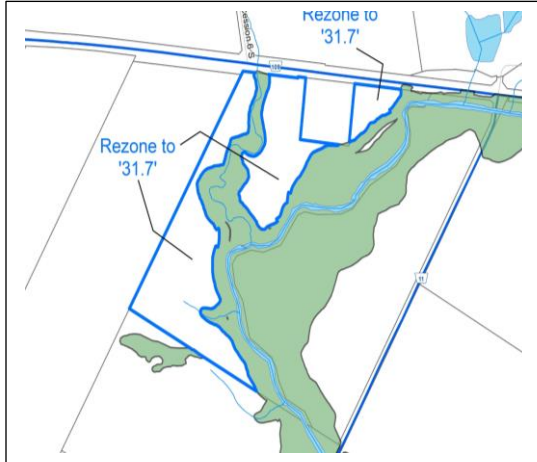
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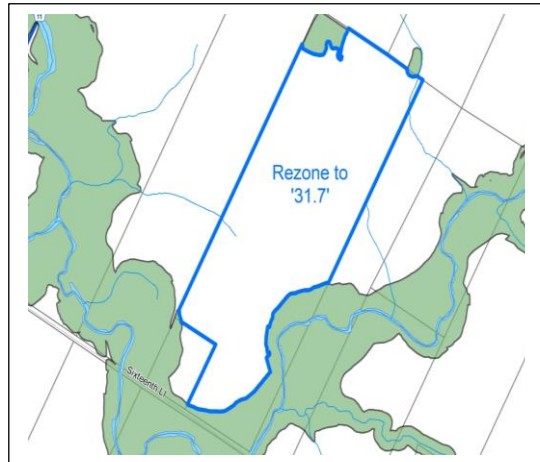
THE TOWNSHIP OF MAPLETON

BY-LAW NO 2019-092.

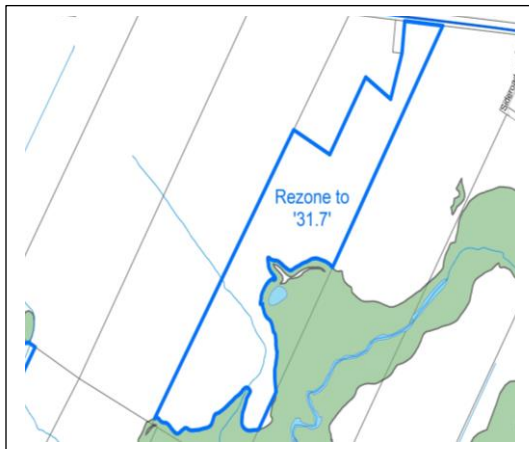
Schedule "bb"



Schedule "cc"



Schedule "dd"



Schedule "ee"



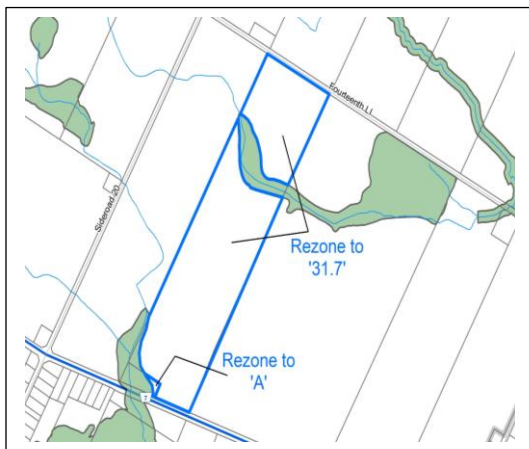
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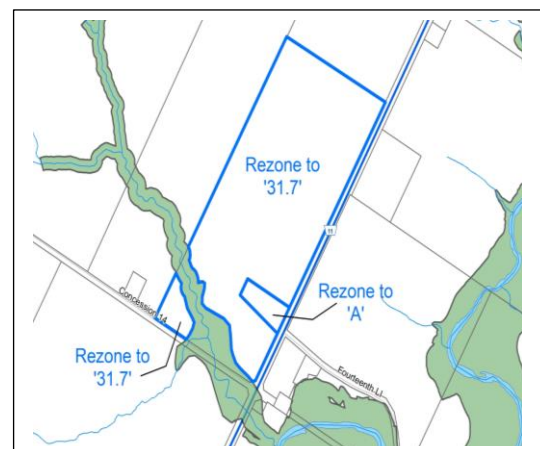
Schedule "gg"



Schedule "hh"



Schedule "ii"



THE TOWNSHIP OF MAPLETON

BY-LAW NO 2019-092.

Schedule "jj"



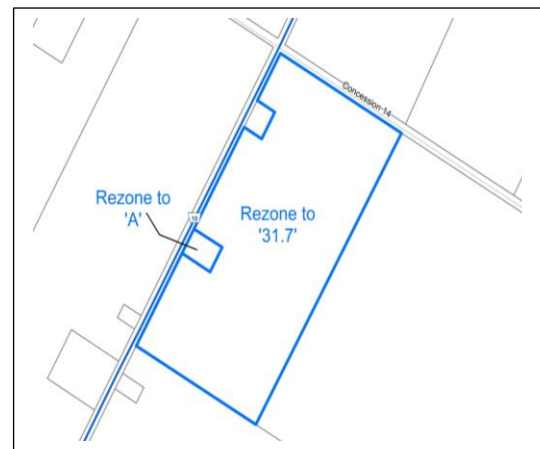
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Schedule "ll"



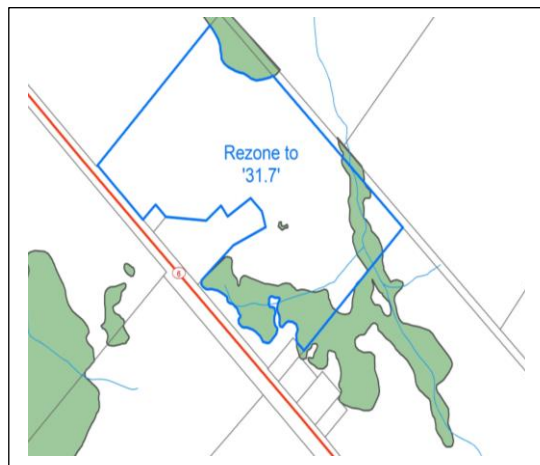
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Schedule "nn"



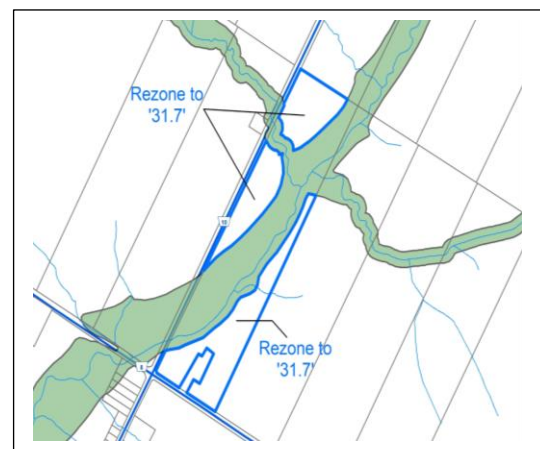
Schedule "oo"



Schedule "pp"



Schedule "qq"



THE TOWNSHIP OF MAPLETON

BY-LAW NO 2019-092.

Schedule "rr"

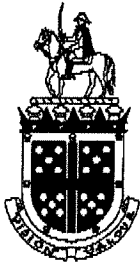


EXPLANATORY NOTE

BY-LAW NUMBER 2019-092

THE PURPOSE AND EFFECT OF THE ZONING BY-LAW AMENDMENT is to provide for “housekeeping” changes to the Comprehensive Zoning By-law as itemized below:

- i) General typographical and mapping corrections.
- ii) Add and update definitions, including clarifying the definition of street, building and swimming pool.
- iii) Clarification of text for regulations such as air conditioner units, tarped/coverall structures, Outdoor display, temporary sales trailer, NE zone setbacks.
- iv) Amend provisions for accessory structures, including increasing the size and height.
- v) Include new provisions for lots created as surplus farm dwelling to recognize lot size.
- vi) Include new provisions to permit an accessory dwelling unit on a rural lot.
- vii) Modify parking requirements for aisle, access width and barrier free and add criteria for parallel and angled parking requirements.
- viii) Modify barrier free/accessibility parking.
- ix) Amend minimum front yard, interior and exterior side yard setbacks in residential zones.
- x) Amend minimum lot area and frontage in residential zones.
- xi) Remove and/or amend site specific exemptions for expired garden suites, redundant restrictions and general adjustments.
- xii) Amend minimum distances between townhouses and apartments.
- xiii) Amend permitted uses within the Future Development zone to existing uses only.



COUNTY OF WELLINGTON

OFFICE OF THE COUNTY ENGINEER
ADMINISTRATION CENTRE
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GUELPH ON N1H 3T9
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T 1.866.899.0248
F 519.837.8138

DON KUDO, P. Eng.
COUNTY ENGINEER

October 10, 2019

Mayor Gregg Davidson
Township of Mapleton
PO Box 160
Drayton ON N0G 1P0

VIA FAX ONLY: 519-638-5113

RE: Winter Maintenance

Dear Mayor Davidson:

Once again I am writing to inquire as to whether your municipal staff would agree to maintain our WR45 from November 18, 2019 or whenever winter maintenance have commenced up to and including April 7, 2020 or until such time as winter operation have ended.

The winter maintenance would include plowing, sanding, and routine patrolling such as necessary to protect the motoring public. It would not include sign repair, pothole patching or wash outs but we would expect to be notified when these deficiencies are encountered.

I offer the following compensation for the 2019/2020 winter season of \$9,000/km.

In addition, if the 2019/2020 seasonal cost exceeds the proposed compensation I will cover those extra costs.

If this arrangement is acceptable please let me know so that our routes can be confirmed.

Sincerely,

Paul Johnson, C.E.T., C.S.T.
Operations Manager

Copy: Brad Hutchinson, Roads Superintendent. Travis Walker, Foreman, County of Wellington; Sam Mattina, Director of Public Works, Township of Mapleton

PROPOSED RESOLUTION
ITEM 11.1

THAT Township of Mapleton Council receive County of Wellington Engineering Department correspondence dated October 10, 2019 regarding Winter Maintenance (Wellington Road 45);

AND FURTHER THAT the County of Wellington compensation of \$9,000 per kilometer for winter maintenance on Wellington Road 45 during the 2019/2020 winter maintenance season be accepted;

AND FURTHER THAT the County of Wellington recognizes if the 2019/2020 seasonal cost exceeds the proposed compensation, the County will be responsible for same.

(defeated)/carried _____
Head of Council



COUNTY OF WELLINGTON

COMMITTEE REPORT

To: Chair and Members of the Planning Committee
From: Linda Dickson, Emergency Manager/CEMC
Date: Thursday, September 12, 2019
Subject: Report on the Rural Green Property Addressing Signage

Background:

In May 1993, County Council supported a resolution from the Planning and Development Committee in Report PD93-11 to undertake a "rural addressing system for Wellington County for use in providing consistent County wide civic addresses", and further that "all (then) rural Townships be requested to use the County numbering system".

April 1994 PD94-11 report of the Planning and Development Committee indicated that the addressing system would be completed for all rural municipalities in Wellington. The report also indicated that that all of the rural Townships are working together to develop consistent signage for both property identification signs and road intersections signs. The County Roads Department assisted the Townships with this project and obtained a manufacturer for both the property signs and the posts. The May 1994 Roads Committee Report awarded tenders for the rural green property signs.

The consensus of County Council in 1993/94 for the rural addressing project was to ensure consistency of signage across all municipalities.

Mapleton Council Green Sign Resolutions:

Mapleton Council has indicated a desire to have the rural green property signs in Mapleton updated to include the Road/Street name. The Township of Woolwich has a similar signage system and the Floradale Fire Department in Woolwich Township services a large area of Mapleton. Mapleton Council supported the following two resolutions.

Resolution of Mapleton Council –January 22, 2019

"That the Township of Mapleton Council direct staff to assess our current system of Green Emergency Civic Numbers and determine viability of including both road number and name of street, and further staff report back to Council".

Resolution of Mapleton Council – February 2019

"THAT Township of Mapleton Council receive Fire/Rescue Report FR2019-02 dated February 12, 2019 regarding Emergency Locate Number Enhancements for information; AND FURTHER THAT Council supports further discussions at the County level for bulk pricing and consistent signage". Staff Report attached.

Green Sign Replacements:

The request to include the road/street name on the green property sign is a definite benefit for emergency location purpose. With the increase in cell phone usage today and less reliance on landline

9-1-1 calls that include the telephone and address location information, the additional information on the sign is helpful for emergency services, public works and utilities that provide services in Wellington.

The inclusion of the road name on the green property sign would be an enhancement for all municipalities in Wellington and not just Mapleton. This would ensure the consistency of the signage originally envisioned by County Council in 1993. The Wellington County Fire Chiefs have reviewed the concept and support updating the green property signs to include the road name. It has also been noted that many of the existing signs (although the responsibility of the property owner once posted) are rusting and are in need of replacement.

It is estimated that the current number of green signs in the County is 13500.

Cost allocation options:

- 1) County budgets for the costs to replace all 13,500 green property signs in the 2020 budget at a cost of \$270,000. Member municipal staff would assist with the replacement of the signs in each municipality; or
- 2) Member municipalities replace all of the green property signs in their municipality and cover the costs of the signs; or
- 3) Cost of replacement of the green property signs be the responsibility of the property owner.

Recommendation:

That the Council for the County of Wellington authorizes staff to budget for the replacement of all current rural green property signs with the exception of intersection signage with green property signs that include the approved municipal road name in the 2020 EM Capital Budget.

Respectfully submitted,



Linda Dickson
Emergency Manager/CEMC, MCIP, RPP, CMMIII

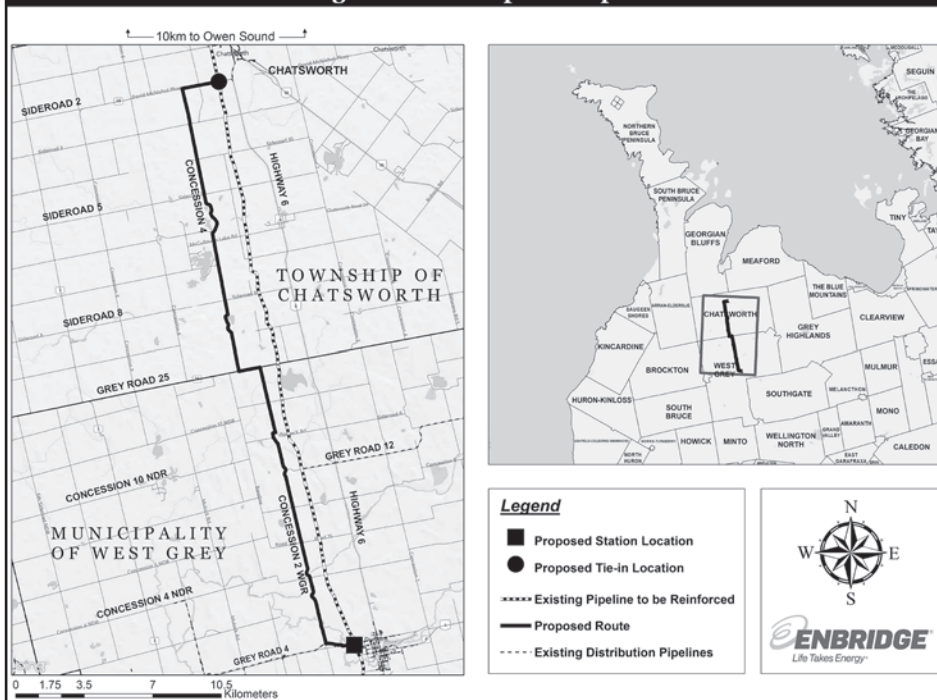
Enbridge Gas Inc. has applied to the Ontario Energy Board for approval to construct approximately 34 kilometres of natural gas pipeline and associated facilities in the Municipality of West Grey and the Township of Chatsworth, both in the County of Grey.

Enbridge Gas Inc. has also applied to introduce a new firm transportation service for gas distributors under Rate M17.

Learn more. Have your say.

If the application is approved as filed, Enbridge Gas Inc. proposes to construct approximately 34 kilometres of new 12-inch diameter natural gas pipeline and associated facilities. A map showing the location of the proposed pipeline is below:

Enbridge Gas Inc. Proposed Pipeline



Enbridge Gas Inc. is also asking the Ontario Energy Board to approve the form of agreements it offers to landowners to use their land for routing or construction of the proposed pipeline and ancillary facilities.

Enbridge Gas Inc. says that the pipeline is needed to provide transportation services to the South Bruce expansion area and to respond to forecast growth along the Owen Sound pipeline system.

Enbridge Gas Inc. also proposes to introduce a new service for gas distributors effective December 1, 2019. This new service under Rate M17 is proposed to be a firm point-to-point transportation service for existing and new gas distributors in Ontario. Enbridge Gas Inc. is also proposing to modify and limit the applicability of the existing bundled delivery service under Rate M9 and the semi-unbundled storage and transportation service under Rate T3, to existing gas distributor customers.

Please review the application carefully for a complete list of approvals and to determine whether you will be affected.

THE ONTARIO ENERGY BOARD IS HOLDING A PUBLIC HEARING

The Ontario Energy Board (OEB) will hold a public hearing to consider the application filed by Enbridge Gas. During the hearing, we will question Enbridge Gas on the case. We will also hear questions and arguments from individual consumers, municipalities and others whose interests would be affected. At the end of this hearing, the OEB will decide whether to approve the application.

As part of its review of this application, the OEB will assess Enbridge Gas' compliance with the OEB's Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario.

The OEB will also assess whether the duty to consult with Indigenous communities potentially affected by the proposed pipeline has been discharged with respect to the application.

The OEB is an independent and impartial public agency. We make decisions that serve the public interest. Our goal is to promote a financially viable and efficient energy sector that provides you with reliable energy services at a reasonable cost.

BE INFORMED AND HAVE YOUR SAY

You have the right to information regarding this application and to be involved in the process.

- You can review the application filed by Enbridge Gas on the OEB's website now.
- You can file a letter with your comments, which will be considered during the hearing.
- You can become an active participant (called an intervenor). Apply by **October 21, 2019** or the hearing will go ahead without you and you will not receive any further notice of the proceeding.
- At the end of the process, you can review the OEB's decision and its reasons on our website.

LEARN MORE

Our file number for this case is **EB-2019-0183**. To learn more about this hearing, find instructions on how to file letters or become an intervenor, or to access any document related to this case, please select the file number **EB-2019-0183** from the list on the OEB website: <http://www.oeb.ca/noticeltc>. You can also phone our Consumer Relations Centre at 1-877-632-2727 with any questions.

ORAL VS. WRITTEN HEARINGS

There are two types of OEB hearings – oral and written. Enbridge Gas has applied for a written hearing. The OEB is considering this request. If you think an oral hearing is needed, you can write to the OEB to explain why by **October 21, 2019**.

PRIVACY

If you write a letter of comment, your name and the content of your letter will be put on the public record and the OEB website. However, your personal telephone number, home address and email address will be removed. If you are a business, all your information will remain public. If you apply to become an intervenor, all information will be public.

This hearing will be held under sections 36, 90(1) and 97 of the Ontario Energy Board Act, 1998, S.O. 1998, c.15 (Schedule B).



ONTARIO ENERGY BOARD

IN THE MATTER OF the Ontario Energy Board Act, 1998, S.O. 1998, c.15, Schedule B;

AND IN THE MATTER OF an Application by Enbridge Gas Inc. for an Order or Orders approving a new firm transportation service for gas distributors under the rate M17 rate class, effective December 1, 2019;

AND IN THE MATTER OF an Application by Enbridge Gas Inc. for an Order or Orders modifying the applicability of the existing Rate M9 and Rate T3 rate schedules for existing gas distributors;

AND IN THE MATTER OF an Application by Enbridge Gas Inc. for an Order or Orders granting leave to construct natural gas pipelines and ancillary facilities in in the Municipality of West Grey and the Township of Chatsworth;

AND IN THE MATTER OF an Application by Enbridge Gas Inc. for an Order or Orders approving the form of various land agreements.

APPLICATION

1. Enbridge Gas Distribution Inc. (“EGD”) and Union Gas Limited (“Union”) were Ontario corporations incorporated under the laws of the Province of Ontario carrying on the business of selling, distributing, transmitting, and storing natural gas within the meaning of the Ontario Energy Board Act, 1998 (the “Act”). EGD and Union amalgamated effective January 1, 2019 to become Enbridge Gas Inc. (“Enbridge Gas” or the “Applicant”)
2. Enbridge Gas is applying to the Ontario Energy Board (“the Board”) pursuant to section 36 of the Act for an Order or Orders granting approval of a new M17 firm transportation service for gas distributors. This application is in response to changes in the competition for natural gas distribution in Ontario as a result of the OEB’s Decision with Reasons in its Generic Community Expansion proceeding (EB-2016-0004).
3. Enbridge Gas is proposing the M17 service to EPCOR Southern Bruce Gas Inc. (“EPCOR”) in response to a request to provide transportation to the South Bruce expansion area. In addition to making this service available to other potential new

entrants, existing gas distributors will have the option to take the M17 service. As proposed, the M17 service is to be effective December 1, 2019.

4. To accommodate the new service, Enbridge Gas is seeking Board approval of the proposed M17 rate design and rate schedule found at Exhibit C, Tab 1, Schedule 1, inclusive of Schedule "A" (General Terms and Conditions), Schedule "B" (Nominations) and Schedule "C" (Receipt Locations).
5. Enbridge Gas is also seeking Board approval pursuant to Section 36 of the Act to modify the applicability of the existing Rate M9 and Rate T3 rate schedules for existing gas distributors. Enbridge Gas is proposing to limit the applicability of the Rate M9 and Rate T3 rate schedules to existing gas distributor customers.
6. Enbridge Gas also hereby applies to the Board, pursuant to Section 90 (1) of the Act, for an Order or Orders granting leave to construct approximately 34 kilometres of NPS 12 hydrocarbon natural gas pipeline ("the Project") in the Municipality of West Grey and the Township of Chatsworth, both of which are within the County of Grey.
7. Enbridge Gas also hereby applies to the Board, pursuant to Section 97 of the Act, for an Order approving the form of land agreements found at Exhibit E, Tab 6, Schedule 2.
8. Attached hereto as Exhibit E, Tab 1, Schedule 1, is a map showing the general location of the proposed Project, and associated facilities and the municipalities, and highways through, under, over, upon or across which the pipeline will pass.
9. Enbridge Gas also applies to the Board for such interim Order or Orders approving interim rates or other charges and accounting Orders as may from time to time appear appropriate or necessary. In particular, Enbridge Gas requests the Board hear its application for a new M17 service pursuant to Section 36 of the Act in an expedited fashion in Order to allow for an effective date of December 1, 2019. In the event the Board is not prepared to provide the foregoing, Enbridge Gas requests an interim Order or Orders approving interim rates to allow the M17 service an effective date of December 1, 2019.
10. Enbridge Gas requests approval of the full application, including its Section 90 (1) request specific to the Owen Sound Reinforcement Project, by February of 2020.
11. This application is supported by written evidence. This evidence is pre-filed and will be amended from time to time as required by the Board, or as circumstances may require.

12. The parties affected by this Application are the owners of lands, government agencies and municipalities over which the pipeline will be constructed, and Enbridge Gas's distribution customers. The persons affected by this Application are the customers resident or located in the Municipalities, the First Nation Reserves and Métis organizations served by Enbridge Gas, together with those to whom Enbridge Gas sells gas, or on whose behalf Enbridge Gas distributes, transmits or stores gas. It is impractical to set out in this Application the names and addresses of such persons because they are too numerous.

13. The address for service for Enbridge Gas is:

Enbridge Gas Inc.
500 Consumers Road
Toronto, Ontario M2J 1P8
P.O. Box 650
Scarborough, Ontario M1K 5E3

Attention: Brandon Ott, Technical Manager, Regulatory Applications
Telephone: (416) 495-7468
Email: brandon.ott@enbridge.com
egiregulatoryproceedings@enbridge.com

-and-

Enbridge Gas Inc.
500 Consumers Road
Toronto, Ontario M2J 1P8
P.O. Box 650
Scarborough, Ontario M1K 5E3

Attention: Guri Pannu, Legal Counsel
Telephone: (416) 758-4761
Fax: (416) 495-5994
Email: guri.pannu@enbridge.com

-and-

Torys
Suite 3000, TD South Tower
Box 270
Toronto, Ontario
M5K 1N2

Attention: Charles Keizer
Telephone: (416) 865-7512
Fax: (416) 865-7380
Email: ckeizer@torys.com

Dated: August 29, 2019

Enbridge Gas Inc.

[original signed by]

Brandon Ott
Technical Manager, Regulatory Applications

October 8, 2019

To: All Ontario Municipalities
Sent Via Email

**Re: Menstrual Products in City Facilities
Our File No. 16.6.99**

At its meeting of September 23, 2019, St. Catharines City Council supported the implementation of a pilot project to provide free menstrual products at City Facilities. The pilot project will run from January until June 2020 and will include the installation of dispensing units in washrooms at locations to be determined by staff.

Below is the full motion which was approved by St. Catharines City Council at its meeting held on September 23, 2019:

That Council support the implementation of Option 1 for a pilot project on free menstrual products in City Facilities, beginning in January 2020 until June 2020 and with the results of the pilot project to be reviewed; and

That a cap be put in place as determined by staff; and

That the Budget Standing Committee include this pilot project in its draft 2020 budgets. FORTHWITH

A previous motion on this matter directed that any decisions related to this pilot project be shared with all Ontario municipalities and school boards.

If you have any questions, please contact the Office of the City Clerk at extension 1524.



Bonnie Nistico-Dunk, City Clerk
Legal and Clerks Services, Office of the City Clerk
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TOWNSHIP OF MAPLETON COUNCIL TRACKING SHEET

FOR OCTOBER 22, 2019 COUNCIL

Subject for Action	Department	Comments
Wastewater Capacity (long term and short term)	CAO & DPW	Questions are being taken until November 2, 2019. 4 site visits have been scheduled to visit our water and waste water plants.
Cemetery By-law	DPW & CLK	Staff will update the bylaw following Master Plan approval.
Community Grant Program	CAO	Report on options presented to Council on December 13, 2016. Policy to be formalized.
Council Video Recording	CAO & CLK	ICompass presentation June 12, 2018. Contract has been signed. Planning has commenced.
Development Charges	SMT	Peter Simcisko will begin the new study in mid-October.
Asset Management Plan (AMP) Update	DF & DPW	Working with Watson and Associates to create a sustainable AMP and policy as per legislated requirements utilizing funding assistance from approved FCM program. Project end date; July 8, 2019. Policy presented May 28, 2019. To be incorporated into policies. Project extension to October 8, 2019 has been requested by Watson and Associates and approved by FCM. Formal agreement has been signed by FCM and the Township to execute funding payment.
Modernization Grant	CAO	Currently going through discovery stages, Mapleton senior staff has had 2 interviews with KPMG and meeting with all CAO's was held on October 3 rd . On track for final report on November 29 th , 2019.

THE CORPORATION OF THE TOWNSHIP OF MAPLETON

BY-LAW NUMBER 2019-093

**Being a by-law to confirm all actions and
proceedings of the Council of the
Corporation of the Township of Mapleton**

WHEREAS Section 5 of the Municipal Act, S.O. 2001 c. 25 (hereinafter called "the Act") provides that the powers of a Municipal Corporation shall be exercised by its Council;

AND WHEREAS Section 5(3) of the Act states, a municipal power, including a municipality's capacity, rights, powers and privileges under section 9, shall be exercised by by-law, unless the municipality is specifically authorized to do otherwise;

NOW THEREFORE the Council of the Corporation of the Township of Mapleton enacts as follows:

1. All actions and proceedings of the Council of the Corporation of the Township of Mapleton taken at its meetings held on Tuesday, October 22, 2019, except those taken specifically by By-law and those required by law to be done by Resolution only are hereby sanctioned, confirmed and adopted as though they were set out herein.
2. The Mayor, or in his absence, the Presiding Officer and the Clerk, or in his/her absence, the Deputy Clerk, are hereby authorized and directed to do all things necessary to give effect to the foregoing.
3. The Mayor, or in his absence, the Presiding Officer and the Clerk, or in his/her absence, the Deputy Clerk, are hereby authorized and directed to execute all documents required by law to be executed by them as may be necessary in order to implement the foregoing and the Clerk, or in his/her absence, the Deputy Clerk, is hereby authorized and directed to affix the seal of the Corporation to any such documents.

READ a first, second and third time on Tuesday, October 22, 2019.

Mayor Gregg Davidson

Clerk Barb Schellenberger